Michaels
COMMUNITIES THAT *lift* LIVES

DEVELOPMENT
MANAGEMENT
CONSTRUCTION
FINANCE

April 2, 2020

Mr. Tom Eisen, Staff Planner
Office of Environmental Quality Control ("OEQC")
Department of Health
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Mr. Eisen:

SUBJECT: National Environmental Protection Act (NEPA) Environmental Assessment ("EA") Request Publication in the Environmental Notice

Project:	Halewai`olu Senior Residence
Applicant:	Halewai'olu Senior Development, LLC
Owner:	City and County of Honolulu
Agent:	R.M. Towill Corporation (Keith Kurahashi)
Location:	1331-1347 River Street – Downtown, Honolulu
Tax Map Key:	(1) 1-7-006:012
Proposal:	A new 201H affordable, rental housing residential facility for seniors aged 62 and over, with incomes at 80% and below of the Area Median Income. The new residential facility will include 156 one- and two-bedroom units (includes one resident manager's unit), commercial spaces, recreational amenities, and off-street parking.

Although not required by statute, on behalf of the City and County Department of Land Management, we respectfully request OEQC publish the Project summary of this Project's NEPA EA (not an HRS 343 HEPA) in the next edition of The Environmental Notice on **April 8, 2020.**

If you have any questions or need any additional information, please contact me at (808) 691-9446 or by email KSeddon@tmo.com.

Thank you for your assistance in this matter.

Very truly yours,

Karen Seddon

Karen Seddon
Vice President, Halewai'olu Senior Development
Regional Vice President, Michaels Development

cc: Sandra Pfund, Director, Department of Land Management

Pacific Guardian Center – Mauka Tower
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813
(808) 691-9446
www.tmo.com

NEPA Action EA/EIS
Publication Form

Project Name	Halewai`olu Senior Residences (NEPA EA)
Island:	Oahu
District:	Honolulu
TMK:	(1) 1-7-006:012
Permits:	201H
Applicant:	Halewaiʻolu Senior Development, LLC Karen Seddon, Vice President Email: kseddon@tmo.com Phone: (808) 691-9446 737 Bishop Street, Suite 1520 Honolulu, Hawaiʻi 96813
Approving Agency:	City and County of Honolulu Department of Land Management Sandra S. Pfund, Director Email: spfund@honolulu.gov Phone: (808) 768-4277 558 South King Street Honolulu, Hawaii 96813
Consultant:	R. M. Towill Corporation Keith Kurahashi, Principal Planner Email: keithk@rmtowill.com 2024 North King Street, Suite 200 Honolulu, Hawaiʻi 96819 Phone: (808) 842-1133
Status:	30-day public and agency comment period starts. **Comments due by May 08, 2020.** Send comments to the Consultant.

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page)**:**

Applicant proposes to demolish an existing vacant commercial building and parking lot on the Project Site and construct a new affordable rental housing facility for seniors aged 62 and over. The new 17-story residential facility will include 155, 1- and 2-bedroom units for seniors earning 80% and below of Area Median Income (AMI), and one resident manager's unit. Eight units will be designated for seniors earning 30% AMI or below; 131 units will be designated for seniors earning 60% AMI or below; and the remaining 16 units will be available for seniors earning 80% AMI or below. The residential facility will also include a multi-purpose room, social services office, property management offices, lobby, courtyard, and retail space. Project will remain affordable for a maximum term of 75 years. It will be about 174 feet tall with a 4-story podium. Various affordable housing and LUO exemptions under the City's HRS, 201H program are being requested.

Environmental Assessment

Prepared in Accordance with 24 Code of Federal Regulations Part 58,
Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities

Halewai'olu Senior Residences

Downtown Honolulu, Honolulu (Kona) District, Island of O'ahu



Volume 1: REPORT & APPENDICES

April 1, 2020

Proposing Applicant:
Halewai'olu Senior Development, LLC
737 Bishop Street, Suite 1520
Honolulu, Hawai'i 96813

Accepting Agency:
City & County of Honolulu
Department of Land Management
530 South King Street, Room 208
Honolulu, Hawaii 96813

Environmental Assessment

Prepared in Accordance with 24 Code of Federal Regulations Part 58,
Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities

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Downtown Honolulu, Honolulu (Kona) District, Island of O'ahu

April 2020

Proposing Applicant:
Halewai'olu Senior Development, LLC
737 Bishop Street, Suite 1520
Honolulu, Hawai'i 96813

Accepting Agency:
City & County of Honolulu
Department of Land Management
558 South King Street Honolulu,
Hawaii 96813

Prepared By:
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819-3494

Project No. 1-23377-00P

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ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-containing Materials
ADA	Americans with Disabilities Act
AIS	Archaeological Inventory Survey
AMI	Area Median Income
APE	Area of Potential Effect
AQIA	Air Quality Impact Assessment
ASD	Acceptable Separation Distances
BLS	U.S. Bureau of Labor Statistics
BMPs	Best Management Practices
BWS	Honolulu Board of Water Supply, City
C & D	Construction and Demolition
CBRA	Coastal Barrier Resources Act
CBRS	John H. Chafee Coastal Barrier Resources System
CDBG	Community Development Block Grant
CDP	Census Designated Place
CEQ	U. S. Council on Environmental Quality
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
City	City and County of Honolulu
CO	Carbon Monoxide
CO2e	Carbon Dioxide Equivalent
CSH	Cultural Surveys Hawai‘i
CWA	Clean Water Act of 1972, as amended
CWB	Clean Water Branch, HDOH
CWRM	Commission on Water Resource Management
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
dB	Decibel

dBA	A-Weighted Decibel
DBEDT	Department of Business, Economic Development & Tourism, State
DCAB	Disability and Communication Access Board, HDOH, State
DEM	Emergency Services Department, City
DFM	Department of Facility Maintenance, City
DLIR	Department of Labor and Industrial Relations, State
DLNR	Department of Land and Natural Resources, State
DNL	Day-Night Average Sound Level
DOE	Department of Education, State
DP	Development Plan
DPP	Department of Planning and Permitting, City
DTS	Department of Transportation Services, City
EA	Environmental Assessment
EFIA	Economic and Fiscal Impact Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMS	Emergency Medical Services, DEM, City
ENV	Department of Environmental Services, City
E.O.	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FTE	Full-time Equivalent
g	Gravitational Acceleration
GDP	Gross Domestic Product
GET	Gross Excise Tax
GHG	Greenhouse Gas

GP	General Plan
GPD	Gallons per Day
HAR	Hawai‘i Administrative Rules
HART	Honolulu Authority for Rapid Transportation
HDOH	Department of Health, State
HDOT	Department of Transportation, State
HECO	Hawaiian Electric Company
HFD	Honolulu Fire Department, City
HHFDC	Hawai‘i Housing Finance and Development Corporation
HHS	U.S. Department of Health and Human Services
HMAS	Hazardous Materials Assessment Survey
HMMF	Hula Mae Multi-Family
HPD	Honolulu Police Department
HRHP	Hawai'i Register of Historic Places
HRS	Hawai‘i Revised Statutes
HSD	Halewai‘olu Senior Development, LLC
HT	Hawaiian Telcom
HUD	U.S. Department of Housing and Urban Development
IBC	International Building Code
ICAC	Interagency Climate Adaptation Committee
LBP	Lead-Based Paint
LEED	Leadership in Energy and Environmental Design
LID	Low-impact Development
LIHTC	Low-Income Housing Tax Credit
LUO	Land Use Ordinance
LOS	Level of Service
MAR	Mobility Analysis Report
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
mph	Miles Per Hour
MS4	Municipal Separate Storm Sewer System

MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NB	Neighborhood Board
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHO	Native Hawaiian Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service, NOAA
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	Ozone
OONIA	Odor and Other Nuisance Impacts Assessment
OMPO	O‘ahu Metropolitan Planning Organization
PacIOOS	Pacific Islands Ocean Observing System
PCB	Polychlorinated Biphenyls
PGA	Peak Ground Acceleration
PM	Particulate Matter
PUC	Primary Urban Center
QCT	Qualified Census Tract
RHRF	Rental Housing Revolving Fund
RLS	Reconnaissance Level Survey
ROH	Revised Ordinances of Honolulu
SDWA	U.S. Safe Drinking Water Act
SFHA	Special Flood Hazard Area
SHPD	State Historic Preservation Division, DLNR, State
SHPO	State Historic Preservation Officer, DLNR, State
SIHP	State Inventory of Historic Places
SLRXA	Sea Level Rise Exposure Area

SLUD	State Land Use District
SMA	Special Management Area
SOBA	Southern Oʻahu Basal Aquifer
SOEST	School of Ocean and Earth Science and Technology, UH
SSA	Sole Source Aquifer
State	State of Hawaiʻi
TMDL	Total Maximum Daily Load
TMK	Tax Map Key
TOD	Transit-Oriented Development
TOD Plan	Downtown Neighborhood Transit-Oriented Development Plan
TP	Total Phosphorus
TSM	Transportation System Management
TSS	Total Suspended Solids
UH	University of Hawaiʻi
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WGSL	Waimānalo Gulch Sanitary Landfill
WSRA	Wild and Scenic Rivers Act
XTEZ	Extreme Tsunami Evacuation Zone

PREFACE

The Applicant, Halewai'olu Senior Development, LLC (HSD), is developing a 0.6181-acre parcel identified as Tax Map Key (TMK) 1-7-006:012, located at 1331-1347 River Street in Honolulu, Island of O'ahu, State of Hawai'i ("Project Site"). This Halewai`olu Senior Residences ("Project") will include the demolition of an existing, vacant, commercial building and parking lot on the Project Site and construction of a new affordable, rental housing residential facility for seniors aged 62 and over, with incomes at 80% and below of the U.S. Department of Housing and Urban Development (HUD) Area Median Income (AMI). The new residential facility will include 156 one- and two-bedroom units (includes one resident manager's unit). The new residential facility will also include a multi-purpose room, warming kitchen, restrooms, storage rooms, utility rooms, computer room, social services activity rooms, social services office, property management offices, mail and package boxes, and elevator lobby on the ground level. On the ground level will also be a courtyard (plaza), retail space, and parking access, along with bicycle parking, the trash compactor room and loading area. Levels 2 -3 will include vehicle parking, a portion of the bicycle parking, a generator room, storage and utility rooms. Level 4 will include a recreation area, laundry room, and equipment rooms. The residential units will be on Levels 5- 17. The new residential facility's preliminary unit count and type are shown in **Table 1: Housing Unit Mix for Halewai'olu Senior Residences**.

Table 1: Housing Unit Mix for Halewai'olu Senior Residences

Unit Type	One-bedroom	Two-bedroom	Total
30% of AMI	8	0	8
60% of AMI	115	16	131
80% of AMI	7	9	16
Manager's Unit	0	1	1
Total:	130	26	156

The Project will revitalize a site that is currently blighted and underutilized. In addition to providing much-needed affordable housing for seniors within the Primary Urban Center (PUC), the Project will provide benefits for the community by providing multi-purpose and activity rooms for the senior residents and the surrounding neighborhood and will improve the urban streetscape through the provision of landscaping, street trees and a courtyard. The Project is located within the Downtown Neighborhood Transit-Oriented Development (TOD) Plan area ("Downtown TOD Plan"), and promotes the principles of a walkable, dense, mixed-use neighborhood where residents are located in close proximity to everyday needs and community activities in the Downtown-Chinatown neighborhood. Although the Project is in proximity to three transit stations (Iwilei, Downtown, and Chinatown), it is nearest to the Chinatown station (approximately 0.4 miles).

The Project Site is owned by the City and County of Honolulu (City). In 1992, the City purchased the property with funds from HUD's Community Development Block Grant (CDBG) program. The Project will be funded through the Internal Revenue Tax Code, Section 42, Low-Income Housing Tax Credit (LIHTC) program, along with funds from the State Hula Mae Multifamily Bond and Rental Housing Revolving Fund programs that were awarded by the Hawai'i Housing Finance and Development Corporation (HHFDC) to HSD in February 2019.

Due to the use of federal HUD CDBG funds for the initial land purchase, the Project is subject to the HUD environmental review regulations as stipulated in Title 24, *Housing and Urban Development*, Code of Federal Regulations (CFR) Part 58, *Environmental Review Procedures For Entities Assuming HUD Environmental Responsibilities*, the National Environmental Policy Act (NEPA) and its federal cross-cutter regulations.

HSD, has requested a determination from the Department of Land Management that the Halewai'olu Senior Residences ("Project") is exempt from HRS, Chapter 343, *Environmental Impact Statement Laws*, and HAR, Chapter 11-200.1, *Environmental Impact Statement Rules*.

Governor David Ige signed and adopted HAR, Chapter 11-200.1 on July 30, 2019, which took effect on August 9, 2019. The Project complies with the eligibility criteria listed in Chapter 11-200.1-15, which authorizes the exemption from the preparation of an Environmental Assessment. See the discussion below:

(c) The following general types of actions are eligible for exemption:

(10) New construction of affordable housing, where affordable housing is defined by the controlling law applicable for the state or county proposing agency or approving agency, that meets the following:

(A) Has the use of state or county lands or funds or is within Waikiki as the sole triggers for compliance with chapter 343, HRS;

Discussion: In accordance with HRS, 343-5(a), the trigger for this Project is the use of state funding, including Low-income Housing Tax Credits and funding from the Rental Housing Trust Fund.

(B) As proposed conforms with the existing state urban land use classification;

Discussion: The Project site is located within the "Urban" district, as classified by the State.

(C) As proposed is consistent with the existing county zoning classification that allows housing; and

Discussion: The Project is located in the "BMX-4" Central Business Mixed Use District, as classified by the City. This BMX-4 district permits the development of the new multi-family facility.

(D) As proposed does not require variances for shoreline setbacks or siting in an environmentally sensitive area, as stated in section 11-200.1-13(b)(11)."

Discussion: The Project does not require a variance for a shoreline setback or the siting in an environmentally sensitive area. Additionally, the Project is not located along coastal areas, nor is it within the 3.2-foot sea level rise exposure area. Further, the subject property is located in Zone X (areas outside the 0.2% annual chance floodplain), as classified by the Federal Emergency Management Agency.

The Project meets the requirements for exemption from HRS, Chapter 343, *Environmental Impact Statement Laws*, and HAR, Chapter 11-200.1, *Environmental Impact Statement Rules*

1.0 PROJECT SUMMARY

Project:	Halewai'olu Senior Residence Project
Applicant:	Halewai'olu Senior Development, LLC (HSD) 737 Bishop Street, Suite 1520 Honolulu, Hawai'i 96813 Contact: Karen Seddon, Regional Vice President Phone: (808) 691-9446
EA Accepting Agency:	City and County of Honolulu Department of Land Management 558 South King Street Honolulu, Hawaii 96813 Phone: (808) 768-4141
EA Preparation:	R. M. Towill Corporation 2024 North King Street, Suite 200 Honolulu, Hawai'i 96819 Contact: Keith Kurahashi, Principal Planner Phone: (808) 842-1133 Email: keithk@rmtowill.com
Project Location:	1331-1347 River Street Honolulu, Hawai'i 96817 Honolulu, Kona District, Island of O'ahu
Tax Map Key:	(1) 1-7-006: 012
Proposed Action:	HSD proposes to demolish an existing, vacant commercial building and parking lot on the Project Site and construct a new affordable rental housing facility for seniors aged 62 and over. The new 17-story residential facility will include 155 units for seniors earning 80% and below of the AMI, and one resident manager's unit. Eight units will be designated for seniors earning 30% or below of the AMI; 131 units will be designated for seniors earning 60% or below of the AMI; and the remaining 16 units will be available for seniors earning 80% or below of the AMI. The residential facility will also include a multi-purpose room, social services office, property management offices, lobby, courtyard, and retail space.
Land Area:	0.6181 acres (26,925 square feet)
Present Use:	Residential
State Land Use District (SLUD):	Urban
City Zoning District:	BMX-4 – Central Business Mixed Use
PUC Development Plan Land Use Map	Medium and Higher-Density Residential/Mixed Use
Special Management Area (SMA):	Not in SMA
Permits and Approvals Required:	Clearances and permits needed from the various Federal, State and City and County of Honolulu agencies include but are not limited to the following

	Federal • Section 106 National Historic Preservation Act (NHPA) **State** **Department of Health (HDOH)** • Community Noise Permit • Noise Variance Permit **HDOH, Disability and Communication Access Board (DCAB)** • HRS, §103-50 Accessibility Compliance **Department of Labor and Industrial Relations (DLIR)** • Dumb Lift Permit • Man Hoist Permit **City** **City Council** • Hawai'i Revised Statutes (HRS) Chapter 201H Exemptions • Development Agreement **Department of Planning and Permitting (DPP)** • Hawai'i Revised Statutes (HRS) Chapter 201H Exemptions • Building and Construction permits – Grading, Building, Demolition, Electrical, Plumbing, Stockpiling, Sidewalk/Driveway • Sewer Connection Permit • Park Dedication Requirement • Storm Drain Connection Permit • Certificate of Occupancy • Construction Plan Review and Approval **Honolulu Board of Water Supply (BWS)** • Water System Connection • Construction Plan Review and Approval **Honolulu Fire Department (HFD)** • Construction Plan Review and Approval • Fuel Tank Permit **Department of Environmental Services (ENV)** • Construction Plan Review and Approval **Department of Transportation Services (DTS)** • Street Usage Permit **Department of Facility Maintenance (DFM)** • Erosion and Sediment Control Plan • Clean Water Pollution Plan • Post-Construction Best Management Plan
Determination:	Finding of No Significant Impact (FONSI)

2.0 PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND

The City, through its Department of Community Services and the Mayor's Office of Housing, published a Request for Proposal on July 3, 2014, with the intention to "realize the Chinatown community's need for a quality affordable senior housing development."[1]

Developer proposals were submitted on September 5, 2014, followed by developer presentations to the Selection Committee on November 10, 2014, and after Best and Final Offers were finalized on February 9, 2015. HSD was informed by the City via a letter dated April 4, 2015, that it had been selected as the developer for the Project.

After a presentation to Mayor Kirk Caldwell and the Administrative Staff on April 28, 2015, HSD and the City entered into negotiations on a Development Agreement until a final draft was completed on November 6, 2015, enabling the City to file Resolution No. 16-70 for City Council approval of the Development Agreement. Resolution No. 16-70 was introduced to the Honolulu City Council Budget Committee on March 16, 2016 and approved on March 30, 2016. Resolution No. 16-70, CD1, FD1[2] was approved by the full Honolulu City Council on May 4, 2016. The final Development Agreement based on the approved resolution was completed on May 17, 2016, with a first Amendment to the Development Agreement completed on August 16, 2016. Due diligence was performed, followed by partial acceptance of the Project by HSD on November 23, 2016, related to acceptance of the physical condition of the property but reserving other objections to the property. A second Amendment to the Development Agreement was completed on December 8, 2016. The Applicant will revise the Development Agreement, as required, after completion of the 201H Process, as this approval may require changes to the Development Agreement. In addition, a separate 201H Development Agreement will be prepared in consultation with the Department of Planning and Permitting (DPP).

The required documentation for the HHFDC Consolidated Application for Project funding, scheduled for February 2017, could not be adequately generated in time for submittal in 2017; therefore, the Project funding submittal was delayed to February 2018. HHFDC subsequently awarded the requested Project funding one year later, in February 2019.

Pursuant to the executed Development Agreement, HSD agreed to develop, construct, complete, manage and operate a senior affordable rental Project, for a term of 65 years (lease may be extended for a period not to exceed 75 years total).

DEVELOPMENT AGREEMENT

The Development Agreement will be revised after approval of the 201H Application is acted on (approved) by the Honolulu City Council, to be sure that all revisions needed to the Development Agreement related to the 201H Application approval can be requested.

Differences between the existing Development Agreement and the Project are discussed below:

[1] Request for Proposals, Halewai'olu Residences, Offered by: City, Kirk Caldwell, Mayor, July 3, 2014, p. 4

[2] http://www4.honolulu.gov/docushare/dsweb/Get/Document-179177/RES16-070.htm

1. "2.2.1 Residential Units: There shall be 150 affordable residential rental units for Qualified Tenants (the "Units") plus one unit for an on-site staff member ("Staff Unit")."
   The Project is planned with 155 affordable residential units with on-site staff unit (resident manager). The Applicant was able to increase the number of affordable rental units provided to seniors.

2. "2.2.3 Unit **Mix:**
   …..

Approx. No. of Units	Type of (No.) Bedroom Unit	AMI Levels, as determined by HUD
8	1	30%
117	1	60%
12	1	80%
10	2	60%
4	2	80%
Total 151"		

   The Project now proposes the following number of units at the listed AMI, increasing the total number of units and total number of larger, two-bedroom units:

Unit Type	***One-bedroom***	***Two-bedroom***	***Total***
30% of AMI	*8*	*0*	*8*
60% of AMI	*115*	*16*	*131*
80% of AMI	*7*	*9*	*16*
Manager's Unit	*0*	*1*	*1*
Total:	*130*	*26*	*156*

3. "2.2.4 Parking and Loading. A three-story parking structure, to include a total of 75 parking stalls, at least 1O of which shall be reserved for persons with disabilities in compliance with the Americans with Disabilities Act, as amended ("ADA"), and one (1) loading space (located on the ground floor), all in compliance with the LUO and other applicable law."

   The Project is planned with 51 parking stalls and as necessary, the number of accessible parking stalls provided will be based on the requirements of the HDOH, DCAB Interpretive Opinion 2014-05. DPP has recommended 25 parking stalls, since the Project Site is in walking distance to the future transit station and bus stops. The proposed 51 parking stalls represents a middle ground between the Development Agreement and DPP's recommendation.

4. "2.2.5 Resident Amenities. The following amenities shall be available exclusively for residents and their guests:

…..

2.2.5.2 An approximately 4,000 square foot rooftop garden on the rooftop of the Community Center."

The Project will now provide approximately 622 square feet rooftop garden due to required rooftop mechanical enclosure and other rooftop equipment for the multi-purpose room below

5. "2.2.6 Community Center. A community center of approximately 10,453 square feet (the "Community Center'') at the ground floor along the main entry to the residences. The Community Center will include a "Great Room" for events, a warming kitchen, and other activity and meeting spaces for small scale programs and services."

   The Community Center spaces total approximately 10,444 square feet, including the "Great Room" warming kitchen, and other activity and meeting spaces.

6. "2.2.7 Retail Space. Developer will provide retail shop space comprising an area of approximately 1,922 square feet configured as two to four small shops with rents to be offered at below-market pricing."

   Due to HECO requirements to locate transformers and the vault room close to the street, the retail space is reduced to approximately 618 square feet.

7. "2.2.1O Modifications. The exact number of Units, Unit mix, Unit affordability mix, square footages, amenities and mixed-use components may be adjusted upon the request of the Developer and reasonable approval of the City based upon the results of Developer's due diligence permitted under Section 4.1 of this Agreement, the requirements of Developer's lenders and investors, and feedback from governmental authorities, community groups and public stakeholders during the design, environmental review and entitlement process. By way of example only, the City and Developer hereby agree that it shall be reasonable for the parties to adjust the Project components as provided for in this Agreement, to the extent necessary to comply with any affordable housing regulatory agreement or similar restrictive conditions or covenants imposed by a governmental agency to be recorded against the Property. Any such modifications shall not significantly deviate from Developer's Proposal and shall be made prior to the submission of the Lease to the City Council for approval, and the final details of all Project components shall be incorporated into such Lease."

   All of these modifications represent not significant deviations from the Development Agreement and permitted without amending the Development Agreement. The number of parking stalls has decreased due to the Project's location within the Downtown TOD plan area and at the request of DPP. Notwithstanding, the Applicant intends to request a modification from the City Council, after action/approval of the 201H Application.

Proposed Change in Use Designation

In order to facilitate the development of the Halewai'olu Senior Residences Project, the City Is proposing to change the CDBG use restriction on the property to allow the construction of affordable rental housing. The rationale for the redesignation of use is as follows:

Redeveloping the vacant commercial building into affordable rental housing meets a CDBG national objective under which housing will be created which is 24 CFR 570.208(a)(3) Housing Activities and furthers the City's goal of creating and preserving affordable rental housing stock.

Accordingly, the following Public Notice was published in the Honolulu Star-Advertiser on Tuesday, March 31, 2020:

"PUBLIC NOTICE
Community Development Block Grant ("CDBGn) Program
Proposed Change in Use

"NOTICE IS HEREBY GIVEN that the City and County of Honolulu (the "City") is proposing to change the use of certain real property acquired with federal CDBG funds from a commercial property which met the national objective of removal of blight to affordable rental housing. The proposed use meets the national objective of a housing activity, carried out for the purpose of providing or improving permanent residential structures which, upon completion, will be occupied by low- and moderate-income households, set forth in 24 Code of Federal Regulations ("CFR") §570.208(a)(3). The change in use is being pursued pursuant to the provisions of 24 CFR §570.505 to the CDBG national objective of a housing activity under 24 CFR 570.208(a)(3) Housing Activities.

The real property ("Property") is known as the John R. Gilliland Sr. Building and is located at 1331-1347 River Street, Honolulu, Hawaii 96817. The property is identified as Tax Map Key 1-7-006:012 and contains 0.6181 acres (26,925 square feet) of land. The property was within the Urban Renewal Plan for the Queen Emma Project, which restricted the use to commercial uses for thirty-five (35) years. The commercial use restriction expired in 1997. However, in 1992, in order to preserve the commercial property, the City utilized CDBG funds to acquire the property in fee for $6,750,000 under the slum and blight national objective.

The City is now proposing to demolish the existing vacant two-story commercial building to construct the Halewai'olu Senior Residences Project, a new 17-story building, which will include one hundred and fifty-five (155) units for seniors earning 80% and below the Area Median Income ("AMI"), and one (1) resident manager's unit. Eight (8) units will be designated for seniors earning 30% or below the AMI; one hundred thirty-one (131) units will be designated for seniors earning 60% or below the AMI; and the remaining sixteen (16) units will be available for seniors. earning 80% or below the AMI. All 100% of the units created will meet the CDBG national objective at 24 CFR 570.208(a)(3) Housing Activities**.** The redevelopment will serve to provide much needed affordable rental housing for seniors and optimize an underutilized parcel in the Primary Urban Core. Community benefits will include a community room for residents and neighbors."

2.2 PROJECT LOCATION

The Project is located at 1331-1347 River Street in proximity to Chinatown in Downtown, Honolulu (Downtown-Chinatown) on TMK: (1) 1-7-006:012. See **Figure 1: Project Location** and **Figure 2: Tax Map Key**. The Project Site is owned by the City. The property is located in the 2019 Qualified Census Tract (QCT)

51.00 with a poverty rate of 22.5%. The Project Site is bounded by River Street to the northwest, Borthwick Mortuary to the south and east, and the Lum Sai Ho Tong temple to the southwest. The Project Site is currently accessed by two driveways along River Street. The Project Site is located within the Downtown TOD Plan area.

It is adjacent to (but not within) the Honolulu Chinatown Special District (SD) and Punchbowl SD, as it is located outside of the district boundaries as shown in Revised Ordinances of Honolulu (ROH), Chapter 21, *Land Use Ordinance* (LUO). See **Figure 3 – City & County of Honolulu Special Districts**. The Project is also not within the National Chinatown Historic District.

2.3 EXISTING AND SURROUNDING USES

The Project Site consists of an existing 35-foot tall, two-story, commercial building, which was constructed in 1958, and an asphalt-paved parking lot. The commercial building was occupied by various small office, restaurant, and commercial establishments; however, the building is now vacant and has become dilapidated over time. An asphalt-paved parking lot is located at the rear of the property behind the building and the Project Site includes a minor amount of peripheral landscaping.

The Project is located within the Downtown TOD Plan Area, and promotes the principles of a walkable, dense, mixed-use neighborhood where residents are located in close proximity to everyday needs and community activities in the Downtown-Chinatown neighborhood. Although the Project is in proximity to three transit stations (Iwilei, Downtown, and Chinatown), it is nearest to the Chinatown station

Northwest of the Project Site is River Street and the sidewalks along River Street serve as a promenade along the Nu‘uanu Stream called Sun Yat Sen Mall, located approximately 54 feet northwest of the Project Site. Further northwest and across the Nu‘uanu Stream are the Waena Apartments. The Izumo Taishakyo Mission of Hawai‘i, a Shinto shrine, constructed in 1968, is located approximately 322 feet northwest of and also across the Nu‘uanu Stream from the Project Site. College Walk promenade is on the northwest side of Nu‘uanu Stream.

The Lum Sai Ho Tong temple, constructed in 1953, is located directly southwest and adjacent to the Project Site. Approximately 254 feet further southwest of the Project Site is the Chinatown Cultural Plaza, a popular commercial center used for seasonal community events. Alongside the Chinatown Cultural Plaza, a portion of River Street by the Nu‘uanu Stream becomes a pedestrian-only promenade popularly used for recreation by seniors in the Downtown-Chinatown area.

The Borthwick Mortuary and Chapel are located directly adjacent and to the southeast of the Project Site. A portion of its surface parking lot extends north and directly borders the northeast portion of the Project Site. The Kuan Yin temple and Foster Botanical Garden are located approximately 246 feet further northeast of the Project Site across Vineyard Boulevard.

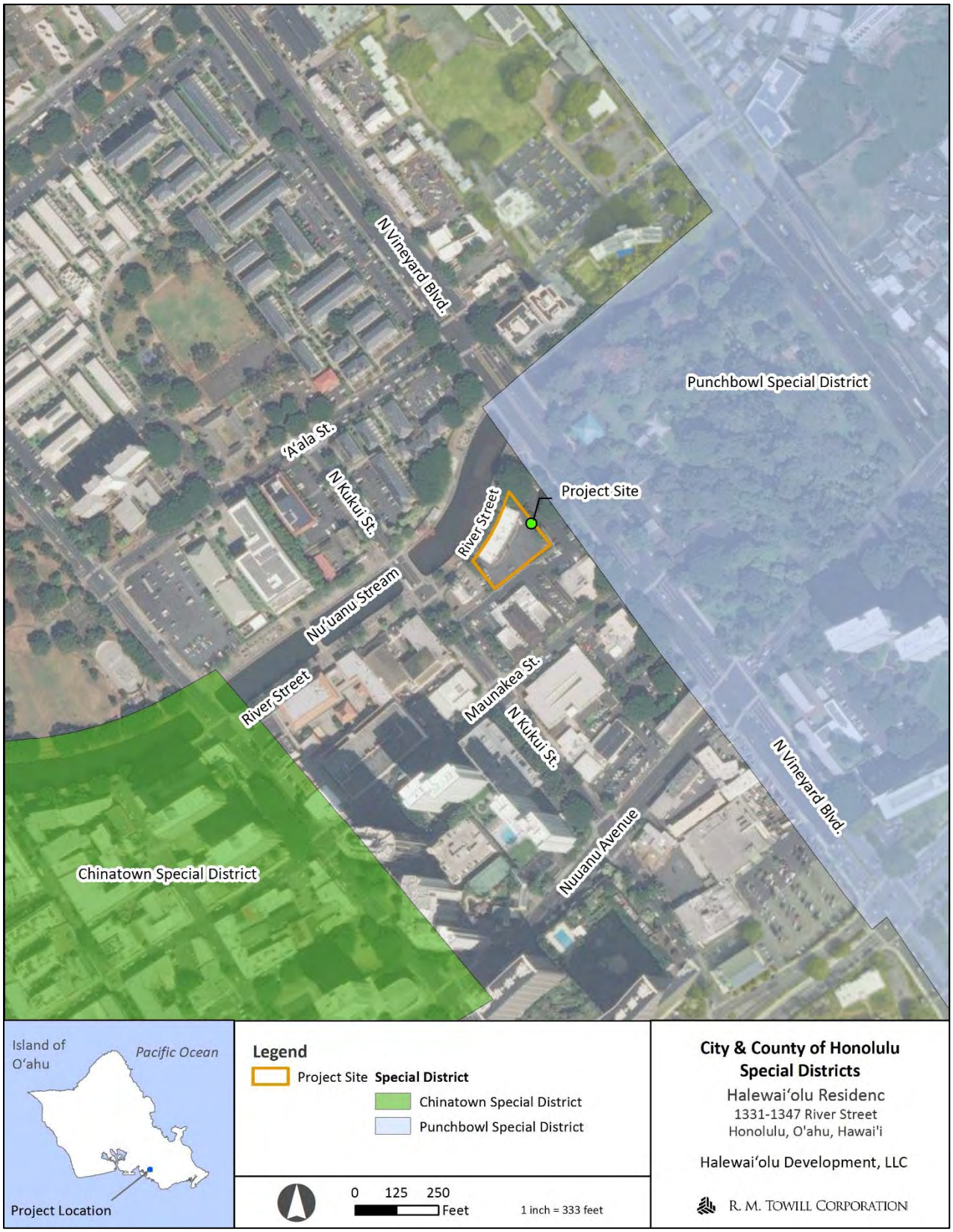
FIGURE 1 – PROJECT LOCATION



FIGURE 2 – TAX MAP KEY



FIGURE 3 – CITY & COUNTY OF HONOLULU SPECIAL DISTRICTS



2.4 DESCRIPTION OF THE PROPOSED PROJECT

The Project will include the demolition of the existing, vacant, commercial building and the surface parking lot on the Project Site and a new affordable housing facility for seniors aged 62 and over at 80% or below of AMI will be constructed. Units will remain affordable for a term of 65 years, with an option to extend to 75 years. The new facility will have 17 levels and be approximately 174 feet in height. The building will include 156 units (including one manager's unit), with one- and two-bedroom units. Five slightly different one-bedroom unit configurations will be offered and will range from about 456 to 478 square feet in floor area. Two types of two-bedroom units about 805 square feet will also be available. The proposed housing mix is presented in **Table 1**. See the preliminary floor plans on Sheets A-111 through A114 in **Appendix A, Drawings.**

The ground level will include a multi-purpose room, warming kitchen, restrooms, storage rooms, utility rooms, computer room, social services activity rooms, social services office, property management offices, mail and package boxes, and elevator lobby on the ground level. A courtyard, retail space, and parking access, along with bicycle parking, a trash compactor room and loading area are also on the ground level. The courtyard will have a large sliding gate to welcome visitors and residents during the day. At night, the sliding gate and courtyard fence will be locked to secure the premises. Stakeholders emphasized the need for a secure building in this area of Downtown-Chinatown. The courtyard tree and landscaping along the west property line will provide visual screening of the building façade and stormwater biofiltration. See Sheet A-111 – Floor Plan Level 1 in **Appendix A**.

The second floor includes vehicle and bicycle parking, storage, and utility rooms. The third level will be comprised of vehicle and bicycle parking, along with an emergency generator. Providing habitable space as a liner for the parking garage on the second, third and fourth levels would raise the cost of the Project and was not provided. The fourth level includes a covered recreation deck, dog area, laundry room, restroom, and maintenance and storage rooms. Residential units are on levels five through seventeen. Each residential level will include 12 units. All units will be Americans with Disabilities Act (ADA) compliant or adaptable to allow conversion to accessible units, and all public spaces and clearances will be ADA compliant. Level 18 is the roof where some mechanical equipment will be located. See **Appendix A.**

The proposed gross area of each floor is provided in **Table 2**: **Proposed Floor Area** below. The proposed floor area ratio (FAR) of the building is 5.9. In the interest of keeping seniors safe, there will be controlled access into the building, as well as a resident manager on-site. There will also be a social services coordinator.

Table 2: Proposed Floor Area

Level	Area
1: Ground Level	16,844 square feet
2: Lobby , Utility, and Stairs (Parking not counted)	1,864 square feet
3: Lobby, Utility, and Stairs (Parking not counted)	2,449 square feet
4: Recreation and Amenities	9,584 square feet
5 – 17: Residential (each floor)	9,785 square feet (each floor)
Total Floor Area:	157,946 square feet

2.5 PURPOSE AND NEED OF PROJECT

Affordable Senior Rental Units

The primary purpose of the Project is to provide much-needed affordable rental housing for seniors aged 62 and over. In July 2018, the State Department of Business, Economic, Development and Tourism (DBEDT), and Office of Planning (OP), published an *Affordable Rental Housing Report and Ten-Year Plan* (Ten-Year Plan), in accordance with Act 127 signed by Governor David Y. Ige on June 29, 2016, which established a goal of developing 22,500 affordable rental units statewide by December 31, 2026. The DBEDT-OP Ten-Year Plan further specified the housing production goals for each HUD income group. The goal stipulated that Honolulu is to develop 9,002 new affordable rental units, with 2,209 of those units targeted for households earning more than 50% but less than 60% of the AMI and 3,289 units targeted for those earning more than 60% but less than 80% of the AMI.

The following tables (**Tables 3** through **6)** show strong potential demand for one- and two-bedroom rental units, island-wide and within a 6-mile radius, amongst the senior demographic (age 62 years old and above) (Cassiday, 2019). The full Market Study that includes these tables is provided in **Appendix B, Halewai'olu Senior Residences 2019 Market Study (Ricky Cassiday, 2019)**.

Table 3: One Bedroom Share of Total Potential Market by AMI

ONE BEDROOM SHARE OF TOTAL POTENTIAL MARKET, BY AMI

Target AMI	Unit Supply	Potential Demand	Capture Rate 50%
30%	8	10,691	5,346
60%	115	2,257	1,129
80%	7	3,875	1,938

Source: Cassiday, 2019

Table 4: Two Bedroom Capture Rate, by AMI

2 BEDROOM CAPTURE RATE, BY AMI

AMI	Total Count	Potential Demand	Capture Rate 50%
60%	16	2,968	1,484
80%	9	2,254	1,127

Source: Cassiday, 2019

Table 5: Renter Households Potential Demand for One Bedroom Units, by AMI

RENTER HOUSEHOLDS POTENTIAL DEMAND FOR ONE BEDROOM UNITS

Target AMI	1-Person	2-Person	Renter Population
30%	7,877	2,814	10,691
60%	1,293	964	2,257
80%	2,360	1,515	3,875

Source: Cassiday, 2019

Table 6: Renter Households Potential Demand for Two Bedroom Units, by AMI

RENTER HOUSEHOLDS POTENTIAL DEMAND FOR 2 BEDROOM UNITS

AMI	Renters
60%	1,657
80%	2,298

Source: Cassiday, 2019

The Project will provide 1 resident manager's unit and 155 senior affordable rental units, with 8 units for seniors at 30% AMI, 131 units at 60% AMI, and the remaining 16 units at 80% AMI. The Project will utilize LIHTC, Hula Mae Multi-Family tax-exempt bonds (HMMF), and Rental Housing Revolving Fund (RHRF) funding, which is administered by HHFDC. The City's 2019 income limits for a one-person household is as follows:

- 30% of AMI: $25,320
- 60% of AMI: $50,640
- 80% of AMI: $67,520

See **Table 7: Honolulu County Income Schedule by Family Size (2019)** for the full income schedule published by HHFDC based on HUD income limits and U.S. Census Bureau data. The rental housing units to be developed as part of the proposed Project include one- and two-bedroom units. A mix of residential units is proposed in order to preserve the socioeconomic diversity of the people within the Downtown-Chinatown community. HSD has designated 90% of the units (139 units) as affordable for residents earning 60% or below of AMI and the remaining 16 units as affordable for residents earning 80% or below of AMI. See **Table 8: Proposed Rental Rates (2019)** for proposed rental rates and **Table 9: Proposed Utility Allowances** for an estimate of monthly utility allowances based on HUD and City standards. The resident rental rate is net of the utility allowance.

Table 7: Honolulu County Income Schedule by Family Size (2019)

HHFDC

HONOLULU COUNTY INCOME SCHEDULE BY FAMILY SIZE 2019

THE FOLLOWING TABLE PRESENTS INCOME LIMITS BY FAMILY SIZE AND BY PERCENTAGES OF THE VERY LOW INCOME LEVELS ESTABLISHED BY HUD. THESE INCOME LIMITS SERVE AS GUIDELINES TO ESTABLISH SALES/RENTAL PREFERENCES.

		LIMITS BY FAMILY SIZE							
MEDIAN $99,000		1 PERSON	2 PERSON	3 PERSON	4 PERSON	5 PERSON	6 PERSON	7 PERSON	8 PERSON
Adjustments for family size		0.7000	0.8000	0.9000	1.0000	1.0800	1.1600	1.2400	1.3200
% of Income	10%	$8,440	$9,640	$10,850	$12,050	$13,020	$13,980	$14,950	$15,910
	20%	$16,880	$19,280	$21,700	$24,100	$26,040	$27,960	$29,900	$31,820
	30%	$25,320	$28,920	$32,550	$36,150	$39,060	$41,940	$44,850	$47,730
	40%	$33,760	$38,560	$43,400	$48,200	$52,080	$55,920	$59,800	$63,640
	50%	$42,200	$48,200	$54,250	$60,250	$65,100	$69,900	$74,750	$79,550
	60%	$50,640	$57,840	$65,100	$72,300	$78,120	$83,880	$89,700	$95,460
	70%	$59,080	$67,480	$75,950	$84,350	$91,140	$97,860	$104,650	$111,370
	80%	$67,520	$77,120	$86,800	$96,400	$104,160	$111,840	$119,600	$127,280
	90%	$75,960	$86,760	$97,650	$108,450	$117,180	$125,820	$134,550	$143,190
	100%	$84,400	$96,400	$108,500	$120,500	$130,200	$139,800	$149,500	$159,100
	110%	$92,840	$106,040	$119,350	$132,550	$143,220	$153,780	$164,450	$175,010
	120%	$101,280	$115,680	$130,200	$144,600	$156,240	$167,760	$179,400	$190,920
	130%	$109,720	$125,320	$141,050	$156,650	$169,260	$181,740	$194,350	$206,830
	140%	$118,160	$134,960	$151,900	$168,700	$182,280	$195,720	$209,300	$222,740

The U.S. Department of Housing and Urban Development (HUD) sets income limits that determine the eligibility of applicants for its assisted housing programs. HUD typically uses the Very Low-Income Limit (VLIL) as the basis for deriving other income limits. The VLIL is calculated by taking the 4-person income limit equal to 50% of the estimated median family income (based on the U.S. Census Bureau's ACS median family income estimates) and making adjustments if this income is outside formula constraints. For example, the VLIL is increased for areas where rental housing costs are unusually high in relation to the median income or if it is less that the relevant State non-metropolitan median family income level. See "FY2019 Briefing Materials" at https://www.huduser.gov/portal/datasets/il/il19/IncomeLimitsMethodology-FY19.pdf

HHFDC uses the HUD income limits for households at the 50% and 60% income levels as calculated for the Multifamily Tax Subsidy Project (MTSP) charts. For HHFDC programs, the 80% income level is calculated as the Multifamily Tax Subsidy Project (MTSP) VLIL (for FY 2019, it is also the HUD Section 8 VLIL) multiplied by 1.6 (or 80/50). The limits for households at other income levels are calculated in the same way. For further information see "Multifamily Tax Subsidy Income Limits" at https://www.huduser.gov/portal/datasets/mtsp.html

NOTE: This chart is provided as a guide only. You are responsible to ensure the accuracy of the numbers.

Table 8: Proposed Rental Rates (2019)

HHFDC **AFFORDABLE RENT GUIDELINES*** **2019**

Affordable rents are based on 30% of income (including utilities)**

Area	$99,000	Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom
HONOLULU COUNTY						
30% of Median		$633	$678	$813	$940	$1,048
50% of Median		$1,055	$1,130	$1,356	$1,566	$1,747
60% of Median		$1,266	$1,356	$1,628	$1,880	$2,097
80% of Median		$1,688	$1,808	$2,170	$2,507	$2,796
100% of Median		$2,110	$2,260	$2,712	$3,133	$3,495
120% of Median		$2,532	$2,712	$3,255	$3,760	$4,194
140% of Median		$2,954	$3,164	$3,797	$4,387	$4,893

*Please note that area market rents may be lower than these rent guidelines.

**Monthly rent levels would include the cost of the following utilities: water, sanitary sewage services, electricity and gas (where applicable). Please refer to the Utility Allowance Schedule for each island.

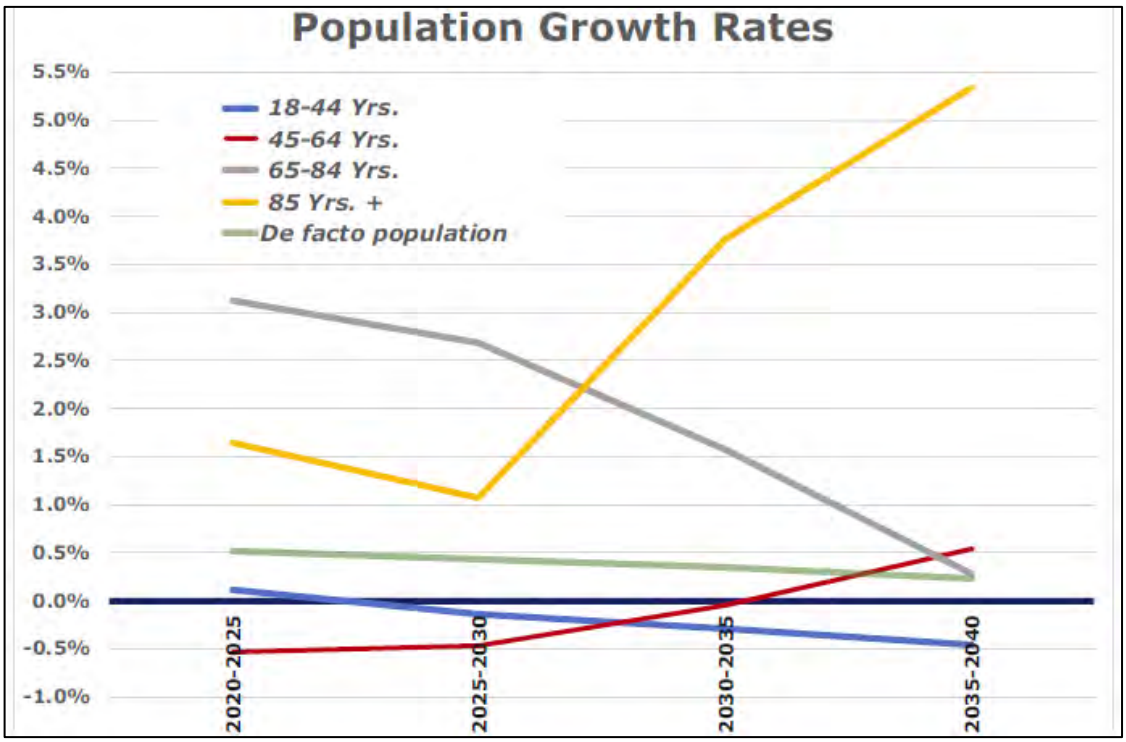
Table 9: Proposed Utility Allowances

Utility or Service	**Monthly Dollar Allowances**	
Utility	1 Bedroom	2 Bedrooms
Cooking –Electric	$15	$21
Other Electric	$60	$84
Total	$75	$105

Note: Utility allowances are based on HUD's "Allowances for Tenant-Furnished Utilities and Other Services" for the City, released January 1, 2019.

Current demographic trends for the City show that the general population as a whole, is aging as seen in **Figure 4: Population Growth Rate** below (Cassiday, 2019). See **Appendix B, Market Study** and **Section 5.1** for further discussion on demographics in the neighborhood and the market demand for affordable housing for the proposed Project.

Figure 4: Population Growth Rates



Source: Cassiday, 2019

Transit-Oriented Development and Multi-Modal Design

In addition to providing much-needed affordable housing for seniors, the Project is located near employment, shopping, and public services/amenities and is intended to meet the needs of seniors who prefer not to own and operate a vehicle to access necessary services while aging in place. The Project is located within the Downtown TOD Plan area that promotes the principles of a walkable, dense, mixed-use neighborhood where residents are located in close proximity to everyday needs and community activities in Downtown-Chinatown. The Project Site is located approximately 0.4 miles northeast of the proposed Chinatown Rail Station, at the intersection of Nimitz Highway and Kekaulike Street, which will have connections to the City bus system and Handi-Van pick-up and drop-off. Due to its proximity to existing public transportation, the future rail system and its central location, the Project offers residents an opportunity to reduce their transportation costs. The Project will also optimize an underutilized parcel in the Primary Urban Core. Community benefits will include a multi-purpose room and activity rooms available to residents and neighbors, street trees to improve the urban streetscape, and a transparent façade to help activate River Street.

During community and stakeholder outreach in preparation of the Downtown TOD Plan, adopted in September 2017, the City, DPP found that "additional housing options are needed for a range of income levels, including . . . senior low-income housing," as discussed further in **Section 7.3.4**. The Downtown TOD Plan acknowledges the high population of seniors and prioritizes housing, in addition to services and pedestrian amenities, as essential to ensuring a high quality of life for residents. The proposed Project would be a direct fulfillment of the needs expressed by the Downtown TOD Plan by providing senior affordable rental housing and improving non-automobile travel for seniors that may not drive or own cars.

Overall, the Project will contribute to a lively social environment by enhancing the pedestrian experience and reducing vehicular traffic.

Mobility trends are changing, and on-site parking will be sized to reflect the downscaled use of vehicles by residents in an urban setting. The convenient location of the Project places seniors near necessary services and will encourage residents to walk or utilize public transit. Reductions to parking requirements for elderly units and the Project's location in the proposed Downtown Neighborhood TOD Special District (SD) ("Downtown TOD SD") will result in approximately 51 off-street parking stalls that will include stalls to meet ADA requirements (the Development Agreement which projected 75 parking stalls and 10 ADA stalls for the Project will need to be modified, after the parameters of the 201H Approval by City Council, which may involve other changes to the Project described in the Development Agreement). One off-street loading area will be provided. DPP has recommended 25 parking stalls, since the Project Site is in walking distance to the future transit station and bus stops. The proposed 51 parking stalls represents a middle ground between the Development Agreement and DPP's recommendation. As necessary, the number of accessible parking stalls provided will be based on the requirements of the HDOH, DCAB Interpretive Opinion 2014-05.

2.6 ALTERNATIVES CONSIDERED

Based on an email from Mr. G. Morgan Griffin, Regional Environmental Officer for the U.S. Department of Housing and Urban Development, Region–IX - Office of Environment and Energy, "Only the preferred alternative must be evaluated for each law/authority and EA factor." As such, the impact and mitigation in future sections will be reviewed just for the preferred alternative.

2.6.1 No Action Alternative

Under the "No Action" Alternative, the 155 affordable housing units for seniors and one resident manager's unit would not be constructed. Additionally, community amenities would not be developed and no enhancement to the streetscape would occur. Under this alternative, environmental effects resulting from development activities would be averted and project costs would be spared. However, the No Action Alternative would render the property underutilized with a dilapidated, deteriorating building. The property would continue to remain inconsistent with the PUC DP and Downtown TOD Plan, which recommends development within the PUC and compact, affordable housing within walkable neighborhoods near future transit stations. The No Action Alternative would not meet the neighborhood needs and would not meet the goals and objectives of City plans. Therefore, this alternative was eliminated from further consideration.

2.6.2 Housing First Alternative

In 2010, the City considered developing the property as a "Housing First" project. Housing First is a national practice aimed to assist people experiencing chronic homelessness through the provision of permanent supportive housing and access to service providers who offer mental illness and substance abuse counseling, job training and placement, and other life skills. The City's initial proposal included the development of 100 residential units and counseling services. This "Housing First" Alternative was projected to cost $10.6 million (in 2010 dollars). However, due to overwhelming Downtown-Chinatown community opposition to the proposal, the City did not move forward with this alternative. Therefore, this alternative was eliminated from further consideration.

2.6.3 Preferred Alternative – Halewai'olu Senior Residence Project

The Downtown-Chinatown community is in support of the development of senior housing at the Project Site, in-lieu of the Housing First Alternative that was initially proposed by the City. Therefore, the Preferred Alternative involves the development of a new affordable housing residential rental facility for seniors aged 62 and over. The Preferred Alternative would result in an advantageous utilization of the property and would address the City's goals and objectives for the Downtown TOD Plan, to increase affordable rentals for seniors. Considering the well-documented need for senior affordable housing on O'ahu; the development potential of the property; and the location of the property within the urban core of Honolulu and near mass transit; the Applicant is seeking to undertake the proposed development as the Preferred Alternative. The Preferred Alternative is put forth as the proposed Project and is further described in **Section 2.4 and is further evaluated in this EA**.

2.7 OWNERSHIP, FINANCING, ESTIMATED COSTS, AND DEVELOPMENT SCHEDULE

In 1992, the City purchased the property on River Street with funds from the HUD CDBG program, supplemented with a City contribution to the total purchase price $6,751,700.00. While Project funding does not include HUD funds, the use of the federal HUD CDBG funding for the initial land purchase subjects the Project to HUD CDBG environmental review regulations as stipulated in 24 CFR Part 58, "Environmental Review Procedures For Entities Assuming HUD Environmental Responsibilities" and compliance with 40 CFR Parts 1500-1508, "Regulations for Implementing the Procedural Provisions of National Environmental Policy Act" and its federal cross-cutter regulations.

The Project is expected to cost approximately $85.6 million, subject to review of the final construction budget. Project construction will be funded with private equity through the LIHTC program, which was awarded by HHFDC to the developer in 2019. Other funding sources include the use of HMMF tax-exempt bonds, RHRF loan, and developer equity. HSD expects construction to begin in 2020.

2.8 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

This NEPA Environmental Assessment (EA) discloses the environmental and cultural impacts that may result from the project's implementation and commits to specific mitigation measures. This EA has been prepared to satisfy the requirements of NEPA as set forth in 40 CFR Parts 1500-1508, HUD environmental review compliance pursuant to 24 CFR 58, and, other environmental compliance requirements and implementing regulations. HSD will use this document to evaluate the possible environmental effects of the proposed action. This EA evaluates alternatives to the proposed Project and describes measures proposed to minimize potential impacts. The potential for direct, indirect, and cumulative impacts of the proposed action are also described.

Although not a requirement of NEPA as set forth in 40 CFR Parts 1500-1508, HUD environmental review compliance pursuant to 24 CFR 58, and, other environmental compliance requirements and implementing regulations, the Applicant will extend the NEPA EA process to include a public and agency 30-day review period.

The Applicant will request that the OEQC (Office of Environmental Quality Control) publish in their Environmental Notice the availability of the NEPA EA for review and comment and the deadline for comments. We will have a 30-day comment period.

After receipt of comments, relevant comments will be addressed in the NEPA EA prior to finalizing.

If the Department of Land Management determines that the Project will not have a significant environmental impact, it will issue a FONSI that will allow the Project to proceed. The public will have 15 calendar days after publication of the FONSI in a local newspaper to comment.

2.9 REQUIRED PERMITS AND APPROVALS

A list of permits and approvals that may be required is provided in **Table 10**: **Required Permits and Approvals** below:

Table 10: Required Permits and Approvals

Permit / Approval	Responsible Agency / Organization
Section 106, NHPA Consultation	State Historic Preservation Division (SHPD)
HRS, Chapter 201H, Affordable Housing Exemptions	City, DPP and City Council
201H Development Agreement	DPP and City Council
Development Agreement	City Council
Community Noise Permit Noise Variance Permit	State, HDOH
Park Dedication Requirement (ROH, 1990, Chapter 22, Article 7, Parks and Playgrounds)	City, DPP
Permits for Construction, including Building, Electrical, Plumbing; Grading/ Trenching Permits; Clearing and Grubbing Permit; Stockpiling Permit; Sidewalk/Driveway Permit; Demolition Permit, Street Usage Permit	City, DPP
Sewer Connection Permit	City, DPP
Water Connection	City, BWS
Plan Review	City, HFD
Certificate of Occupancy	City, DPP
HRS, §103-50 Accessibility Compliance	State, HDOH, DCAB
Street Usage Permit	City, DTS
Dumb Lift Permit Man Hoist Permit	State, DLIR
Fuel Tank Permit	City, HFD

Erosion and Sediment Control Plan Clean Water Pollution Plan Post-Construction Best Management Plan	City, DFM
Street Tree Permit	City, DPR

2.10 REGULATORY COMPLIANCE AND COMMUNITY CONSULTATIONS

The Project has been reviewed with appropriate government agencies to solicit input and provide a meaningful discussion about potential impacts and mitigations for the Project. Further, the Project will comply with City, State and Federal permits and approvals, which are discussed in **Section 6.1**.

HSD began conducting community outreach in August 2014 with various Downtown-Chinatown community stakeholders. Community input was also included in developing the Community Provisions section of the Development Agreement between HSD and the City, and in development of the Project design. Between August 2014 and May 2019, HSD has conducted 20 total community meetings and revised the Project to reflect feedback received at each meeting, as much as feasible. Feedback regarding massing, height, adjacency, unit sustainability, color and cultural references, green space, and Feng Shui were all taken into consideration for the Project design. Further discussion on public outreach, including a list of all meetings, is provided in **Section 7.7**.

Meetings related to the NEPA process have been conducted, as per **Section 2.8**.

Although not a requirement of NEPA as set forth in 40 CFR Parts 1500-1508, HUD environmental review compliance pursuant to 24 CFR 58, and, other environmental compliance requirements and implementing regulations, the Applicant will extend the NEPA EA process to include a public and agency 30-day review period.

The Applicant will request that the OEQC publish in their Environmental Notice the availability of the NEPA EA for review and comment and the deadline for comments. We will have a 30-day comment period.

After receipt of comments, relevant comments will be addressed in the NEPA EA prior to finalizing.

If the Department of Land Management determines that the Project will not have a significant environmental impact, it will issue a FONSI that will allow the Project to proceed.

The filing and publication of a notice of the FONSI with the Star Advertiser and OEQC will be followed by a 15-day public comment period. See **Section 7.0** for a complete list of agencies, organizations, and individuals consulted during the EA process. See also **Sections 5.2 and 5.3** for further discussion of the communication consultation for the preparation of the Draft Archaeological Inventory Survey (AIS) and Draft Cultural Impact Assessment (CIA) and **Section 6.1.12** for further discussion of NHPA Section 106 consultation to-date.

Once the Project is constructed, the proposed multi-purpose and activity rooms will be available for use by residents and the neighborhood community. In an effort to continue communication and include the surrounding community, an Advisory Committee will be established by HSD, property management its social services coordinator that may include committee members from the Downtown-Chinatown Neighborhood Board (NB) No. 13, United Chinese Society, Chinese Chamber of Commerce, and Chinatown Community Center Association, along with a cross section of other neighborhood organizations.

3.0 ENVIRONMENTAL SETTING

3.1 CLIMATE AND CLIMATE CHANGE

3.1.1 Existing Environment

The climate of the Honolulu District is typically warm and dry. Prevailing trade winds arrive from the northeast. According to the National Weather Service Honolulu Office, over a period of 30 years, normal monthly high temperatures range from 80 degrees in January to a high of 89 degrees in August for an annual average of 84 degrees. Normal month low temperatures range from a low of 65 degrees in February to 74 degrees in August for a monthly average of 70 degrees. Precipitation typically ranges from 0.44 inches in August to a high of 3.8 inches in December. The annual average rainfall in Honolulu is 17.05 inches per year.

Climate change is considered a threat to all coastal areas. Planning for climate change and sea level rise (SLR) is challenging as there are multiple variables and changing and unknown factors. Research indicates that greenhouse gas (GHG) emissions, including carbon dioxide, methane, nitrous oxide, and fluorinated gases, are a key contributor to the unprecedented increases in global atmospheric warming over the past century (USEPA, 2011 and IPRC, 2013). University of Hawai‘i (UH) researchers have documented the effects of climate change in Hawai‘i, as air temperatures have risen; rain intensity has increased while total rainfall has decreased; stream flows have decreased; sea surface temperatures and sea levels have increased; and the ocean is becoming more acidic (IPRC, 2013, var. and SB No. 2745, 2012). These trends are projected to continue to increase in the future, which poses unique and considerable challenges to Hawai‘i. It is estimated that sea level has risen in Hawai‘i by approximately 0.6 inches per decade (1.5 millimeter per year) over the past century (SOEST, 2012). The estimates point to a potential aggregate SLR of 1.3 feet (40 centimeter) by the year 2060 and a rise of 3.3 feet (100 centimeter) by 2110 (SOEST, 2012).

The Hawai‘i State Legislature passed a law (SB 2745) in 2012 that amended the State Planning Act to include climate change as one of the State’s priority guidelines. In 2014, the Hawai‘i State legislature passed the *Hawai‘i Climate Adaptation Initiative Act* (Act 83, 2014), codified as HRS, Chapter 225P, which established an Interagency Climate Adaptation Committee (ICAC). The purpose of Act 83 is to address the effects of climate change by implementing a climate adaption plan. On June 6, 2017, Governor David Ige signed Act 32, Session Laws of Hawai‘i, which amended HRS, Chapter 225P by renaming the ICAC to the Hawai‘i Climate Change Mitigation and Adaptation Commission (“Commission”). The Commission published the *Hawai‘i Sea Level Rise Vulnerability and Adaptation Report* (“SLR Report”) in December 2017, which included recommendations on how to reduce exposure and increase adaptability to the impacts of SLR. Research within the SLR Report notes that the intensity and frequency of natural disasters have increased and will continue to do so, and further provides technical projections of areas along the coast that are vulnerable to SLR based on the latest available science. The SLR Report includes recommendations to address risks associated with climate change. The SLR Report found that a SLR of 3.2 feet and the associated erosion, flooding, and waves inundation, will have significant impacts to O‘ahu’s building and land values, residents and infrastructure. Portions of O‘ahu that are vulnerable to the SLR are illustrated on the Hawai‘i Sea Level Rise Viewer (“Viewer”), an online interactive map created in conjunction with the SLR Report. Specifically, the Viewer defines an area called the SLR exposure area (SLR-XA), which is the projected extent of chronic flooding due to SLR (PacIOOS, 2018). The Project Site is not located in a coastal area (located 0.4 miles from the shoreline), nor is it located within the 3.2 feet SLR-XA.

Based on Guidance from the Honolulu Climate Change Commission, the City and County of Honolulu has found that a planning benchmark of six feet of sea level rise (SLR) is appropriate for projects with a life span

beyond mid- century, and for critical infrastructure. High tide flooding and nuisance flooding may be present and precede global mean SLR by decades. The National Oceanic and Atmospheric Administrators (NOAA) have come up with a viewer to view impacted areas at different levels of sea level rise. At six feet, the Project Site will not be affected by sea level rise. See **Figure 5: Sea Level Rise Exposure Area.**

3.1.2 Potential Impacts

An Air Quality Impact Assessment (AQIA) was prepared by Trinity Consultants in November 2019 for the Project to assess its impact on climate and climate change. See Appendix C, Air Quality Impact Assessment. The adverse impacts of GHG emissions are inherently indirect and cumulative, in that the consequences of climate change are removed in time and space from the boundaries of the Project Site but are arguably foreseeable. According to the AQIA, the Project will result in the creation of short-term GHG emissions due to the use of fossil-fuel based construction equipment. Construction-related activities may include demolition, grading, excavation, concrete work, stockpiling, transport of building materials and spoils, and the construction of the residential facility (Trinity, 2019a). The AQIA estimates that the Project will result in approximately 1,338 metric tons of carbon dioxide equivalent (CO_2e)[3] during construction. However, these emissions are expected to be minimal, temporary and will cease once construction is completed (Trinity, 2019a).

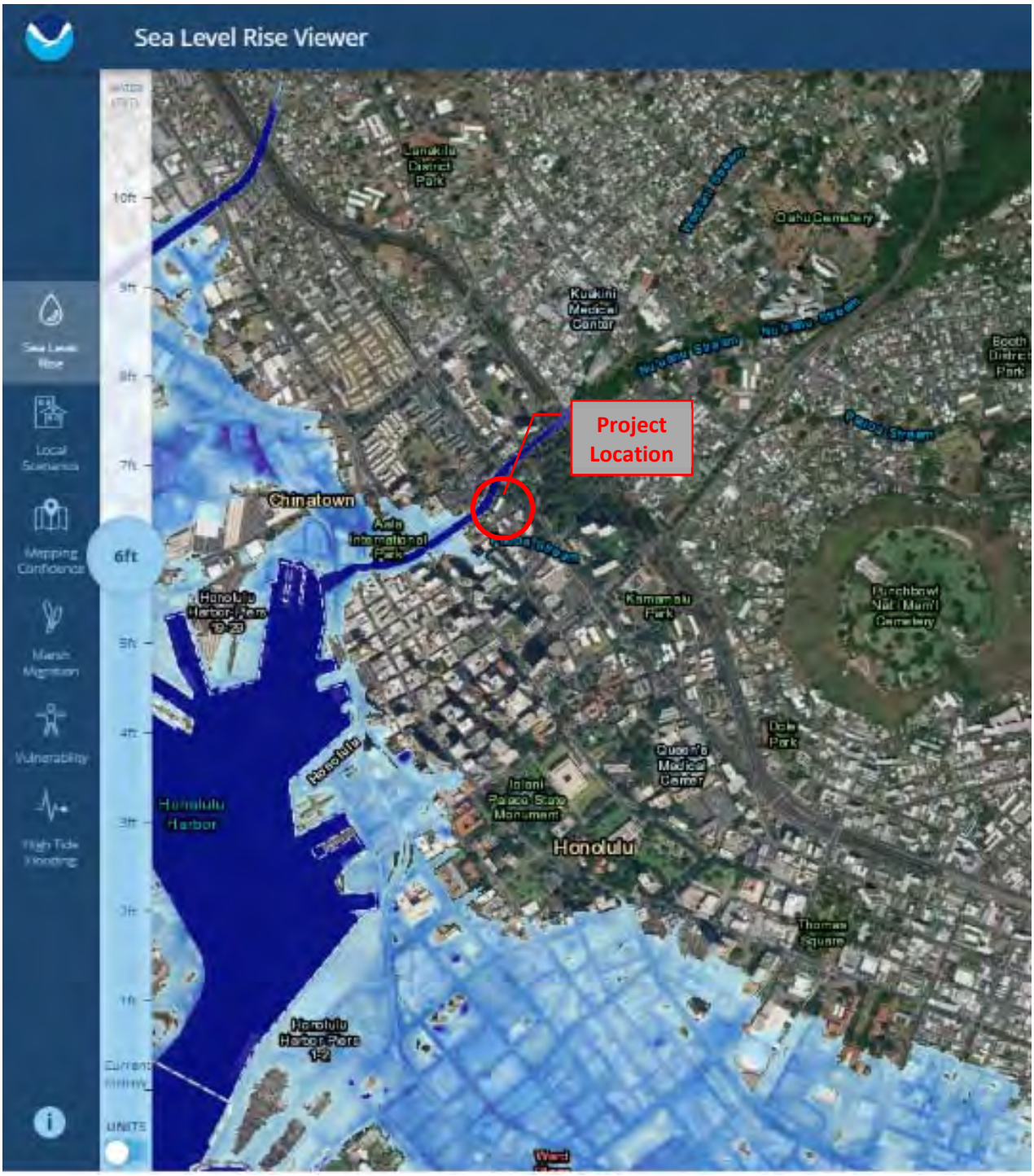
Once construction is complete, the Project will result in the creation of GHG emissions due to transportation to and from the Project Site and the use of natural gas, electricity, wastewater, potable water use and solid waste disposal. The AQIA estimates that the Project will result in approximately 4 tons per day of CO_2e due to vehicle miles travelled or 0.04% of total countywide CO_2e from motor vehicles. Insignificant amounts of GHG emissions are anticipated to result from residents' use of natural gas, electricity, water, wastewater and solid waste disposal (Trinity, 2019a). The Project is not anticipated to have a significant long-term contribution to total GHG emissions or a cumulative adverse impact on the regional or global climate conditions.

3.1.3 Avoidance, Minimization, and/or Mitigation Measures

The Project will be designed to attempt to meet Leadership in Energy and Environmental Design (LEED) Silver standards. LEED-certified buildings are recognized as saving energy, water, and resources and generating less waste than buildings that are not designed and built to LEED standards, reducing the Project's potential environmental impact and enhancing its sustainability (Trinity, 2019a). Additionally, the Project will provide more vegetation than what currently exists, which will result in carbon sequestration and lower the carbon footprint of the Project. Further mitigation measures are not anticipated to be required.

[3] The effect each GHG has on climate change is measured as a combination of the quantity of its emissions and its global warming potential and is expressed in terms of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically expressed in terms of pounds or tons of CO_2e (Trinity, 2019a).

Figure 5: Sea Level Rise Exposure Area



3.2 AIR QUALITY

3.2.1 Existing Environment

The Federal Clean Air Act (CAA), as amended, is the primary federal law that governs air quality, while the Hawai'i Air Pollution Control Act is its companion state law. These laws and related regulations by the United States Environmental Protection Agency (EPA) and the HDOH, Clean Air Branch, set the standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and State ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). The NAAQS and State air quality standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision.

O'ahu is in attainment of both NAAQS and State air quality standards. Readings at the Honolulu monitoring station operated by the HDOH, located approximately 6.5 miles southeast of the Project area, show that criteria pollutants were below the NAAQS and State air quality standards, as shown in **Table 11: Air Quality in the Project Area: 2015 – 2017**.

Table 11: Air Quality in the Project Area: 2015 – 2017

Parameter	Statistic	2015	2016	2017	Strictest Standard
24-hour PM_{10}	Maximum	36	29	31	150 µg/m3
Annual PM_{10}	Annual average	11.5	13.8		50 µg/m3
24-hour $PM_{2.5}$	3-yr avg 98th percentile	10.4	10	10	35 µg/m3
Annual $PM_{2.5}$	3-yr avg Annual average	3.7	3.4	3	12.0 µg/m3
8-Hour O_3	4th highest daily value	0.051	0.048	0.046	0.070 ppm
1-Hour NO_2	3-yr avg 98th percentile	23	29	33	100 ppb
Annual NO_2	Annual average	0.004	0.004	0.004	0.053 ppmc
1-Hour CO	2nd high	1.4	1.5	1.4	9 ppm
8-Hour CO	2nd high	1.0	1.1	0.9	4.4 ppm
1-Hour SO_2	3-year avg 99th percentile	8	7	4	75 ppb
3-Hour SO_2	2nd high	0.007	0.006	--	0.5 ppm
24-Hour SO_2	Maximum	0.003	0.002	0.002	0.140 ppm
Annual SO_2	Annual average	0.000	0.000	0.0044	0.03 ppm
3-month lead	Maximum	0.002	0.002	0.04	0.15 µg/m3
1-Hour hydrogen sulfide	2nd high	0.003	0.002	--	0.025 ppm

Source: Trinity Consultants, 2019

3.2.2 Potential Impacts

The Project will result in the generation of dust and exhaust from construction-related activities, including demolition, grading, excavation, concrete work, stockpiling, transport of building materials and spoils, and the construction of the residential facility. However, these dust and exhaust emissions will be temporary and are not anticipated to have a significant long-term impact on air quality (Trinity, 2019a).

Once the Project is constructed, the primary impact on air quality will result from motor vehicle trips to and from the proposed residential facility. The AQIA analyzed the Project's projected motor vehicle emissions, based off of an estimated 310 daily vehicle trips, as stated in the *Focused Mobility Analysis Report for the Proposed Halewai`olu Senior Residences* (MAR), prepared in August 2019 by Fehr and Peers. See **Appendix E**, **Focused Mobility Analysis Report**. The AQIA assumed an average, conservative length of 30 miles per trip, generated by the proposed Project. Utilizing the existing traffic levels indicated in the MAR and existing ambient air quality monitoring data from the HDOH's monitoring station, the AQIA determined that the Project is not anticipated to cause or contribute to violations of the NAAQS or State air quality standards or have a significant long-term or a cumulative adverse impact on the regional air quality (Trinity, 2019a).

South of the Project is the Borthwick Mortuary, which includes a crematorium with two incinerators. Pursuant to Hawai'i Administrative Rules (HAR), Chapter 11-60.1, Borthwick Mortuary has obtained and is in compliance with Noncovered Source Permit No. 0422-01-N. An *Odor and Other Impacts Assessment* (OONIA) was conducted by Trinity Consultants in November 2019 (Revised March 2020) to assess if construction of the Project would change the wind flow in the Project area, which might increase odors to certain neighbors in the surrounding community. See **Appendix D, Odor and Other Nuisance Impacts Assessment.** Six locations adjacent to the Project area and the Project Site were assessed for odor impacts – the Lum Sai Ho Tong, Mun Lun School, Chinese Cultural Plaza, Izumo Taishakyo Mission, Kuan Yin Temple and Foster Botanical Garden. The OONIA found that potential odors for properties adjacent to the Project Site were reduced at four locations and were unaffected at two locations. Future occupants of the Project site should not be adversely affected by the crematorium's operation, provided that the Borthwick facility continues to operate as permitted by the HDOH. The Project is expected to have an overall long-term net benefit to odor nuisance in the area (Trinity, 2019b).

3.2.3 Avoidance, Minimization, and/or Mitigation Measures

To minimize the potential adverse impact on air quality due to fugitive dust, the General Contractor will limit the amount of grubbing, grading, and vegetation removal, disturbing only the minimum area required, an estimated 0.6 acres. Additionally, construction work will be in conformance with air pollution control standards contained in the HAR, Title 11, Chapter 60.1, *Air Pollution Control*. Standard mitigation measures to contain fugitive dust and minimize engine exhaust may include the following:

- Maintain all construction equipment in accordance with manufacturer's specifications;
- Minimize the extent of disturbed area as much as possible;
- Use water trucks as needed to minimize the amount of airborne dust leaving the site;
- Cover or continuously wet dirt stockpile areas containing more than 100 cubic yards of material to minimize the formation of windblown dust;
- Install construction fencing to minimize the transmission of windblown dust onto roadways and adjacent properties;
- Implement permanent dust control measures identified in the Project plans as soon as possible following completion of any soil disturbing activities;

- Limit vehicle speed for all construction vehicles moving on any unpaved surface at the construction site; and
- Cover all trucks hauling dirt, sand, soil, or other loose materials (Trinity, 2019a).

Once construction is completed, the Project is not anticipated to have a significant, long-term adverse impact on air quality or odors in the surrounding community since the increase in motor vehicle traffic related to this Project versus the former commercial use will likely be negligible. Further mitigation measures are not anticipated to be required.

3.3 GEOLOGY, TOPOGRAPHY, AND SOILS

3.3.1 Existing Environment

The island of Oʻahu was formed by two major shield volcano formations, the older Waiʻanae Range to the northwest and the younger Koʻolau Range to the east. Both are remnants of shield volcanoes, but the term "range" indicates that they have lost most of their original shield outlines and are now long, narrow ridges shaped largely by erosion. Waianae Volcano is estimated to be middle to late Pliocene in age and forms the bulk of the western one-third of Oʻahu. The Koolau Volcano is estimated to be late Pliocene to early Pleistocene (Ice Age) in age and forms the majority of the eastern two-thirds of Oʻahu (Geolabs, 2017). The Waiʻanae and Koʻolau ranges were further transformed during the Pleistocene period through significant erosion cycles in which great amounts of material were removed by rainfall, stream and marine erosion.

The Project Site is located adjacent to River Street (northwest of the Project Site) and beyond that is the southwest bank of Nu'uanu Stream on the Honolulu Coastal Plain, a low-lying coastal plain along Oʻahu's southern coast. The Honolulu Coastal Plain is composed of interbedded marine, terrestrial, and volcanic deposits on the southwest side of the former Koʻolau Volcano (Geolabs, 2017).

A *Geotechnical Engineering Exploration* ("Geotechnical Report") was prepared by Geolabs, Inc. in 2019. See **Appendix F, Geotechnical Engineering Exploration**. The Geotechnical Report found that the base of the Project Site consists of basaltic lava flow from the Honolulu Volcanic Series, which was deeply scoured by stream erosion at a time when the sea level approximately 300 feet below its present elevation. As sea level rose due to the continental glaciers of the Ice Age melting, erosion of the basalt ceased, and subsequent extended periods of alluvium and ash deposition were transported from Nuʻuanu Valley upstream of the Project Site. Sandy beach deposits and coralline reef formation then covered the alluvium when the sea level rose above its present elevation. As sea level rose to its present level, the Nuʻuanu Stream channel was filled with fine-grained organic soils deposited in a lagoonal environment. Alluvial deposits continued to accumulate over the lagoonal sediments. In the past centuries, the area was filled for development (Geolabs, 2019).

The Project Site is approximately trapezoidal in shape and relatively flat, with existing ground elevations ranging from +8 to +10 feet above mean sea level (MSL) (Geolabs, 2017). See .

According to the U.S. Department of Agriculture (USDA), Soil Conservation Service's *Soil Survey of the Islands of Kauai, Oʻahu, Maui, Molokai, and Lanai, State of Hawaiʻi, 1972*, the Project Site is entirely comprised of 'Ewa silty clay loam (EmA), which occur on moderately shallow, 0 to 2% slopes. EmA soil is characterized by very slow runoff and an erosion hazard that is no more than slight. This soil was historically used for sugarcane, truck crops, and pasture.

Six subsurface borings were conducted, Boring Nos. 1 and 2 extended to approximate depths of 86 and 121.2 feet below the existing pavement surface, while Boring Nos. 101 through 104 extended to approximate depths of 79 to 152.5 feet below the existing pavement surface . Boring No. 1, 101 and 103 on the southern portion of the Project Site, encountered a thin layer of surface fills overlying a highly compressible layer of recent alluvium and lagoonal deposits extending to depths of about 25 to 38 feet below the existing pavement surface. Stiff to very stiff alluvial deposits interbedded with very dense cobbly boulders were the encountered and extended to the maximum depth explored of about 121.2 feet below the existing pavement. Boring Nos. 2, 102 and 104 were conducted on the northern portion of the Project Site, and encountered a highly compressible layer of recent alluvium and lagoonal deposits between depths of about 1 and 19 feet below the existing pavement surface. Below that, dense cinder sands and very stiff alluvial clays interbedded with basalt formation were encountered to a depth of about 98 feet below the ground surface. A hard to very hard basalt formation was encountered between depths of about 48 to 86 feet below the existing pavement surface (Geolabs, 2017). See Error! Reference source not found..

3.3.2 Potential Impacts

Due to the existing topography at the site, the Project will involve minimal site grading work. Areas within the grading limits will be cleared and grubbed thoroughly. Based on the subsurface conditions and structural load demands on the new high-rise building foundations, the Project will use a deep foundation system consisting of micropiles with a diameter of 7.625 inches (same as the grout bulb size), and the permanent casing should extend 3 feet into the alluvial clay deposits. These micropiles will extend about 75 to 120 feet below the bottom of the foundation cap elevations. A micropile consists of a small diameter (usually less than 12 inches) drilled and grouted pile with a center reinforcing steel bar. The micropile foundation typically is constructed by drilling a borehole, placing reinforcing steel in the hole, and grouting the borehole. In order to eliminate the chance of differential movement between two structures supported on different foundation systems, micropiles will be used on the minor structures as well. Micropiles are desirable because they can be installed readily in access restrictive environments and in numerous soil types and ground conditions. In addition, installation of the micropiles generally causes minimal disturbance to adjacent structures, the adjacent soils, and the environment. (Geolabs, 2019).

Compared to a dilled shaft foundation, micropiles will require less concrete material and will create a smaller amount of spoils that need to be disposed of off-site.

The Project is not anticipated to have a significant, adverse impact on geology, topographic landforms or soils on the Project Site or in the near vicinity. The Project will not alter the existing topographic in a manner that adversely impacts views or drainage patterns. The Project will not reduce the stability of surface features or underground utilities through alteration of the underlying soils. The Project will not involve excavation or disturbance of soils containing hazardous contaminants in such a manner that public health and safety are compromised.

3.3.3 Avoidance, Minimization, and/or Mitigation Measures

The Geotechnical Report included recommendations and mitigation measures that should be adhered to by the General Contractor during construction, including, but not limited to the following:

- Vegetation, debris and existing structures will be removed and disposed of properly to reduce the potential for contaminating excavated materials.
- The clayey silt soils encountered near the surface during the two borings may be used as general fill, provided that the maximum particle size is less than 3 inches in largest dimension.

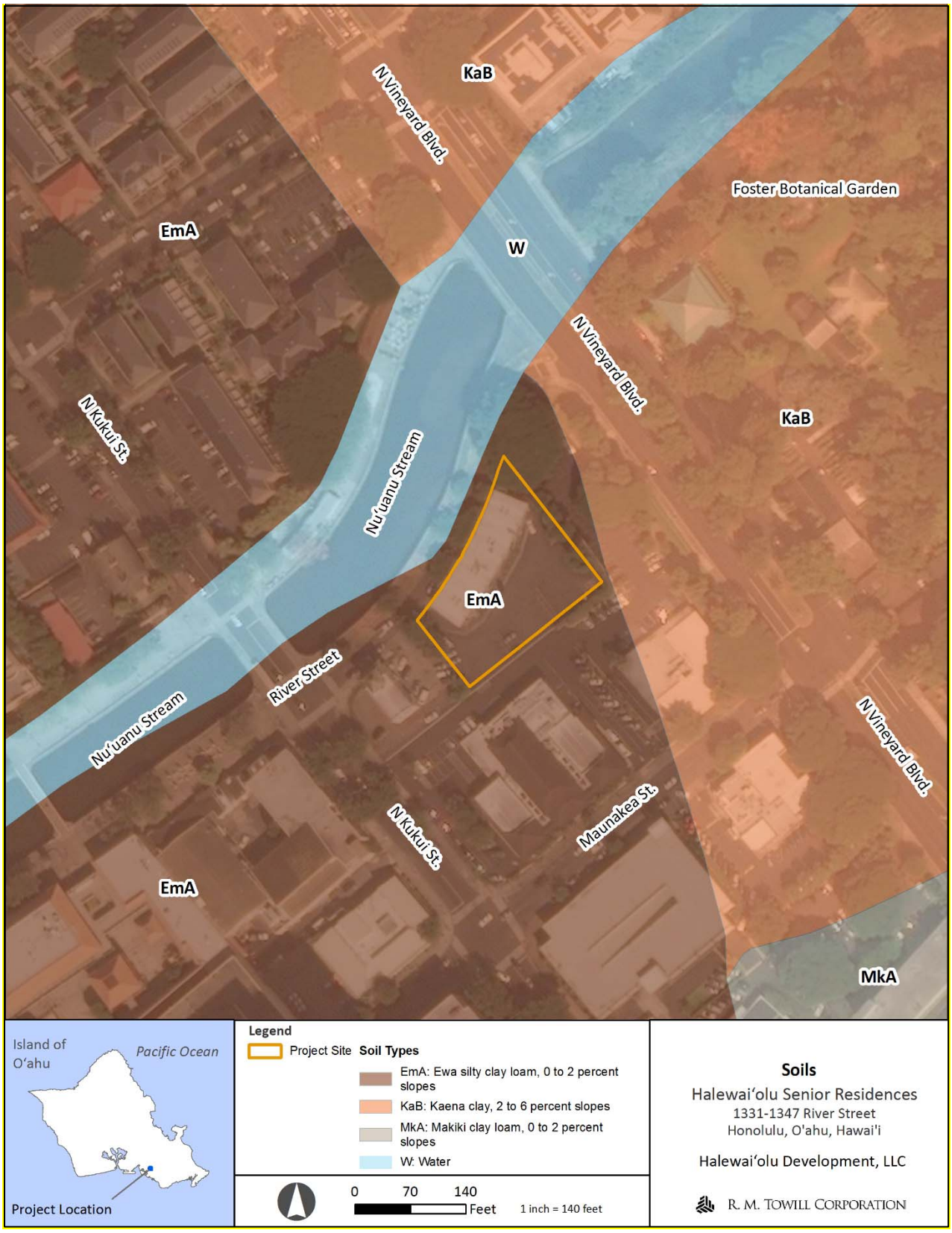
- Imported materials that are used as select granular fill should be non-expansive granular material, such as crushed coral or basalt.
- During excavations, if groundwater is encountered, backfill materials should consist of free-draining granular materials, such as No. 3B Fine gravel, wrapped on all sides with non-woven filter fabric.
- A Geolabs representative should monitor the grading operations to observe whether undesirable materials are encountered during the excavation and scarification process, and to confirm whether the exposed soil conditions are similar to those encountered in our field exploration (Geolabs, 2019).

The proposed Project will be designed in accordance with the requirements of the International Building Code (IBC), 2006 edition. Further the recommendations that are provided here and in the Geotechnical Report in **Appendix F** will be followed. Grading, excavation, and other construction activities required for the Project will be in accordance with City and State regulatory requirements. See preliminary plans on Sheets C002, C005, and C006 in **Appendix A**. Further mitigation measures are not anticipated to be required.

Figure 6: Topography



Figure 7: Soils Map



3.4 WATER RESOURCES AND HYDROLOGY

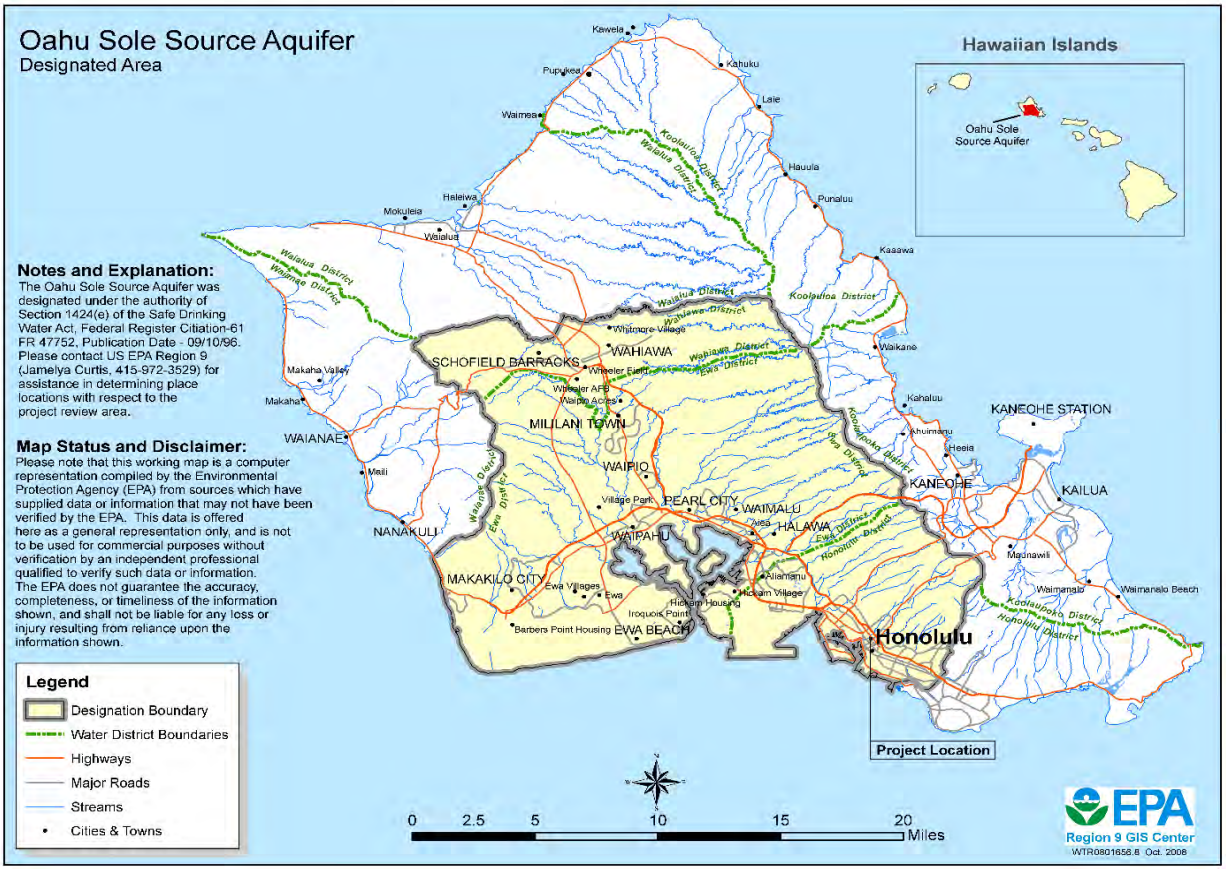
3.4.1 Existing Environment

Groundwater

Approximately 50% of Hawai'i's water supply is sourced from groundwater. An important source of groundwater supply for O'ahu is derived from the Southern O'ahu Basal Aquifer (SOBA), a basal aquifer underlying southern O'ahu, which extends from the Mō'ili'ili and Makiki region of O'ahu to the southern end of the Wai'anae Range. Rainfall in the Ko'olau Range is the principal source of the fresh groundwater recharge in the SOBA.

The SOBA is designated a Sole Source Aquifer (SSA) by the EPA. A SSA is defined as an aquifer that supplies at least 50% of the drinking water for a community. the U.S. EPA's Sole Source Aquifer Program was established under Section 1424(e) of the U.S. Safe Drinking Water Act (SDWA). The purpose of the program is to help prevent contamination of groundwater, by requiring all federally-funded projects above a SSA to consult with the EPA. See **Figure 8: O'ahu Sole Source Aquifer** below. See **Section 6.1.14** for further discussion.

Figure 8: O'ahu Sole Source Aquifer

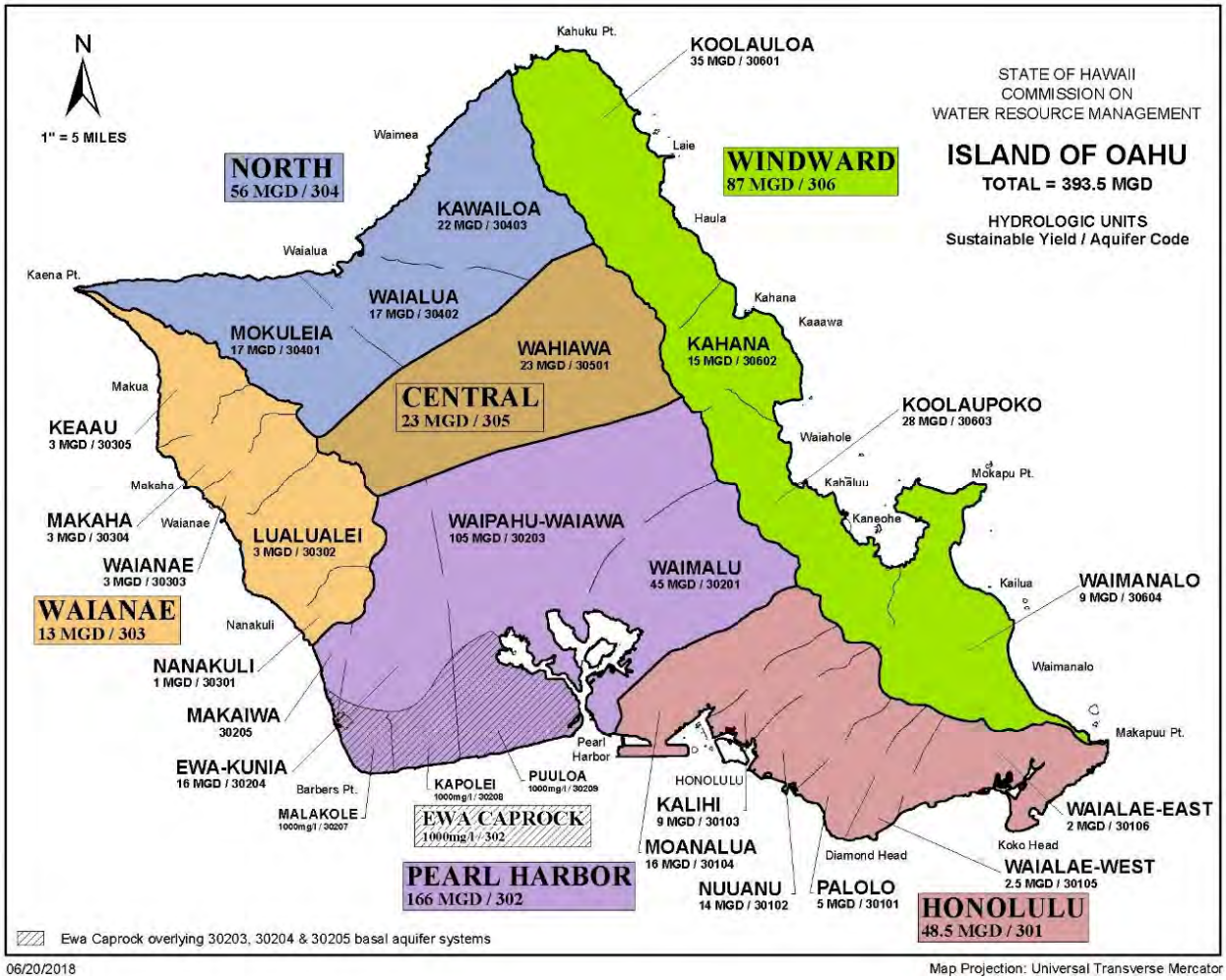


Source: EPA, 2009

The State Department of Land and Natural Resources (DLNR), Commission on Water Resource Management (CWRM) has divided and defined O'ahu into five groundwater management areas/sectors: North, Windward, Honolulu, Pearl Harbor and Central. The boundaries of the SOBA cover a vast majority of the Central, Pearl Harbor and Honolulu sectors. The Honolulu Sector is further divided into six aquifer subsystems: Pālolo, Nu'uanu, Kalihi, Moanalua, Wai'alae-East and Wai'alae-West. The Project is located within the Kalihi aquifer subsystem. The CWRM also established an aquifer coding system used to describe the groundwater hydrologic units for each aquifer subsystem, in an attempt to manage groundwater resources. See **Figure 9: Hydrologic Unit Map** below.

According to the HDOH, Safe Drinking Water Branch, Groundwater Protection Program's Groundwater Contamination Maps, there are no public drinking or non-drinking water wells, such as irrigation and industrial wells, on or near the Project Site, nor are there any sites that were flagged for potential groundwater contamination.

Figure 9: Hydrologic Unit Map



Source: DLNR, CWRM 2018

Borings performed for the Geotechnical Report (**Appendix F**) found groundwater at depths of about 7.2 to 7.9 feet below the existing pavement surface. Groundwater levels can fluctuate depending on surface water runoff and seasonal precipitation, due to the proximity of the Project Site to the Nu'uanu Stream and groundwater withdrawal and/or injection.

Surface Water

The Nu'uanu Stream is located approximately 54 feet northwest of the Project Site. See **Figure 10: Surface Waters.** The Nu'uanu Stream is located in the Nu'uanu Watershed and is a perennial stream, flowing continuously throughout the year. Nu'uanu Stream channel has been modified and begins about 0.5 miles mauka of the Nu'uanu Reservoir No. 4 and flows through Nu'uanu Valley and Downtown Honolulu before reaching the Honolulu Harbor near Piers 15 and 16.

In the vicinity of the Project site, the Nu'uanu Stream is designated as a "Class 2" inland water by the HDOH, Clean Water Branch (CWB). According to HAR, Chapter 11-54, *Water Quality Standards*, "Class 2" waters are to be protected for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping, and navigation.

Figure 10: Surface Waters



The Nu'uanu Stream is listed on the §303(d) list in the HDOH's *2018 State Water Quality Monitoring and Assessment Report* (HDOH, 2018). During the dry season, Nu'uanu Stream does not meet the State's water quality standards for the following parameters: enterococcus, total nitrogen, nitrate + nitrite (NO3+NO2), total phosphorus (TP), turbidity, total suspended solids (TSS), trash, dieldrin, and chlordane. During the wet season, the Nu'uanu Stream does not meet the State's water quality standards for TP and TSS. Water bodies on the §303(d) list require HDOH to develop a Total Maximum Daily Load (TMDL), to assist bringing that water body into compliance with State water quality standards. The Nu'uanu Stream is currently listed as a "Low" priority for HDOH to initiate the development of a TMDL within the current monitoring and assessment cycle.

3.4.2 Potential Impacts

Groundwater

The Project involves excavation for the construction of the residential facility. Generally, the depth of excavation will be approximately 12 feet below the existing ground levels, for the construction of the building foundations and elevator pits. Additionally, the residential facility be supported on a deep foundation system consisting of micropiles with a diameter of 7.625 inches. These micropiles will extend about 75 to 120 feet below the bottom of the foundation cap elevations. Based on the subsurface soil conditions (e.g. soft and loose lagoonal deposits) and limited working space, temporary shoring (e.g. using interlocking steel sheet pilings) of some of the deeper excavations, especially where dewatering may be required. Excavation with backhoe excavator will likely be utilized. The Contractor and geotechnical engineer will be responsible for dewatering during construction, and for the selection of dewatering equipment and methods, to ensure there is minimal impact on the groundwater table.

The Project is not anticipated to have a significant, long-term or cumulative adverse impact on the SOBA, or SSA or groundwater resources in the Project vicinity. Ground-altering activities that threaten SSAs are typically associated with the installation of an injection well drilling or detention / infiltration basin; and/or a release of toxic chemicals (e.g. oil, grease, pesticides) which pollutes groundwater.

Surface Water

During construction, there is the potential that sediment and pollutants from construction storm water discharges may enter Nu'uanu Stream. However, pollution control measures and best management practice (BMPs) will be installed by the General Contractor to ensure short-term adverse impacts to water quality of the Nu'uanu Stream are avoided.

Permanent post-construction BMPs will be installed when the Project is complete to minimize long-term impacts to water quality. Additionally, the Project and associated landscaping will pre-treat storm water runoff and beautify River Street along this portion of the Nu'uanu Stream; therefore, increasing its attractiveness as a recreational resource and encouraging maintenance of the stream for residents and the community to enjoy. The Project is not anticipated to have a significant, long-term or a cumulative adverse impact to Nu'uanu Stream or other nearby surface waters. The Project does not involve permanent alteration, excavation or filling of a surface water.

3.4.3 Avoidance, Minimization, and/or Mitigation Measures

Groundwater

If groundwater is encountered during construction, the General Contractor and geotechnical engineer will be responsible for the selection of dewatering methods and equipment, to shore and seal excavated work areas in a manner that will minimize the potential for ground water infiltration into active work areas and to prevent the infiltration of pollutants into the groundwater table. If construction dewatering is required, a National Pollutant Discharge Elimination System (NPDES) permit for construction dewatering will be obtained from the DOH, CWB, in accordance with HAR, Chapter 11-54 and 11-55.

Surface Water

As previously stated, pollution control measures and BMPs will be installed by the General Contractor to prevent soil loss and sediment discharges into Nu'uanu Stream and to ensure short-term adverse impacts to Nu'uanu Stream are avoided. The Project is not likely to require an NPDES permit for construction storm water runoff, as the project size is less than 1.0 acre. BMPs will be employed in all phases of the Project. BMPs will be installed prior to the start of construction, will be maintained throughout the construction period, and permanent BMPs will be installed once construction is complete. BMPs will generally include a stabilized construction ingress/egress, catch basin inlet protections, and temporary filter sock perimeter controls. In addition to the BMPs described above, good housekeeping mitigation measures, may include the following. For additional details, see Sheets C002, C005 and C006 in **Appendix A**:

- When cleared and grubbed areas are not to be graded or disturbed for 14 days or more, seed, plant, or hydroseed temporary vegetation or use other temporary stabilization methods, unless remaining vegetation provides adequate protection.
- The General Contractor shall employ dust control measures, including keeping the Project Site and surrounding area free from dust nuisance. The work shall be in conformance with HAR, Chapter 11-60, Air Pollution Control. Measures may include but not be limited to the installation of dust screens, watering of the Project Site and fill material being placed.
- All pollutants discharged from the construction site to off-site areas will be swept or vacuumed each day before leaving the job site.
- Construction materials, waste, toxic and hazardous substances, stockpiles and other sources of pollution shall not be stored in buffer areas, near areas of concentrated flow, or areas abutting the Municipal Separate Storm Sewer System (MS4), receiving waters, or drainage improvements that discharge off-site. Primary and secondary containment controls and covers shall be implemented to the maximum extent practicable.
- Spill prevention and response plans to eliminate and minimize the discharge of pollutants to the MS4 and receiving waters from leaks and spills by reducing the chance far spills, absorbing, containing, and cleaning up spills and properly disposing of spill materials. At a minimum, all leaks and spills immediately shall be cleaned up immediately.
- Prevent fuel spills and leaks by using off-site facilities, fueling only in designated areas, enclosing or covering stored fuel, and implementing spill controls such as secondary containment and active measures using spill response kits.
- Stockpiles shall not be located in drainage ways, within 50 feet from areas of concentrated flows and are not allowed in the City Right-Of-Way. Sediment barriers or silt fences shall be used around the base of all stockpiles to prevent storm water carrying contaminants into drainage systems and State waters. Stockpiles greater than 15 feet in height shall require an 8-foot wide benching in accordance with ROH, Chapter 14, Article 15, *Grading, Grubbing and Stockpiling*. Stockpiles must

be covered with plastic sheeting or a comparable material if they will not be actively used within 7 days.
- Prevent or reduce discharge of pollutants to storm water from concrete waste by conducting washout offsite or performing onsite washout in a designated area constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Should heavy rains, tropical storm, or hurricane occur during construction, a Rain Response Plan has been developed.

Permanent BMPs may include the following. For additional details, see Sheets C005 and C006 in **Appendix A**.:

- Minimizing soil compaction and impervious surfaces;
- Directing runoff to engineered biofiltration cells;
- Limiting storm water runoff from landscape areas to impervious areas;
- Automatic irrigation systems to minimize runoff of excess irrigation water;
- Stenciled storm drain inlets;
- Prohibition of residential vehicle and equipment washing and cleaning;
- Locating the loading dock in the building; and
- Planting permanent ground cover as soon as possible.

The General Contractor may modify the proposed BMPs as necessary to account for unanticipated or site-specific conditions. Further mitigation measures are not anticipated to be required.

3.5 NATURAL HAZARDS

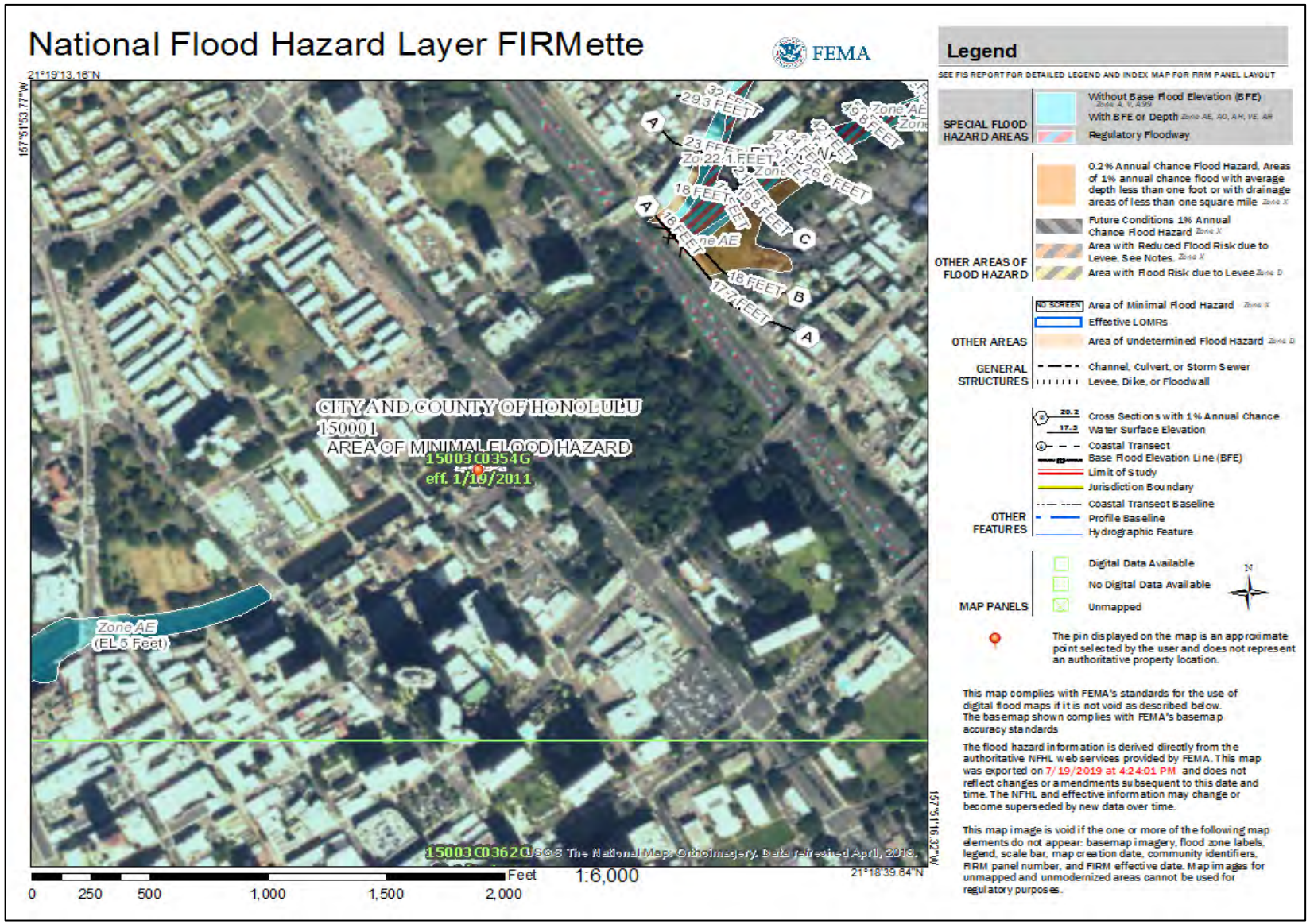
3.5.1 Existing Environment

Flood

Flooding in the Hawaiian Islands primarily occurs due to stream overflow and high surface runoff (non-channelized flow) as a result of torrential rains that fall on the steep slopes in the mountain ranges and drainage basins. The most frequent and severe flooding occur where steep sloping mountain ranges abruptly meet flat or low-lying coastal plains, as found in Waimanālo, Kailua, Kāneʻohe, and Lāʻie on the island of Oʻahu. Nearly every year flash floods cause damage to property, homes, highways, and crops in Hawaiʻi (Fletcher, et al., 2002).

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM), map number 15003C0354G, effective on January 18, 2011, the Project Site is located in Zone "X." Zone "X" is an area of minimal flood hazard that has been determined to be outside the 0.2% annual chance floodplain and outside of the 500-year floodplain. The Project Site is not located within a FEMA Special Flood Hazard Area (SFHA). See **Figure 11: FEMA FIRMette No. 15003C0354G**. However, the Federal Emergency Management Agency (FEMA) completed a Base Level Engineering (BLE) study in 2019 for flood areas on Oahu that were not previously mapped. The BLE identified the flood areas adjacent to Nu'uanu Stream, makai of the Freeway. According to the BLE, the parcel is in the 100-year floodplain with a Base Flood Elevation (BFE) of 12.04. The Project will comply with applicable flood requirements for the Project.

Figure 11: FEMA FIRMette No. 15003C0354G



Tsunami

Tsunamis involve the generation of a series of destructive ocean waves, due to a large displacement of water, created by sea floor movements caused by earthquakes, landslides, submarine faulting or volcanic eruptions. The characteristics of a tsunami are difficult to predict, as there are several factors to consider, including the depth, topography, and morphology of the offshore region, and the aspect, slope, geology, and morphology of the shoreline they inundate, which effects the distance over which they travel (Fletcher, et al., 2002).

Tsunamis differ from ordinary ocean waves and storm surges in that the entire water column from the sea floor to the ocean surface is displaced, not just the upper few feet of the ocean surface. As tsunamis enter shallower coastal waters, the speed of the wave slows down and the height increases. A wave that may be only 3 feet high or less in the ocean may climb to more than 60 feet when it hits the coastline. Therefore, a tsunami can cause great loss of life and property damage when they come ashore. The first wave is almost never the largest; successive waves may be spaced tens of minutes apart and continue to arrive for many hours.

Tsunamis that affect Hawai‘i typically originate from distant, seismically active areas bordering the Pacific Ocean (also known as the “Rim of Fire”), or from local, shallow undersea earthquakes, primarily near the island of Hawai‘i (“Big Island”). Twenty-six tsunamis with flood elevations greater than 3.3 feet have made landfall in the Hawaiian Islands in recorded history, and 10 of these had significant damaging effects on O‘ahu. Since 1946, there have been 4 significant tsunami “run-up” events in Hawai‘i, in 1946, 1957, 1960 and 1964, where heights varied from 1 to 14 feet. The most recent tsunami to impact O‘ahu, occurred on March 11, 2011, when the Tōhoku earthquake and tsunami originating from Japan caused damage at several locations around the island especially the north shore.

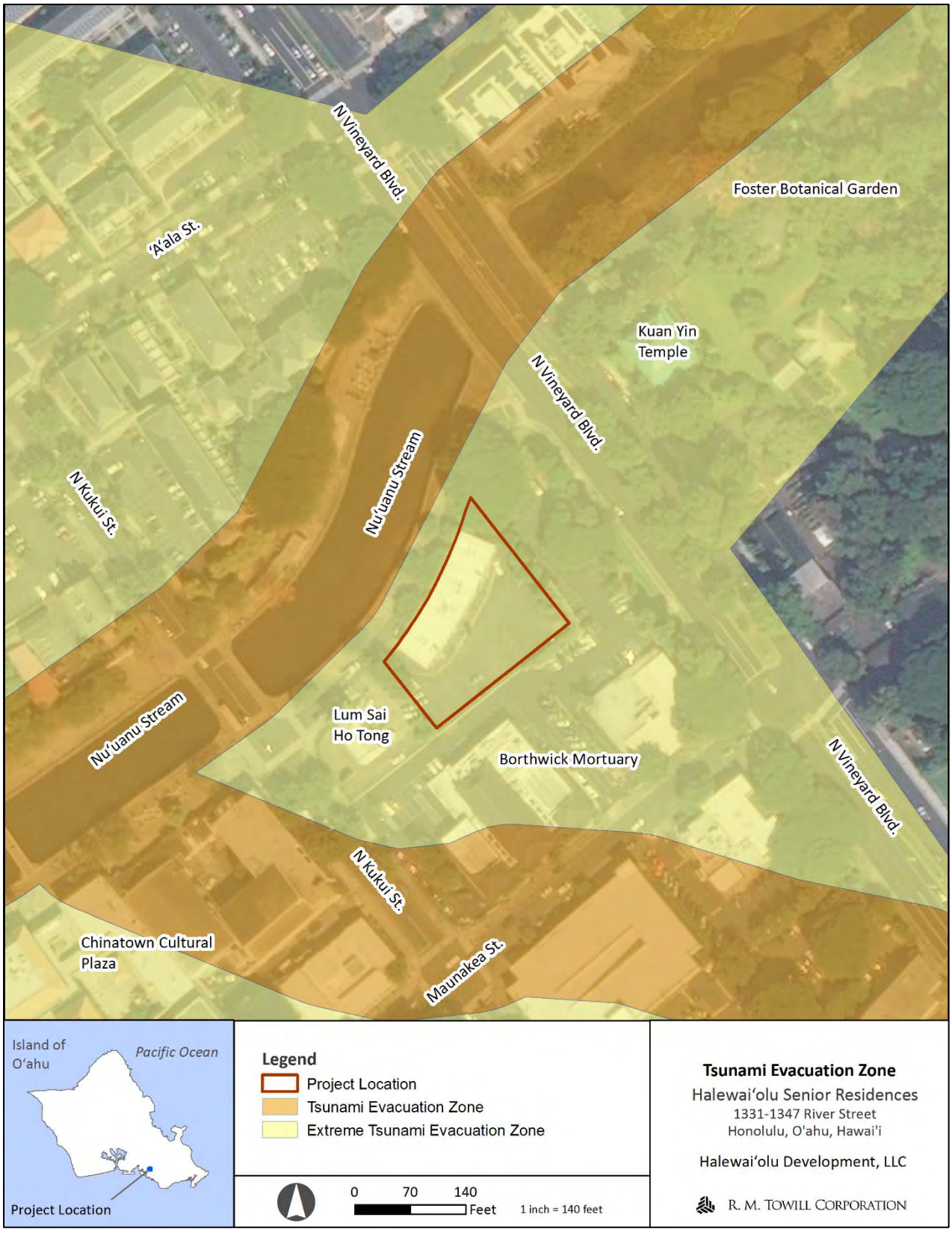
The Pacific Tsunami Warning Center (PTWC) issues warnings when a potential tsunami with significant widespread inundation is imminent or expected. Tsunami warnings alert the public that widespread, dangerous coastal flooding is possible and alert emergency management officials to take action for the entire tsunami hazard zone. The City, Department of Emergency Management prepares Tsunami Evacuation Zone Maps for the island of O‘ahu. According to Map 19, Inset 2 – Airport to Waikiki, the subject property is not within the Tsunami Evacuation Zone. It is however, within the “Extreme Tsunami Evacuation Zone” (XTEZ), or the areas that must be evacuated only during an extreme tsunami event generated from earthquakes of Magnitude 9+ on the Richter scale. **Figure 12: Tsunami Evacuation Zone**.

Seismic Hazard

Generally, earthquakes are caused by shifts in tectonic plates. In contrast, earthquake activity in Hawai‘i is linked primarily to volcanic activity and occurs on the Big Island. Approximately 95% of the earthquakes on the Big Island are directly related to the movement of magma within Kīlauea or Mauna Loa, beneath the earth's surface. Earthquakes that reach O‘ahu are generally not strong enough to be felt and cause little to no damage. O‘ahu does not have any active volcanoes; therefore, is not subject to *significant* earthquakes (Fletcher, et al., 2002).

Over the last 150 years of recorded history, earthquakes greater than Magnitude 6 were not reported on O‘ahu. Based on available information, it is assumed that an earthquake of about Magnitude 5.6 occurred on June 28, 1948 in the vicinity of O‘ahu, possibly along the hypothesized and controversial Diamond Head Fault feature. The Diamond Head Fault feature is believed to extend northeasterly away from the southeastern tip of the Island of O‘ahu (Geolabs, 2017). The most recent earthquake to cause minor

Figure 12: Tsunami Evacuation Zone



damage on the island of Oʻahu occurred on October 15, 2006, on the Big Island (southwest of Puakō), and measured a magnitude of 6.7 on the Richter scale.

Figure 13: State of Hawaiʻi Seismicity illustrates the estimated risk of earthquakes using the measure of ground motion hazard in terms of peak ground acceleration (PGA) measured as a percentage of Earth's gravitational acceleration (g). The map to the right depicts the maximum PGA expected over the next 50 years with at least a 2% chance of exceedance. The southeast part of the Island of Hawaiʻi has the highest expected ground acceleration at over 100% g. This amount of acceleration would make it difficult to stand and could topple structures. The color scale shows the island of Oʻahu to have an expected ground acceleration of 15%, a reduced risk in which a moderate amount of shaking may be experienced (USGS, 2017).

Hurricanes and High Winds

In Hawaiʻi, northeast trade winds predominate throughout most of the year and generally range in velocity between 10 and 20 miles per hour (mph) with trade winds of 40-60 mph periodically occurring. When wind speeds exceed 70 mph, the storms are characterized as hurricanes. Hurricanes are a type of tropical cyclone with wind speeds greater than 74 mph. Hurricanes occur seasonally in Hawaiʻi, typically during the summer to early winter months (June to November). During hurricanes and storm conditions high winds cause strong uplifting forces on structures, particularly roofs. Wind-driven materials and debris can attain high velocity, causing devastating property damage and harm to life and limb.

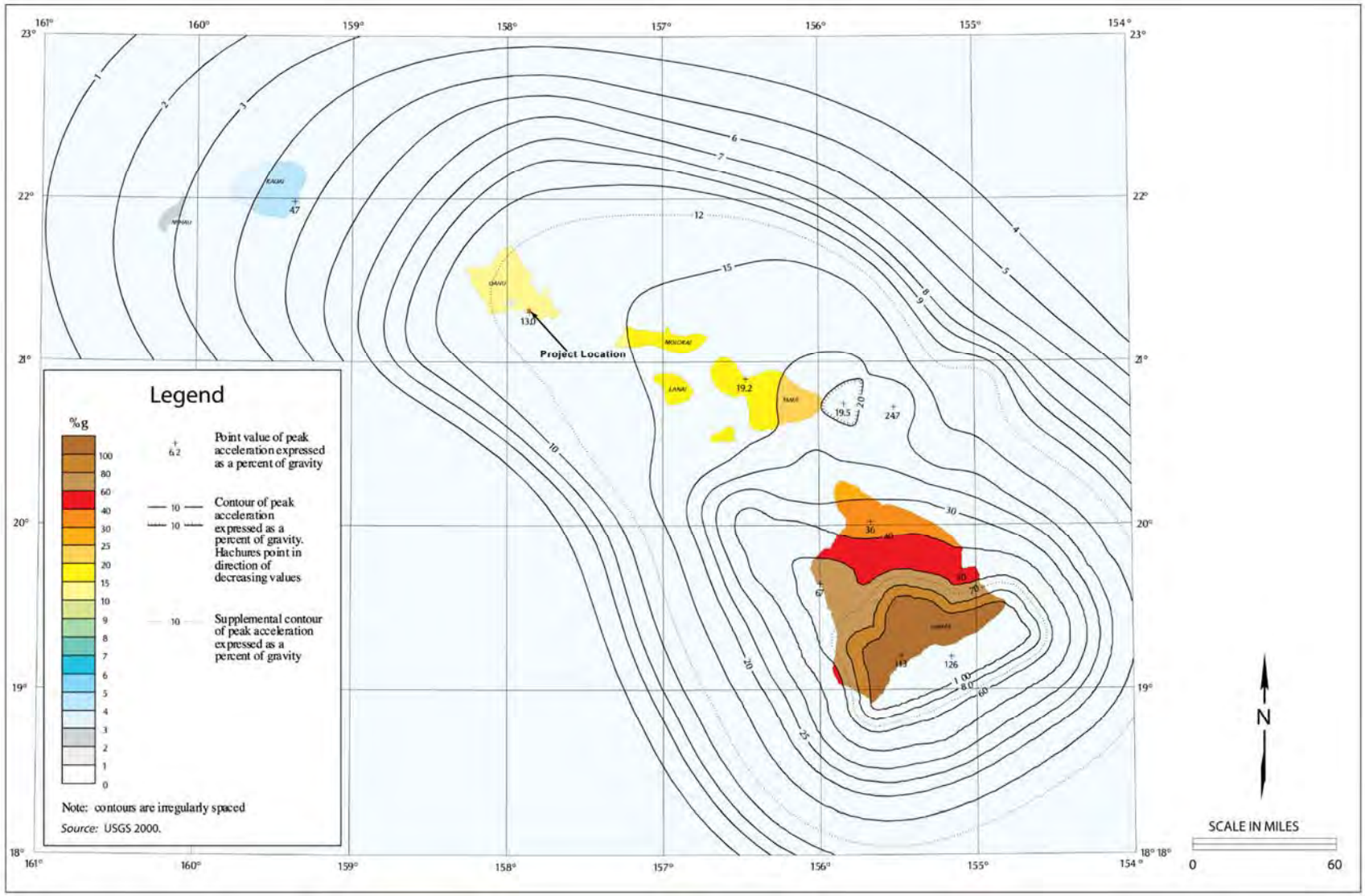
Hurricanes are classified according to categories, where "Category 1" hurricanes have wind speeds between 75-95 mph and "Category 5" hurricanes have wind speeds exceeding 155 mph. Hurricanes occasionally approach the Hawaiian Islands, but rarely reach the islands with hurricane force wind speeds. Hawaiʻi has been affected twice since 1982 by significant hurricanes. Hurricane ʻIwa was a category 1, which passed over Kauaʻi on November 23, 1982, while Hurricane Iniki was a Category 4, which passed over Kauaʻi on September 11, 1992. Hurricane Lane was the most recent hurricane to threaten Hawaiʻi, which started as a Category 5 on August 22, 2018 and was downgraded to below hurricane status, as it gradually weakened and dissipated on August 29, 2018.

3.5.2 Potential Impacts

Flood

During construction, the Project is not expected to be significantly impacted by flooding due to its location within the FEMA Flood Zone X. The National Flood Insurance Program (NFIP) does not regulate development within Zone X. The Project Site is not located within a SFHA or the Base Flood Plain. However, the Federal Emergency Management Agency (FEMA) completed a Base Level Engineering (BLE) study in 2019 for flood areas on Oahu that were not previously mapped. The BLE identified the flood areas adjacent to Nu'uanu Stream, makai of the Freeway. According to the BLE, the parcel is in the 100-year floodplain with a Base Flood Elevation (BFE) of 12.04. The Project will comply with applicable flood requirements for the Project.

Figure 13: State of Hawai'i Seismicity



Tsunami

During construction, the Project is not expected to be significantly impacted by tsunamis. The Project Site (located about 0.4 miles from the shoreline) is not located within the tsunami evacuation zone.

The Project will not result in permanent facilities or site conditions that will significantly exacerbate property damage or increase risk to the public's health and safety in the event of tsunami. Once construction is completed, the Project will continue to be at risk from the threat of an extreme tsunami. In the event of a tsunami, residents of the Project may be required to evacuate to safe areas.

Seismic Hazards

During construction, the Project is not expected to be adversely impacted by seismic activity.

The Project will comply with the IBC, 2006 Edition, which provides design criteria to safeguard against potential damage from seismic activity. The new residential facility will improve safety for nearby neighbors, as it will replace an outdated, nonconforming building with a residential facility that has enhanced structural resistance to potential earthquakes. The Project will not result in permanent facilities or site conditions that will significantly exacerbate property damage or increase risk to the public's health and safety in the event of an earthquake. The Project will be designed to safeguard against the potential damage from seismic activity. In the event of an earthquake, residents of the Project may be required to be evacuate to safe areas.

Hurricanes and High Winds

During construction, the Project is not expected to be significantly impacted by hurricanes and high winds.

The Project will not result in permanent facilities or site conditions that will significantly exacerbate property damage or increase risk to the public's health and safety in the event of a hurricane. Once construction is completed, the Project will continue to be at risk from the threat of a hurricane but will have been designed and constructed to meet building code requirements to mitigate hurricane impacts.

3.5.3 Avoidance, Minimizations, and/or Mitigation Measures

Flood

In the event of a flood event, construction activities will cease; equipment and materials will be secured; and all Federal, State and City requirements will be implemented to ensure the safety construction crews and community members near the Project area.

The residential facility tower and podium will adhere to design standards as set forth in the IBC, 2006 Edition and ROH, Chapter 21A, *Flood Hazards*. Any increase in runoff caused by an increase in impervious surfaces will be mitigated on site as required to meet City standards. Further mitigation measures are not anticipated to be required.

Tsunami

In the event of a potential tsunami, the PTWC will issue warnings. Depending on the type of tsunami warning and what phase of and where construction is occurring, work may have to come to a halt.

The residential facility tower and podium will be designed to meet applicable building code requirements. Further mitigation measures are not anticipated to be required.

Seismic Hazards

In the event of an earthquake, the U.S. Geological Survey (USGS), Central North Pacific office will provide updates on seismic activity. Construction activities may cease and equipment and materials will be secured. All Federal, State and City requirements will be implemented to ensure the safety of construction crews and community members near the project area.

The Project will be designed to meet applicable building code requirements to mitigate potential impacts from seismic activity. Further mitigation measures are not anticipated to be required.

Hurricane and High Winds

The National Hurricane Center issues a "Hurricane Watch" 48 hours in advance of a potential hurricane event and issues a "Hurricane Warning" when sustained winds of at least 74 mph are expected within 36 hours. Upon issuance of a Hurricane Warning, construction operations will cease, work crews will finalize securing the Project Site and evacuate until the hurricane threat has passed. Upon issuance of a Hurricane Watch, work crews will begin securing the construction site as follows:

- Remove or secure equipment, machinery, construction materials, and portable toilets;
- Stop scheduled deliveries of building materials;
- Remove jobsite signage, dust screens, silt screens, and other temporary installations; and
- Locate and turn off jobsite utilities, including electricity, water, and gas.

The Project will be designed to meet applicable building code requirements to mitigate potential impacts from hurricanes and high winds. Further mitigation measures are not anticipated to be required.

3.6 SCENIC AND VISUAL RESOURCES

3.6.1 Existing Environment

Scenic and visual resources include panoramic views and vistas; landmarks, including distinctive or cherished structures and physical features; and landscape features including significant trees and open space areas.

The PUC DP encourages the preservation of the following significant panoramic views and vantage points in Honolulu:

Section 3.1.1.2 Scenic Views

- *The Koʻolau and Waiʻanae Mountain Ranges and their foothills (notably, Red Hill and Puu Ualakaa, or Round Top);*

- *The Pacific Ocean, Pearl Harbor's East Loch, Ford Island, Honolulu Harbor, Ke'ehi Lagoon and Kewalo Basin, and their respective shorelines;*
- *The craters of Leahi (Diamond Head), Puowaina (Punchbowl) and Aliamanu; and*

Section 3.1.2 Policies

- *Preserve panoramic views of natural landmarks and the urban skyline. Preserve views of the Koolau and Waianae Mountain Ranges, Punchbowl, Diamond Head, Pearl Harbor and other natural landmarks. Maintain important view corridors within and across urban Honolulu and keep Downtown as the most prominent feature of the urban skyline. Views along the Pearl Harbor shoreline and the Pearl Harbor Historic Trail toward the mountains, shoreline, significant landmarks, and adjacent communities should be created and maximized wherever possible and appropriate.*

Section 3.1.3.3 Urban Skyline and Mauka-Makai Views

- *Maintain the visual prominence of important districts by allowing a greater height and massing of buildings, such as in the Downtown area;*
- *Apart from downtown and other central Honolulu locations, promote mid-rise or low-rise scale for new buildings;*
- *Preserve the following panoramic views indicated schematically in Figure 3.1 by establishing building height limits and setbacks that are based on viewplane analyses to determine the sight lines and desired view dimensions and characteristics*
    - *From Ala Wai Canal Promenade toward the Ko'olau Range;*
    - *From Ala Moana Beach Park toward the Ko'olau Range;*
    - *From Kewalo Basin toward the Ko'olau Range and Punchbowl;*
    - *From Kaka'ako Waterfront Park toward Punchbowl and the Ko'olau Range;*
    - *From Punchbowl Lookout toward Diamond Head;*
- *Preserve and enhance significant mauka or makai view corridors along major collector streets indicated in Figure 3.1 through a combination of zoning controls and streetscape improvements.*

Panoramic view planes identified in the PUC DP that are in viewing range near the Project site include public views of the Ko'olau Mountain range and Punchbowl.

3.6.2 Potential Impacts

During construction, construction activities will be visibly apparent due to the staging of heavy equipment and vehicles, nighttime lighting, and the presence of dust screens. However, dust screens also function to screen views into construction areas, thereby mitigating the visual distraction and contrast of an active construction area from the surrounding uses. Construction-related impacts to visual and scenic resources are temporary and will end upon completion of the Project.

The Project involves construction of a residential tower about 174 feet tall in an area zoned for 350-foot heights. Proposed elevations of the residential facility from various viewpoints are in **Appendix A, Drawings**. The tower will be built in a mauka-makai orientation, whereby, the short side of the tower is facing the north-south direction. See **Figure 14** for the mauka-makai view from North Kukui Street and **Figure 15** for the mauka-makai view from River Street. Therefore, the new residential facility will not significantly obstruct mauka-makai views of the Ko'olau Mountain range from the southern shore,

Downtown Honolulu or the Honolulu Harbor. The Project may partially obstruct views of Punchbowl from neighboring buildings immediately southwest of the Project Site. Although, existing buildings in the vicinity of the Project partially obstruct views of the Koʻolau range and Punchbowl; thus, the Project will integrate into the present urban fabric. Moreover, the Project will align with the PUC DP by maintaining the visual prominence of Downtown Honolulu, by encouraging a greater height and massing of buildings.

The Project is not anticipated to result in a significant adverse impact to any visual or scenic resources, as the proposed improvements will not result in a *substantial* and permanent alteration of a region's visual character, a recognized view plane, an obstruction of a landmark feature, or lighting characteristics. Conversely, the Project may result in a minor beneficial visual impact to River Street with the removal of the blighted property, new landscaping, and activation of the street frontage.

3.6.3 Avoidance, Minimizations, and/or Mitigation Measures

During construction General Contractors will employ the following measures to mitigate impacts on visual and scenic resources:

- Schedule and phase construction activities to minimize the project duration.
- Schedule material and equipment delivery and refuse removal during non-peak use periods on public roadways and within areas of high public use.
- Install dust fences with a minimum height of 12 feet to screen active construction areas and staging and stockpile areas from view.

The Project is oriented mauka-makai to preserve a view corridor of the Koʻolau Mountain Range. Final design treatments to minimize the impact of the residential facility on surrounding neighborhood may include height setbacks, screening for the parking podium, active ground floor uses and/or landscaping. Additional consideration may be given to the architectural elements for building materials, color, patterns and texture, to reduce the appearance of the scale and massing of the tower.

3.7 NOISE CONDITIONS

3.7.1 Existing Environment

Noise is defined as sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Under certain conditions, noise can interfere with human activities at home or work and affect human health and well-being.

Figure 14: Mauka-Makai View from North Kukui Street



Figure 15: Mauka-Makai View from River Street



Sound levels are easily measured, but human response and perception of the wide variability in sound amplitudes is subjective. The accepted unit of measure for noise levels is the decibel (dB) because it reflects the way humans perceive changes in sound amplitude. A-weighted decibel (dBA) sound levels are typically used to account for the response of human ear. The term "A-weighted" refers to a filtering of the noise signal to emphasize frequencies in the middle of the audible spectrum and to de-emphasize low and high frequencies in a manner corresponding to the way the human ear perceives sound. The dBA has been found to correlate well with a person's judgment of the noisiness of different sounds and has been used for many years as a measure of community noise.

The noise descriptor currently used by federal agencies, including HUD, to assess environmental noise is the Day-Night Average Sound Level (DNL). In urbanized areas shielded from high volume streets, DNL levels generally range from 55 to 65 DNL, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 to 75 DNL when the roadway is a high-speed freeway. For purposes of determining noise acceptability for funding assistance from federal agencies, an exterior noise level of 65 DNL or less is considered acceptable for residences (Ebisu, 2019).

The State HDOH monitors noise in accordance with HRS, Chapter 342F. and HAR, Title 11, Chapter 46, *Community Noise Control*. HAR §11-46-3 defines maximum permissible sound levels for three classifications of land use (by zoning district). The Project Site is in "Class A," the class for all residential, conservation, preservation, public space, open space or similar types of zoning districts. The maximum permissible sound levels in Class A is 55 dBA during the daytime (7 a.m. to 10 p.m.) and 45 during the nighttime (10 p.m. to 7 a.m.). Although dBA is not directly comparable to DNL, State HDOH noise limits for multifamily residential, commercial, and resort lands are at approximately 60 DNL (HDOH, 1996b). The maximum permissible sound level can be exceeded for short periods, but not for more than 10% of the time within any 20-minute period. Construction activities are regulated through the issuance of noise permits which allow excessive construction noise during limited time periods.

An *Acoustic Study for the Halewai'olu Senior Residences Project* ("Acoustic Study") was prepared by Y. Ebisu and Associates in April 2019. See **Appendix G, Acoustic Study**. The Acoustic Study assessed existing and future traffic and ambient noise conditions in the vicinity of the proposed Project in March 2019. The major contributor to existing ambient noise levels within the Project area was traffic along North Vineyard Boulevard. The noise levels did not exceed 65 DNL at ground level on the Project Site or at existing buildings along River Street, North Kukui Street, and Maunakea Street (Ebisu, 2019). Ebisu and Associates amended the Acoustic Study on September 26, 2019 to adjust the Project completion date of 2022 instead of 2021. The amendment letter is provided in **Appendix G**.

3.7.2 Potential Impacts

During construction of the Project will involve excavating, grading, concrete casting, the placement of pre-cast structural components, and paving. Most of the noise will be generated during mobilization and operation of heavy construction equipment comprised of earth moving equipment, such as diesel engine powered bulldozers, trucks, backhoes, front-end loaders, graders, and similar equipment. Construction equipment noise is expected to be in the range of 55 and 90 dBA near the Project Site. Predicted maximum construction noise levels at these buildings during the site preparation and earthwork phases of

construction ranged from 88 to 86 dBA (plus or minus 5 dBA). The highest noise levels at existing residences during site preparation and building erection work are expected to occur at the existing Waena Apartments across Nu'uanu Stream, where minimum buffer distances are moderately large (in the order of 200 feet).

However, all noise exposure is not expected to be continuous during the total construction period and noise related to construction is expected to cease upon completion of the proposed Project. These impacts are unavoidable and will be temporary.

The Acoustic Study found that noise level predictions in 2022 should fall within a range of 64.4 to 65.0 DNL along the residential tower's mauka face. Additionally, the construction of the tower will have a noise mitigating effect from traffic along North Vineyard Boulevard, and River Street, North Kukui Street, and Maunakea Street. Therefore, future traffic noise levels are predicted to not exceed the federal standard of 65 DNL (Ebisu, 2019). The Project is not anticipated to result in a significant, long-term adverse impact to existing noise conditions. The Project will not involve construction-related or permanent increases in noise levels that fail to meet federal regulations; or involve noise that persistently disrupts normal routines or causes harm to human health.

A separate analysis was done on the noise level predictions from a mature rail system projected for year 2030 by R.M. Towill Corporation, based on the operational HART system along Nimitz Highway and noise impacts described in the Final Environmental Impact Statement for the Honolulu High Capacity Transit Corridor dated July 8, 2010. Based on the projected noise impact at the residential tower at 215 North King Street located 145 feet away from the centerline of the rail line with a projected 63 DNL and the projected noise impact at the residential tower at 700 Richards Street located 85 feet away from the centerline of the rail line with a projected 63 DNL, the impact at the Project Tower located 2,000 feet away from the centerline of the rail line at Nimitz Highway will be between 52 and 53 DNL. For purposes of determining noise acceptability for funding assistance from federal agencies, an exterior noise level of 65 DNL or less is considered acceptable for residences. Since the 52 and 53 DNL projected impact from the HART system is well below the acceptable 65 DNL no mitigation measures are required.

3.7.3 Avoidance, Minimization, and/or Mitigation Measures

Under HAR, Title 11, Chapter 46, noisy construction activities are restricted to hours between 7:00 AM and 6:00 PM, from Monday through Friday, and exclude certain holidays. Noisy construction activities are normally restricted to the hours of 9:00 AM to 6:00 PM on Saturdays, with construction not permitted on Sundays. To mitigate short-term Construction-related noise, project Contractors will be required to comply with the provisions of HAR, Chapter 11-46, Community Noise Control. Construction activities will be subject to the following limitations:

- A Community Noise Permit will be obtained for construction activities conducted between 7:00 a.m. to 6:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 p.m. on Saturdays.
- The use of certain construction equipment, including pile drivers, hydraulic hammers, and jackhammers, will be limited to 9:00 a.m. to 5:30 p.m., Monday through Friday.
- An approved Community Noise Variance will be required for any construction activities that exceed permissible sound levels before 7:00 a.m. and after 6:00 p.m., Monday through Friday, or before 9:00 a.m. and after 6:00 p.m. on Saturdays, or at any time on Sunday and holidays.

Construction equipment and vehicles will be appropriately muffled and maintained to reduce backfires. All generators will be housed in baffle boxes (a sound-resistant box placed over or around a generator), be equipped with an attached muffler, or use other noise-abatement methods in accordance with industry standards. In addition, the use of properly muffled equipment, quieted portable engine generators, and diesel equipment would be specified for use within 500 feet of noise sensitive properties. Heavy truck and equipment staging areas would be located at areas that are at least 500 feet from noise sensitive properties

whenever possible. Truck routes which avoid residential communities should be identified wherever possible. Construction barriers may also be used, as required. Additionally, construction activities and use of heavy equipment would be scheduled as much as possible during daylight hours to avoid disturbing area residents during the evening.

Traffic noise levels at all units are predicted to not exceed the FHA/HUD standard of 65 DNL when the Project is complete. Therefore, long-term traffic noise mitigation measures are not required.

3.8 TERRESTRIAL BOTANICAL RESOURCES

3.8.1 Existing Environment

A *Biological Resources Survey for the Halewai'olu Senior Residences* ("Biological Survey") was prepared for the Project by Robert W. Hobdy in March 2019. See **Appendix H, Biological Resources Survey**.

Terrestrial botanical species consisted of a few small to medium sized trees in planter areas around the perimeter of the parking area. A variety of grasses and urban weeds were growing beneath these plants. A total of 45 plant species were recorded on the Project Site; none were native species or special plant habitats. No plant species currently proposed for listing or listed under either the federal or State endangered species statutes or Critical Habitat were identified during the survey on the Project Site. Nine plant species were of uncommon occurrence: plains bluestem (*Bothriochloa bladhii*), common sandbur (*Cenchrus echinatus*), swollen fingergrass (*Chloris barbata*), Bermuda grass (*Cynodon dactylon*), oleander (*Neriu oleander*), straggler daisy (*Calyptocarpus vialis*), pink tecoma (*Tabebuia heterophylla*), Geiger tree (*Cordia sebestina*) and false mallow (*Malvastrum coromandelianum*). The remaining thirty-six plant species were of rare occurrence Project Site (Hobdy, 2019).

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, the U.S. Fish and Wildlife Service (USFWS) was consulted regarding federally-listed species in the Project area. On June 28, 2019, a species list provided by the USFWS did not identify critical habitats or federally-listed terrestrial flora in the Project area (USFWS, 2019a). See **Appendix I, U.S. Fish and Wildlife Service – Technical Assistance.**

3.8.2 Potential Impacts

During construction, the Project will involve clearing, grubbing, and site disturbances related to construction. Short-term adverse impacts to rare, threatened, endangered or protected plant species in the Project area are not anticipated. Construction work will be within an urban area that has been previously disturbed and is heavily trafficked.

The Project involves the development of a residential facility in urban Honolulu. Long-term adverse impacts to rare, threatened, or endangered flora are not anticipated from the Project. The Project will not

result in a substantial decline or take of a federally-listed plant species or a substantial damage of a designated critical habitat.

3.8.3 Avoidance, Minimizations, and/or Mitigation Measures

Landscape designs may include the use of lowland native plant species to the extent practicable. Further mitigation measures are not anticipated to be required.

3.9 TERRESTRIAL FAUNAL AND AVIFAUNAL RESOURCES

3.9.1 Existing Environment

The Biological Survey prepared for the Project included a survey of terrestrial faunal and avifaunal resources in the Project area. See **Appendix H.**

Insects

One non-native insect species was recorded during the survey, the dung fly (*Musca sorbens*).

Mammalian

No mammalian species were seen in the Project area during the survey. An evening survey was conducted with the use of bat detector, and no activity from the endangered ʻōpeʻapeʻa or Hawaiian hoary bat (*Lasiurus semotus*) was detected. While not seen, non-native mammals, including domestic dogs (*Canis familaris*), domestic cats (*Felis catus*), mongoose (*Herpestes auropunctatus*), rats (*Rattus spp.*) and mice (*Mus domesticus*) may occur in the Project area. No mammalian species currently proposed for listing or listed under either the federal or State endangered species statutes were recorded at the Project Site (Hobdy, 2019).

The USFWS indicated that the Hawaiian hoary bat may occur in the Project area (USFWS, 2019a).

Avian

During the survey, two non-native species and two native species were observed during two site visits. The two non-native species, the zebra dove (*Geopelia striata*) and the common pigeon (*Columba livia*), were both common in and around the Project area (Hobdy, 2019).

The native manu o kū or white tern (*Gygis alba rothschildi*) was seen regularly flying above the Project area in small numbers and were judged to be uncommon. The white tern is an indigenous seabird that is found on many Pacific islands and atolls. Prior to 1959 white terns were not known to breed in the main Hawaiian Islands. However, their numbers have been growing on Oʻahu and can now be seen regularly in Honolulu, flying amongst tall buildings and landing in trees. Several were seen flying above the Project area. White terns do not carry federally protected, endangered or threatened status. Two indigenous migratory kōlea or Pacific golden-plovers (Pluvialis fulva) were seen as individuals in the Project area and were judged to be rare. The Pacific golden-plover is a migratory bird that spends its summers breeding and raising its young on arctic tundra, then flies south to spend its winters on Pacific islands. Many thousands winter in Hawaiʻi where they can be found in almost all habitats from sea level to mountain

tops. Pacific golden-plovers are quite common here and do not carry federally protected, endangered or threatened protected status. Both the White tern and kōlea are listed as protected species under the 50 CFR 10.13, Migratory Bird Treaty Act (Hobdy, 2019).

Waterbirds, such as the aeʻo or Hawaiian stilt (*Himantopus mexicanus knudseni*), ʻalae keʻokeʻo or Hawaiian coot (*Fulica alai*), ʻalae ʻula or common moorhen (*Gallinula chloropus sandvicensis*) or the koloa or Hawaiian duck (*Anas wyvlliana*) were not seen during the survey and no suitable wetland habitat occurs within the Project area. Seabirds, such as Hawaiian petrels (Pterodroma phaeopygia sandwichensii) and Newell's shearwaters (Puffinus newelli), were not seen during the survey, but may transit over the Project area when

flying between the ocean and nesting sites in the mountains during their breeding season (March through November) (Hobdy, 2019).

The USFWS indicated that the white tern may occur in the Project area (USFWS, 2019a).

3.9.2 Potential Impacts

Pursuant to Section 7, ESA, informal consultation was conducted with USFWS to determine the impact of the Project on federally-endangered resources in the Project area. In a letter dated July 26, 2019, the USFWS concurred that the Project "may affect, but is not likely to adversely affect" Hawaiian seabirds, Hawaiian hoary bats, or Hawaiian waterbirds in the Project area (USFWS, 2019b). See **Appendix J, U.S. Fish and Wildlife Service – Informal Consultation**.

The following short-term impact analysis is based off informal consultation with the USFWS:

- Hawaiian seabirds – Nighttime work is not anticipated. If nighttime work becomes necessary there is the potential that nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds may collide with man-made structures and, if not killed outright, dazed or injured birds become easy targets of opportunity for feral mammals. However, an increase in light pollution due to the Project will be indistinguishable in urban Honolulu, and therefore is not likely to increase seabird fallout (USFWS, 2019b).
- Hawaiian hoary bat – During the clearing and grubbing phase of construction, woody plants or trees greater than 15 feet will not be removed or disturbed during the Hawaiian hoary bat's pup rearing season. Additionally, as discussed in Section 3.8.1, vegetation in the Project area consists of a few small to medium-sized trees in planter areas around the perimeter of the existing parking area and a variety of grasses and weeds (Hobdy, 2019); therefore, the likelihood that the Hawaiian hoary bat will utilize foliage and/or trees for nesting on the Project Site is not likely.
- Hawaiian waterbirds – The Project Site does occur near the concrete chanelized Nu'uanu stream, but this area is not suitable habitat for Hawaiian waterbirds, and their occurrence in the project area has not been observed. It is not probable that Hawaiian waterbird nests or chicks would be crushed as a result of the proposed project, as they are not known to occur within the project area. Therefore, the impacts are discountable. Because impacts from the proposed project are discountable, we concur with your determination that the proposed project may affect, but is not likely to adversely affect the Hawaiian waterbirds (USFWS, 2019b).

The Project involves the development of a residential facility in urban Honolulu. Long-term adverse impacts to rare, threatened, or endangered fauna are not expected from the Project. The Project will not result in a substantial decline or take of federally-listed insect, mammalian or avian species; a substantial damage of a designated critical habitat; or a substantial interference with daily or seasonal movements of migratory seabirds.

3.9.3 Avoidance, Minimization, and/or Mitigation Measures

During construction, the following mitigation measures will be implemented to minimize the potential for impacts to avifaunal species, such as Hawaiian seabirds, Hawaiian waterbirds and the Hawaiian hoary bat:

- Trimming of trees greater than 15-feet tall will not occur between June 1 and September 15, and barbed wire will not be used for fencing;

- If nighttime work becomes necessary, construction will be avoided during seabird fledgling season (September 15 through December 15) and outdoor lighting will be sensor activated or turned off to avoid seabird disorientation and fallout;
- All outdoor lights shall be fully shielded so that the bulb can only be seen from below bulb height and used when needed, and automatic motion sensors shall be installed or turned off when human activity is not occurring in the lighted area;
  Erosion control for earth disturbing activities will be employed to ensure that sediments are not delivered to drainages or waterways as a result of the Project;
- Construction crews will be informed of potential endangered species that may occur within or transit through the Project area and that any intentional physical interactions with identified endangered species will be explicitly prohibited;
- If a previously undiscovered nest is found after work begins, work will cease within a minimum radius of 100 feet of the nest, and USFWS will be contacted (808-792-9400) within 24 hours; and
- Contact USFWS within 24 hours of finding a downed seabird. If alive, place the bird in the cat kennel and contact Save Our Shearwaters (808-246-4348) immediately for further instruction on where to bring the bird (USFWS, 2019b).

No significant adverse long-term or cumulative impacts to fauna are anticipated. Further mitigation measures are not anticipated to be required.

4.0 PUBLIC SERVICES

4.1 TRANSPORTATION FACILITIES

4.1.1 Existing Environment

The MAR analyzed existing traffic operations at two intersections near the Project Site (Kukui Street/Maunakea Street and Kukui Street/River Street), estimated trip generation, reviewed site access and considered the Project's potential impacts on pedestrian, bicycle and transit modes (Fehr and Peers, 2019). See **Appendix E**, **Focused Mobility Analysis Report**.

Roadway System

Vehicle access/ to the Project Site is provided by Kukui Street and River Street. Egress from the Project Site is provided by River Street and a stop-controlled right turn onto North Vineyard Boulevard.

The analysis in the MAR is based on engineering methodologies published in the Highway Capacity Manual (HCM), published by the Transportation Research Board. The operations of roadway facilities are described with the term Level of Service (LOS). The HCM defines LOS as "a quantitative stratification of a performance measure or measures representing quality of service." HCM defines the six levels of service from the traveler's perspective, ranging from the best – LOS "A" – to the worst – LOS "F." LOS's "A," "B," and "C" are considered satisfactory levels of service. LOS "D" is generally considered a "desirable minimum" operating LOS. LOS's "E" and "F" are undesirable conditions. Intersection LOS is primarily based upon average delay in seconds per vehicle (sc/veh) (Fehr & Peers, 2019).

A description of the existing roadway system near the Project area is below:

- **River Street** is a local street that traverses in a mauka-makai direction and provides direct access to the Project Site. River Street is a one-way, one-lane street under the jurisdiction of City from

North Kukui Street to North Vineyard Boulevard. The posted speed limit is 25 mph. Makai of North Kukui Street, River Street becomes a pedestrian promenade and continues as a vehicular roadway makai of North Beretania Street;

- **North Vineyard Boulevard** is a major arterial road within the vicinity of the Project Site. It is a six-lane arterial that extends between Pālama Street and Lunalilo and is under the jurisdiction of State, Department of Transportation (HDOT). The posted speed limit is 30 mph. The intersections of North Vineyard Boulevard at River Street and Maunakea Street are signalized;
- **Kukui Street** traverses an ʻEwa-Diamond Head direction between Aʻala Street and Pali Highway. Kukui Street is a two-way, two-lane local street under the jurisdiction of the City, DTS. The posted speed limit of Kukui Street is 25 mph; and,
- **Maunakea Street** is a two-lane local street that is aligned in a mauka-makai direction. It is located on the Diamond Head side of the Project Site and connects North Vineyard Boulevard and Kukui Street. The posted speed limit is 25 mph. Maunakea Street is under the jurisdiction of DTS (Fehr & Peers, 2019).

The intersections of Kukui Street/Maunakea Street and Kukui Street/River Street were evaluated during weekday AM and PM peak periods (6:00 AM – 9:00 AM and 3:00 PM – 6:00 PM). The weekday AM peak hour of traffic occurred between the hours of 7:15 AM and 8:15 AM. Weekday PM peak hour of traffic occurred between the hours of 5:00 PM and 6:00 PM at the N Kukui Street/River Street intersection, and between 4:45 PM and 5:45 PM at N Kukui Street and Maunakea Street. Both intersections were found to function at a LOS C or better during the AM and PM peak hours (Fehr & Peers, 2019). See **Table 12, Existing (2019) Intersection Levels of Service.**

Public Transit Service

Bus service in the Project area is provided by Oʻahu Transit Services, which operates TheBus. The closest bus stops are located 0.1 mile away (or roughly a four-minute walk) from the Project Site on North Beretania Street at River Street (Stop ID: 439) and Nuʻuanu Avenue at North Vineyard Boulevard (Stop ID: 389). These bus stops serve about 25 different routes, which provide transit users good access to most destinations in and around Downtown Honolulu (Fehr & Peers, 2019).

Table 12: Existing (2019) Intersection Levels of Service

Intersection	Traffic Control	Peak Hour	Delay (seconds/vehicle)	LOS
1. North Kukui Street/River Street	Unsignalized	AM	7.6	A
		PM	7.5	A
2. North Kukui Street/Maunakea Street	Signalized	AM	21.3	C
		PM	23.5	C

Source: Fehr & Peers, 2019

The City is currently in the construction stages of its fixed rail transit system, Honolulu Authority for Rapid Transportation (HART) Rail, which begins in Kapolei and ends at Ala Moana Center in the PUC. The proposed transit system is being constructed in phases. The Chinatown Station No. 17 is planned to serve Chinatown, Pali, Downtown, and outlying residential areas, and is located approximately 0.4 mile southwest of the Project area. The station features ADA pedestrian access, bicycle parking, elevator and stairs, restroom, connections to the TheBus, and TheHandiVan pick- up and drop-off. The entire system is estimated to be operational by 2025. HART estimates that the operation of the rail system will remove approximately 40,000 vehicles from the roads by 2030 (HART, 2019).

Pedestrian and Bicycle Access

A description of the existing bicycle and pedestrian network near the Project area is below:

River Street – Project Site Sidewalks are provided along both sides of River Street, with an attached sidewalk on the Diamond Head side fronting the Project Site and a pedestrian pathway (separated by a landscaped buffer) on the ʻEwa side of the street adjacent to Nuʻuanu Stream. Marked crosswalks are provided at the River Street's intersection with North Kukui Street providing access from the Project Site to the River Street promenade. At the intersection with North Vineyard Boulevard a pedestrian signal is present providing a controlled crossing of this six-lane roadway. Designated bicycle facilities are not currently provided on River Street. Bicyclists are required to share the roadway with vehicles, although some cyclists choose to ride on the pedestrian path on the ʻEwa side of the street.

North Vineyard Boulevard includes sidewalks provided on both sides of the road. Crosswalks and pedestrian countdown signals are provided on the Diamond Head and makai legs of the intersection at Maunakea Street. As mentioned above, a pedestrian signal is provided at the intersection with River Street to provide a protected crossing of North Vineyard Boulevard. Separate or designated

bicycle facilities are not provided on Vineyard Boulevard in the vicinity of the Project. Bicyclists are required to share the roadway with vehicles.

Kukui Street includes sidewalks on both sides of the street. Crosswalks are provided across all roadway legs of the River Street intersection. Crosswalks and pedestrian countdown signals are also provided on all four legs of the Maunakea Street intersection. Separate or designated bicycle facilities are not provided on Kukui Street. Bicyclists must share the roadway with vehicles.

Maunakea Street includes sidewalks on both sides of the road. Crosswalks and pedestrian countdown signals are provided at the intersections with Kukui Street and Vineyard Boulevard. Separate or designated bicycle facilities are not provided on Maunakea Street. Bicyclists must share the roadway with vehicles (Fehr & Peers, 2019).

Pedestrian counts collected during the peak periods at the two study intersections indicated that the highest volumes of pedestrians crossing at a study intersection occurred during the PM peak hour, with 203 people crossing at the North Kukui Street/Maunakea Street intersection. Most pedestrians crossed Maunakea Street on the Diamond Head side of the intersection. The pedestrian pathways between the Project Site and the two nearest bus stops were found to provide adequate access in terms of pavement quality and limited conflicts with vehicles (Fehr & Peers, 2019).

Bicycle activity in the vicinity of the Project area is low, based on counts collected during the peak periods. A total of 11 bicyclists were observed at the North Kukui Street/River Street intersection during AM and PM peak hours, and 22 bicycles were observed at the North Kukui Street/Maunakea Street intersection during the AM and PM peak hours (Fehr & Peers, 2019).

4.1.2 Potential Impacts

Roadway System

During construction, short-term impacts to traffic circulation may occur; however, traffic impacts will be temporary and will cease with the completion of the Project. Traffic increases will result from construction crews traveling to and from the Project Site, as well as construction vehicles making deliveries and removing demolition debris.

Once construction is completed, the project is forecasted to generate 310 net new daily vehicle trips, five net new AM peak hour trips (0 inbound/5 outbound), and 11 net new PM peak hour trips (3 inbound/8 outbound). It should be noted that this forecast is a conservative estimation, as an existing daily driveway count was not completed for the survey (Fehr & Peers, 2019). The Project trip generation estimates are based on data that was developed using MainStreet, a web application developed by Fehr & Peers, and are summarized in **Table 13: Project Trip Generation Estimates**:

Table 13: Project Trip Generation Estimates

Project Component	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Senior Adult Housing - Attached	156 units	577	11	20	31	22	19	41
Transit/Walk/Bike Trip Reduction[4]		267	-7	-13	-20	-12	-11	-23
Existing Trip Reduction[5]		--	-4	-2	-6	-7	0	-7
Total		**310**	**0**	**5**	**5**	**3**	**8**	**11**

Source: Fehr & Peers, 2019

The Project will generate few vehicular trips and is expected to have a negligible impact on traffic operations. Therefore, no roadway improvements are proposed. Vehicular access for the Project will be provided by a single driveway on River Street at the makai end of the Project Site. This driveway provides access to the Project's parking area provided on the second and third stories of the building, which will provide approximately 51 parking spaces. In addition, the driveway provides access to a loading area on the first floor that can accommodate one van or single-unit truck for deliveries or passenger loading (Fehr & Peers, 2019).

The Project is not anticipated to have a significant long-term or a cumulative adverse impact on the existing traffic network in the Project area; and/or substantially decrease the LOS of the existing roadway network (e.g. change in LOS A to LOS F).

Public Transit Service

The Project is not anticipated to have a significant long-term or a cumulative adverse impact to existing bus services in the Project area and/or substantially increase the need for public transportation. Existing bus services appear to be sufficient to serve the Project. Multiple bus stops are located within a reasonable walking distance of the Project Site, with the two closest bus stops located within a four-minute walk. Pedestrian access to these stops appears to be accessible for a disabled person utilizing a wheelchair or a walking aid. The Project will be approximately 0.4 miles from the proposed HART rail Chinatown station. This rail will enhance transit access and further reduce the need for Halewai`olu residents to use or own a car (Fehr & Peers, 2019).

Pedestrian and Bicycle Access

[4] Internal capture and active/transit trip reductions calculated using MainStreet web app (see **Appendix E** for details).

[5] Existing trip reduction based on Project Site driveway counts conducted in March 2019.

Pedestrian circulation will be provided via the sidewalk fronting the Project Site along River Street, as well as a pedestrian alley located on the mauka side of the building providing access to a stairwell. All pedestrian access within the building is provided by stairs or elevators. The Project will provide bicycle parking stalls on levels 1-4 (Fehr & Peers, 2019).

The Project is not anticipated to have a significant long-term or a cumulative adverse impact to existing or proposed bicycle and pedestrian networks in the Project area. The Downtown TOD Plan identifies pedestrian intersection improvements that are to be made at the River Street's intersections with Kukui Street and North Vineyard Boulevard. A pedestrian signal was recently installed at River Street's intersection with North Vineyard Boulevard. The Project will not conflict with these improvements or significantly impact the existing sidewalk provided along its frontage. *The O'ahu Bike Plan* (2012) provides guidance on desired bike facilities across the island of O'ahu. This plan is currently being updated. The *O'ahu Bike Plan Update (*2018 Draft) identifies a proposed bicycle path on the 'ewa side of River Street, and proposed bicycle lanes on both sides of North Vineyard Boulevard and North Kukui Street. The Project will not conflict with the installation of these bicycle facilities (Fehr & Peers, 2019).

4.1.3 Avoidance, Minimizations, and/or Mitigation Measures

Roadway System

During construction, the following mitigation measures will be implemented to minimize disruptions to traffic:

- The General Contractor may schedule heavy truck activity as much as possible between the hours of 9:00 a.m. and 3:00 p.m. on weekdays. Work on weekends may also be avoided to minimize traffic disruptions. The Honolulu Police Department (HPD) will be notified prior to periods of heavy truck activity or during transport and operation of heavy equipment.
- The General Contractor will be required to keep all construction vehicles in proper operating condition and ensure that material loads are properly secured to prevent dust, debris, leakage, or other adverse conditions from impacting public roadways.
- Traffic control barricades, cones, signage, and lighting will be used as necessary to alert drivers and delineate construction boundaries. Staging areas will be located on site. Approach signs and a flag person will be positioned to direct traffic through temporary traffic control zones as necessary.
- Construction schedules will be coordinated with other nearby properties that have planned improvements to ensure minimal effects on local streets.

Public Transit Service

No mitigation measures are proposed.

Pedestrian and Bicycle Access

No mitigation measures are proposed.

Future Traffic Plans to be Submitted, As Required by DPP

1. A Construction Management Plan (CMP) will be submitted to DPP for review and approval prior to the issuance of demolition/building permits for major construction work. The CMP will identify the type, frequency, and routing of heavy trucks and

construction related vehicles. Every effort will be made to minimize impacts from these vehicles and related construction activities.

The CMP will identify and limit vehicular activity related to construction to periods outside of the peak periods of traffic where feasible, utilizing alternate routes for heavy trucks, provisions for either on-site or off-site staging areas for construction related workers and vehicles to limit the use of on-street parking around the Project site, and other mitigation measures related to traffic and potential neighborhood impacts. Preliminary or conceptual traffic control plans will be included in the CMP. The Applicant will document the condition of roadways prior to the start of construction activities and provide remedial measures, as necessary, such as restriping, road resurfacing, and/or reconstruction if the condition of the roadways has deteriorated as a result of the related construction activities.

2. A Traffic Management Plan (TMP) will be submitted and approved prior to the issuance of the (temporary) Certificate of Occupancy (CO). The TMP will demonstrate how the loading area will be managed with the mix of residential drop-off/pick-up as well as trash pick-up and commercial loading activities.

3. Updates to the Focused Mobility Analysis Report (MAR) will be provided approximately one year after the issuance of the CO, to validate the traffic projections, trip reduction rates, distribution, and assignment contained in the initial MAR dated August 6, 2019.

4.2 PARKS, OPEN SPACE AND RECREATION FACILITIES

4.2.1 Existing Environment

The Project Site is near several recreational facilities in the Downtown-Chinatown community. The Project Site is bounded by River Street to the northwest. The sidewalks along River Street serve as a promenade also known as Sun Yat Sen Mall along the Nu‘uanu Stream, located approximately 54 feet north of the Project Site. Further south, River Street becomes a pedestrian-only promenade adjacent to the Chinese Cultural Plaza, which is host to various cultural events throughout the year. The Foster Botanical Garden, which is managed by the City, Department of Parks and Recreation (DPR), is located approximately 246 feet northeast of the Project Site. Beretania Community Park, managed by DPR, is located approximately 0.16-mile northwest of the Project Site. Kauluwela Community Park, managed by DPR, is located approximately 0.18-mile north of the Project Site. See **Figure 16: Parks and Recreation Facilities**.

4.2.2 Potential Impacts

During construction, a short-term, increase in traffic congestion may have effects on the public accesses to the Sun Yat Sen Mall along the Nu‘uanu Stream. Minor impacts to the existing noise conditions and air quality may also occur as a result of construction activities. However, these construction-related impacts will be temporary, and will cease upon Project completion.

Residents of the Project will benefit from the existing surrounding community and social networks, and the convenient proximity to recreation activities and social opportunities. Access to parks and open space would give senior residents an opportunity to maintain their health by providing ample space to walk. Moreover, the Project will include recreational facilities for future senior residents, such as a garden,

recreation deck, computer room, and pet area. The multi-purpose and activity rooms on the ground floor will also be available for residents and may host neighborhood events, thus encouraging social networking with the surrounding community.

The Project is not anticipated to have a significant adverse long-term impact on the existing parks and recreational resources, as the proposed Project will not involve a long-term loss of access to, permanent change to or conflict with any parks or recreational resources.

4.2.3 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are proposed.

4.3 FIRE, POLICE AND MEDICAL SERVICES

4.3.1 Existing Environment

Fire protection services on O‘ahu are provided by the City, HFD. HFD responds to emergencies including, but not limited to fires, emergency medical calls, hazardous materials incidents, motor vehicle accidents, natural disasters and technical rescues. The Central Fire Station 01 is located approximately 0.3-mile south of the of the Project Site at 104 South Beretania Street

Police protection services on O‘ahu are provided by the City, HPD. HPD divides the island into eight patrol districts; district stations are located in Kalihi, Pearl City, Kapolei, Wahiawa, and Kaneohe, and police substations are located in Waianae, Kailua, Kahuku, Waikiki, and Chinatown. The Project area is within District 1 – Central Honolulu, Sector 1, which is based at the Downtown Substation located approximately 0.3 miles southwest of the Project Site at 79 North Hotel Street.

Emergency medical service is provided by the City’s Emergency Services Department (DEM), Emergency Medical Services (EMS) Division. EMS operates 22 ambulance units under two districts. All ambulance units are designated as advanced life support units, meaning they are staffed by at least two people. The Project area is served by District 2, which includes the southeast region of O‘ahu. HFD also responds to medical emergencies, providing first aid in coordination with EMS.

Medical services in close proximity to the Project Site include the Kuakini Medical Center, located approximately 0.47-mile northeast, and the Queen’s Medical Center, located approximately 0.6-mile southeast of the Project Site. Kuakini Medical Center is a private hospital licensed for 212 acute care beds that includes 188 medical/surgical beds and 24 critical care beds. The Queen’s Medical Center hospital is licensed for 505 acute and 28 sub-acute care beds. Queen’s serves as the major referral center for cancer, heart disease, neuroscience, orthopedics, surgery, emergency medicine, and behavioral health, and has the only organ transplantation program in the state. Queen’s is also the state’s designated trauma center - the first and only Level I trauma center in the state.

Figure 16: Parks and Recreation Facilities



4.3.2 Potential Impacts

During construction, there may be an increase in phone calls to HPD regarding Project-related traffic and noise. There may also be minor adjustments to HPD's manpower if the Project requires traffic control during the construction. Additionally, construction activities could potentially increase the demand on police and medical services should worker safety emergency situations arise. Emergency vehicle access to the Project Site will be maintained for the duration of construction. Increased calls to HFD are not expected to result from construction activities.

The Project will increase the population within the immediate Project area; however, the residential facility will not substantially increase the population in the region, as it is assumed the future residents will be relocating from other communities in Honolulu. The Project is not anticipated to have a significant long-term or a cumulative adverse impact on existing fire, police and medical services, as the Project will not result in an appreciable increase on the demand for such services; or lead to an obstruction or reduction of such services, which would endanger the health and safety of individuals on the Project Site or surrounding community.

4.3.3 Avoidance, Minimization, and/or Mitigation Measures

In the interest of protecting seniors of the building, the residences will be private with controlled access and only residents (or their guests) will be allowed entry to the residences. A resident manager will also remain onsite.

The residential facility will be designed and built in compliance with applicable fire code requirements, as listed in ROH Chapter 20. The residential facility will be provided with approved water supply and flow required for fire protection. Construction drawings will be submitted to the Fire Prevention Bureau of HFD for review and approval. Coordination with HPD during construction will be necessary to mitigate traffic congestion and ensure public safety. Further mitigation measures are not anticipated to be required.

4.4 EDUCATION FACILITIES

4.4.1 Existing Environment

The Project Site is located within the State Department of Education's (DOE) McKinley Complex (Kaimuki-McKinley-Roosevelt Complex Area), which includes the following schools: Kaahumanu Elementary, Kaiulani Elementary, Kauluwela Elementary, Lanakila Elementary, Likelike Elementary, Royal Elementary, Central Middle School, and McKinley High School. These schools serve approximately 6,440 students (DOE, 2017). Public charter schools located within the McKinley Complex include the Myron Thompson Academy and Voyager School. The Complex also includes the McKinley Community School.

4.4.2 Potential Impacts

The Project involves a residential facility for seniors aged 62 and older. Therefore, the Project is not anticipated to have a significant long-term or cumulative adverse impact on the public-school system.

4.4.3 Mitigation Measures

No mitigation measures are proposed.

4.5 POTABLE WATER

4.5.1 Existing Environment

The City, BWS constructs, operates and maintains O'ahu's municipal potable water system, which comprises of an interconnected distribution network of reservoirs, wells, shafts, water tunnels, booster and pumping stations and water mains.

A *Halewai'olu Senior Residences Preliminary Engineering Report* ("Preliminary Engineering Report") was prepared for the Project by Gray, Hong, Nojima & Associates, Inc. in April 2019. See **Appendix K, Preliminary Engineering Report**. The Preliminary Engineering Report confirmed that the existing BWS potable water system serving the Project Site consists of an 8-inch diameter water line which runs within River Street. Four water laterals serve the Project Site from the 8-inch water line. There are nine abandoned water meter boxes located within the concrete sidewalk fronting the Project Site (Gray et al., 2019). See Attachment C-4 of **Appendix K** for locations of existing utilities.

According to a letter from the BWS, dated March 7, 2019, "the existing water system is adequate to accommodate the domestic demands and offsite fire protection for the proposed development." However, the final decision on the availability of water will be confirmed during the building permit application approval process (Gray et al., 2019).

4.5.2 Potential Impacts

During construction, the Project will involve the use of potable water for dust control, vehicle wash down, concrete mixing, general housekeeping activities, and for pipe pressure testing. However, quantities of water required for these uses are relatively minor, and these uses will be intermittent and will cease upon Project completion.

The Project involves the development of a residential facility with 156 multifamily units. The projected average daily demand per multifamily unit is 400 gallons per unit. Therefore, the Project is anticipated to require 62,400 gallons per day (GPD) for the 156 units (Gray et al., 2019). The Project is not anticipated to result in a significant long-term or cumulative adverse impact on the potable water system as the system is adequate to support the Project. The Project does not involve the creation of point-source pollution that leads to permanent damage to the watershed, surface waters or aquifers that replenish O'ahu's potable water supply; nor does the Project involve a substantial alteration to any portion of the existing potable water system; or a substantial consumption of potable water.

4.5.3 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are proposed. The HSD will continue to consult with BWS as the Project moves forward to the building permit application stage.

4.6 ELECTRICAL AND COMMUNICATIONS FACILITIES

4.6.1 Existing Environment

The Project Site is served by an existing 167 KVA, 120/240V, single phase, pad- mounted Hawaiian Electric Company (HECO) transformer located at the southern driveway, which connects to underground HECO duct lines that are routed along River Street, Maunakea Street, North Kukui Street, and North Vineyard

Boulevard. A HECO handhole located on the sidewalk next to the southern driveway currently distributes primary utility power to the Project Site (Gray et al., 2019).

The Project Site is served by Spectrum's telecommunications services via Hawaiian Telcom (HT) underground conduit system. Spectrum uses the HT pull box located next to the southern driveway near the HECO handhole to deliver telephone, internet and cable television services. HT has confirmed that the existing infrastructure is adequate to provide telephone and high-speed internet services to the Project Site, in accordance with a will serve letter from HT, dated September 27, 2016. The HT pull box will be the point of connection for both HT and Spectrum services. See Attachment E-1 of **Appendix K** for the HT will serve letter. (Gray et al., 2019).

4.6.2 Potential Impacts

During construction, the Project is not anticipated to create a delay or disruption in the provision of electrical power for the surrounding community. Construction activities will not adversely impact the existing communications system.

The Project may include extending new HECO underground conduits, installing new handholes and manholes, and upsizing primary utility conductors, pending HECO's upgrade of underground duct lines and circuits. The Project may include the installation of fiber optic cables to deliver telephone, high-speed internet services and digital television services. Associated off-site improvements will include telecommunication system improvements, including extending new underground conduits, installing new pullboxes, handholes and manholes, and supplementing the existing underground support structure (Gray et al., 2019).

The Project is not anticipated to have a significant long-term or a cumulative adverse impact on the existing electrical or communications facilities, as the electrical power demands do not exceed the utility providers' service capacity and the Project is not anticipated to create a delay or disruption in provision of electrical power or communications for the surrounding community.

4.6.3 Avoidance, Minimization, and/or Mitigation Measures

In the event of a utility power outage, the General Contractor should be prepared with a backup power generator on-site. HSD will continue to coordinate with the HECO, HT, and Spectrum as the Project progresses. The Project will obtain necessary permits and regulatory approvals prior to construction.

4.7 WASTEWATER FACILITIES

4.7.1 Existing Environment

The Project Site is served by an existing 6-inch sewer lateral that connects to a 12-inch sewer main located in River Street, owned and maintained by the City, ENV. The 6-inch sewer lateral is located approximately at the midpoint of the northwestern boundary fronting River Street (Gray et al., 2019).

4.7.2 Potential Impacts

During construction, the Project will not have an adverse impact on the existing wastewater facilities. The General Contractor will provide portable toilets for use by the construction workers. Wastewater from the portable toilets will be collected and discharged into an acceptable sewer manhole designated for receiving septage.

The Project involves a residential facility with 156 units. The estimated design flow for 156 units (716.8 persons) is 152,388 GPD. A Sewer Connection Application (2019/SCA-0111) for the Project was issued by the City, DPP on January 29, 2019 (Gray et al., 2019). See Attachment C-6 of **Appendix K**.

The Project is not anticipated to result in a significant long-term or a cumulative adverse effect on the existing wastewater system, as the wastewater collection system is adequate to support the proposed development.

4.7.3 Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures are proposed.

4.8 SOLID WASTE COLLECTION AND DISPOSAL

4.8.1 Existing Environment

The City, ENV, Refuse Division is the agency responsible for the collection, transport and disposal or O‘ahu’s solid waste. Liquid and solid waste is disposed of at the Campbell Industrial Park’s H-POWER Plant and the Waimānalo Gulch Sanitary Landfill (WGSL) in Kapolei. Construction and demolition (C & D) solid waste is handled of by the privately-owned PVT Land Company’s landfill, the only publicly-accessible, commercial landfill on O‘ahu. The PVT landfill accepts approved contaminated soil for disposal or use in solidification of liquid wastes and sludge material for processing or disposal.

4.8.2 Potential Impacts

During construction, liquid waste, solid waste and C & D debris will be generated. Liquid waste will be contained in a controlled area such as a holding pit, sediment basin, or portable tank; containment areas will be impermeable and leak free and will not be located where accidental release of the liquid will discharge into storm drains. The General Contractor will be responsible for the disposal of solid waste and C & D debris at the appropriate above-mentioned landfills in accordance with City, State and federal regulations. The General Contractor will also be responsible for ensuring that the loads are properly secured and covered to prevent the inadvertent loss of solid waste while in transit and to prevent the commingling of rainfall with solid waste.

The Project involves the development of a residential facility with a total of 156 units. A private company will pick up and transport solid waste generated by this Project. While the Project will lead to a generation of solid waste, the Project is not anticipated to lead to a substantial increase in the generation of liquid and solid waste, nor will the Project lead to a delay or disruption in the City’s collection of solid waste for the surrounding community. Therefore, no significant long-term or cumulative adverse impacts to the City’s solid waste collection and disposal facilities are anticipated.

4.8.3 Avoidance, Minimization, and/or Mitigation Measures

Disposal of solid waste and hazardous materials will be handled in accordance with City, State and federal rules and regulations. All construction-related materials and debris will be disposed of at an approved landfill site. The General Contractor will ensure that waste loads are properly secured and covered to prevent the inadvertent loss of waste along the roadway and the commingling of rainfall with waste materials while it is in transit.

4.9 STORM WATER AND DRAINAGE

4.9.1 Existing Environment

The City, DFM, Storm Water Quality Branch (SWQB), is responsible for maintaining the drainage system on O'ahu. The Project Site is almost entirely covered by impervious surfaces, consisting of an existing building and an asphalt paved parking lot. Storm water runoff flows from the Project Site toward a concrete swale near the southern most driveway and into a catch basin on River Street. The existing drainage system fronting the Project Site consists of concrete gutters along both sides of River Street and curb inlets/catch basins located at the northwest boundary and near the intersection of River Street and North Kukui Street. Underground 18-inch diameter, reinforced, concrete pipes run from the catch basins and discharge into the adjacent Nu'uanu Stream (Gray et al., 2019).

4.9.2 Potential Impacts

Construction will involve excavation, trenching and other ground disturbing activities. The total area of construction ground disturbance will not exceed the 1-acre size threshold which triggers the need for a NPDES permit, construction storm water discharges from DOH, CWB, in accordance with HAR, Chapter 11-54 and 11-55.

Once construction is completed, approximately 94% of the Project Site will be impervious surfaces of either paved or roof topped areas. In accordance with the City's R*ules Relating to Storm Drainage Standards*, the estimated storm water runoff is 3.06 cubic feet/second. On-site storm water will be collected by a drain inlets, biofiltration cells and underground drainage pipes which are anticipated to connect to the existing catch basin located in River Street (Gray et al., 2019).

Any increase in runoff caused by an increase in impervious surfaces will be retained on site as required to meet City standards, and onsite drainage will be designed to flow away from the building, towards landscaped areas.

The Project is not anticipated to have a significant, long-term or cumulative adverse impact to the City's existing storm drainage system. Moreover, storm water runoff will be pre-treated on site before entering the City's storm water drainage system. Further mitigation measures are not anticipated to be required.

4.9.3 Avoidance, Minimization, and/or Mitigation Measures

During construction, BMPs will include the installation of a stabilized construction entrance/exit, catch basin inlet protections, and temporary filter sock perimeter controls. See additional discussion in **Section 3.4.3**. See Sheets C005 and C006 in **Appendix A.**

The Project will comply with DPP's Administrative Rules, Title 20, Chapter 3, *Rules Relating to Water Quality*. Post-construction storm-water requirements include retaining as much water on-site as feasible with the use of LID retention BMPs, whilst using a biofilter to filter residual storm water that is not retained

on-site. The Project Site will be permanently stabilized using vegetative covering, pavement or equivalent, prior to the removal of erosion and sediment measures. For a full list of post-construction storm water BMPs, see Section 3.4 of **Appendix K**.

4.10 HAZARDOUS WASTES AND MATERIALS

4.10.1 Existing Environment

A *Hazardous Materials Assessment Survey* ("HMAS") was prepared by Ford & Associates, Inc. in April 2019; see **Appendix L, Hazardous Materials Assessment Survey**. The HMAS was performed of the interior and exterior portions of the existing building on the Project Site. The HMAS resulted in the identification, bulk sample collection, and laboratory analyses of suspect hazardous materials, such as asbestos-containing materials (ACM), lead-based paint (LBP). The HMAS confirmed that nine materials in the existing building contain ACM above the regulatory level of 1%, as defined by EPA and DOH. The HMAS did not find LBP above the EPA/HUD regulatory level of 0.5% lead by weight; however, seven paint samples reported lower concentrations of lead. Other potentially hazardous materials observed on the Project Site include the following: Polychlorinated Biphenyls- Containing (PCB) units such as fluorescent lighting fixtures; mercury-containing fluorescent bulbs and high intensity discharge lamps; chlorofluorocarbon (CFC)-containing air conditioning units; ionizing radiation smoke detectors containing a small radioactive source (typically Americium 241); and emergency exit light fixtures that contain a rechargeable lead-acid battery (Ford & Associates, 2019).

Phase I Environmental Site Assessment

"Michaels Development Company ("Client") retained Bureau Veritas North America, Inc. (Bureau Veritas) to conduct a Phase I Environmental Site Assessment ("ESA" or "assessment") of Halewaiolu Residences property located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012) in Honolulu, Oahu, Hawaii (the "subject property"). The objective of the assessment was to provide an independent, professional opinion regarding the presence or absence of recognized environmental conditions, as defined by ASTM International (ASTM), associated with the subject property."
A complete copy of the Phase I Environmental Assessment is provided in **Appendix R**.

FINDINGS AND OPINIONS

"Bureau Veritas has performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 for Halewaiolu Residences located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012) in Honolulu, Oahu, Hawaii (the "subject property"). Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 1.3 of this report.

This assessment has revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property, except for the following:

A. **Former Auto Repair Facility on the Northeast Adjoining Property-** The 1950 and 1955 fire insurance maps depicted an "Auto Repair" on the northeast adjoining property. The 1955 fire insurance map also depicted an "Oil and Grease Storage" on the northeast adjoining property.

   This is considered a recognized environmental condition because there is a potential for past releases of petroleum hydrocarbons and other chemicals from the northeast adjoining

property to migrate to the subject property. Bureau Veritas recommends conducting a subsurface investigation along the northeastern boundary of the subject property, including soil and groundwater sampling with laboratory analyses.

However, this assessment has revealed the following environmental conditions, which are not considered recognized environmental conditions, as defined by ASTM, in connection with the subject property:

B. **Suspect ACM** –The building on the subject property was constructed in 1959 and may contain ACM. Suspect ACM were observed in the subject building, including vinyl floor tiles with associated mastic, drop and hard wall plaster. The building may also include suspect ACM that were hidden from view, such as caulking or sealant between building components and roofing materials.

   This finding is not considered a recognized environmental condition because asbestos is not an ASTM issue. However, prior to any activities (i.e., repair, renovation, demolition) which may disturb suspect ACM, these and similar materials should be sampled and analyzed for possible asbestos content. If these materials are found to contain asbestos, the building owner or leased space tenant may be required to comply with applicable United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), National Emission Standards for Hazardous Air Pollutants (NESHAPS), and state and local regulations.

C. **Suspect LBP-** The subject property is improved with a multi-tenant building constructed in 1959. Therefore, LBP could be an issue at the subject property. The way to determine if LBP is an issue is through sampling and laboratory analysis to determine the presence or absence of LBP.

   This finding is not considered a recognized environmental condition because LBP on buildings is not considered an ASTM issue. Sampling and analysis should be conducted prior to renovation or demolition activities that may disturb painted surfaces. If the paints are found to contain lead, the building owner or leased space tenant may be required to comply with applicable USEPA, and state and local regulations."

A Phase II Environmental Site Assessment was conducted to further investigate concerns presented in this Phase I Environmental Site Assessment.

Phase II Environmental Site Assessment

"Halewaiolu Senior Development, LLC retained Ford & Associates, Inc. (FAI) to perform a Phase II Environmental Site Assessment (ESA) for the Halewaiolu Residences Redevelopment Project, located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012), in Honolulu, Oahu, Hawaii (herein referred to as the "site"). A Site Location Map showing the location of the site is included as Figure 1, located behind the *Figures* tab.

The site is the current location of a two-story, multi-tenant commercial building intended for redevelopment. In July 2015, Bureau Veritas North America, Inc. (BVNA) conducted a Phase I ESA of the

site to assess for the presence of recognized environmental conditions (RECs) related to historical use (BVNA, 2015). Based on this investigation, BVNA identified the former presence of automobile repair structures and an oil and grease storage area on the northeast adjacent property.

Therefore, the purpose of this investigation was to perform subsurface soil and groundwater sampling and analysis at the site to assess for the potential migration of chemicals of potential concern (COPC) from these historical features on the neighboring property."

SUMMARY AND CONCLUSIONS

"Based on review of the fire insurance maps from 1950 and 1955, the northeast adjoining property was occupied by a structure labeled "Auto Repair." Furthermore, on the 1955 fire insurance map, there was an additional structure on the northeast adjoining property labeled "Oil and Grease Storage." Therefore, the purpose of this investigation was to perform subsurface soil and groundwater sampling and analysis at the site to assess for the potential migration of COPC from these historical features on the neighboring property.

FAI mobilized to the site on April 1, 2019 to perform soil and groundwater sampling activities. During this time, FAI supervised Geotek, a drilling subcontractor, during the drilling of three borings at the site (identified as B-1 through B-3). Drilling and subsurface soil sampling were performed using the direct push drilling method. Soil samples were collected using the multi-increment sampling approach recommended by the HDOH (HDOH, 2017b). In each boring, one soil sample was collected from the capillary fringe. Following completion of each boring, Geotek installed a temporary groundwater well consisting of 1-inch diameter Schedule 40 PVC well casing, with 0.010 inch screen size. Groundwater purging and sampling was performed following installation, using a low-flow sampling technique (HDOH, 2017b).

In total, three soil samples (identified as *B-1*, *B-2*, and *B-3*) and three groundwater samples (identified as *MW-1* through *MW-3*) were collected from the site and analyzed for the following:

- TPH-GRO, DRO, and RRO using EPA Methods 8015M.
- Total Lead and Cadmium using EPA Methods 6020B/3050B/3005A.
- PCBs using EPA Methods 8082A/3550C/3510C.
- VOCs using EPA Methods 8260C/5030B.
- PAHs using EPA Method 8270D/3550C/3010C.

Based upon the laboratory analytical results, no COPC were detected above the laboratory reporting limits, or the Unrestricted and C/I EALs in either the soil samples or groundwater samples. Therefore, it does not appear that the site has been impacted by historical features on the neighboring property, and no further investigation appears necessary at this time."

A complete copy of the Phase II Environmental Assessment is provided in **Appendix S**.

4.10.2 Potential Impacts

During construction, the Project will involve demolition of the existing building, containing hazardous materials. As a result, the following hazardous materials will require removal and proper disposal prior to demolition:

- ACM must be properly removed and disposed.
- Fluorescent light ballasts and high intensity discharge light fixtures be inspected for PCB units as well as mercury-containing waste.
- Two pad-mounted, split-system air-conditioning units containing CFC should be removed and recycled.
- No special handling or disposal will be required when disturbing LBP.
- Ceiling-mounted smoke detectors that have radioactive sources.
- Emergency exit-light fixtures that rechargeable lead-acid battery (Ford & Associates, 2019).

The Project, as a multi-family dwelling for seniors, is not anticipated to have a significant long-term or cumulative adverse impact on the use of hazardous wastes and materials. The Project involves the removal of existing hazardous materials from the Project Site; and therefore, a minor beneficial impact on surrounding environment.

4.10.3 Avoidance, Minimization, and/or Mitigation Measures

HSD will coordinate with the HDOH, Asbestos Abatement Office prior to demolition and work with a General Contractor who is trained in LBP and ACM abatement to safely remove hazardous materials and limit any potential exposure to anyone who may be onsite. ACM materials will be properly removed and disposed of at an approved waste depository facility prior to general demolition/construction activities. A licensed asbestos abatement contractor shall conduct the removal and disposal work under the supervision of a qualified industrial hygiene professional. Additionally, all demolition and construction activities would adhere to the provisions of the HDOH's *Guidance for Construction and Demolition Waste Disposal* (HDOH, 2013) to ensure proper handling of potentially contaminated materials. All abatement work will be performed per all applicable State and federal requirements and guidelines. Upon completion of the work, all required clearances will be provided for the abated areas of work and LBP chips will be HEPA-vacuumed from the surrounding ground and placed in DOT-approved disposal containers. If there are any potential hazardous wastes or materials found during construction that were not identified during the survey, the General Contractor should make a hazardous waste determination in accordance with the HAR, Chapter 11-262-11, *Hazardous Waste Management*, and then properly dispose the hazardous material to an approved waste facility.

Fluorescent light ballasts not displaying the "No PCBs" indication should be removed from the light fixture, placed in a State-approved waste container/drum, properly labeled, and disposed as PCB waste. PCB waste generated in the State must be shipped to an approved waste depository facility located in the Continental U.S. for final disposal. All lighting fixtures and high intensity discharge lamps that may contain mercury shall be managed in accordance with the 40 CFR Part 273. Bulbs/lamps may be recycled, if possible. CFC-containing units, ionizing radiation smoke detectors, and emergency exit light fixtures shall be removed and recycled in accordance with current regulatory requirements prior to demolition.

During construction, the Contractor shall also prevent or reduce the discharge of hazardous materials to storm water through proper material use and waste disposal. Construction materials and hazardous substances, stockpiles and other sources of pollution shall not be stored in buffer areas, near areas of concentrated flow, or areas abutting the MS4, receiving waters, or drainage improvements that discharge off-site. In the unlikely event that hazardous materials are discharged to the MS4, the DFM, HFD, and HPD shall be immediately notified, and a written report shall detailing the pollutants discharged, reasons for the discharge, and the measures that will be taken to prevent a reoccurrence of the discharge will be submitted to DFM.

5.0 SOCIOECONOMIC, HISTORIC AND CULTURAL ENVIRONMENT

5.1 SOCIO-ECONOMIC ENVIRONMENT AND DEMOGRAPHICS

This section details the Project's potential impacts on the following socio-economic indicators: population and housing, economic and public fiscal impacts, employment and earnings, and social networks. To support the analysis, *Halewai'olu Senior Residences 2019 Market Study* ("Market Study") was prepared by Ricky Cassiday in 2019; see **Appendix B**. Additionally, the *Halewai'olu Senior Residences Economic and Fiscal Impact Assessment* ("EFIA") was prepared by PBR Hawai'i and Associates (PBR) in 2019; see **Appendix M, Economic and Fiscal Impact Assessment**.

5.1.1 Existing Environment

Population and Housing

Table 14: Estimated Demographics Data for 2018 shows various summary data on current overall population demographics of the State, City, and the Urban Honolulu Census Designated Place (CDP), is generally comparable to the PUC.[6] An estimated 19.2% of the population in the Urban Honolulu CDP is over the age of 65, compared to 18.4% in Hawai'i (U.S. Census Bureau, 2018).

According to DBEDT's *Population and Economic Projections for the State of Hawai'i to 2045 (2018),* population aging is one of the most prominent features of the State's population trend, increasing by 3.3% annually across the State on average. Honolulu's senior population is projected to significantly increase over other segments of the population from 2020-2040. The projected population for those aged 65 to 84 is 154,087 in 2020, 175,938 in 2025 and 190,661 in 2040 (Cassiday, 2019). Figure 4: Population Growth Rates in **Section 2.5** illustrates the demographic changes projected over the next 20 years in the City.

Table 14: Estimated Demographics Data for 2018

	Urban Honolulu CDP	City	Hawai'i
Population	347,397	980,080	1,420,491
Race			
White	17.7%	21.7%	25.6%
African American	1.7%	2.8%	2.2%
Asian	54.1%	43%	37.6%
American Indian/Alaskan Native	0.1%	0.3%	0.4%
Native Hawaiian/Pacific Islander	8.1%	9.6%	10.2%
Two or More Races	17.4%	22.6%	24%
Hispanic/Latino	7.0%	10%	10.7%
Age			
65 and Over	19.2%	17.7%	18.4%
Median Income by Household	$65,707	$80,078	$74,923
Persons Below Poverty Level	11.6%	8.3%	8.8%

[6] DBEDT notes that the former Honolulu CDP was separated in 2010 into 3 areas – Urban Honolulu CDP, East Honolulu CDP and a portion placed in the already existing Hickam CDP. Comparably, the PUC is defined as extending "from the core of historic downtown Honolulu to Pearl City in the west and Waialae-Kahala" (DPP, 2004).

	Urban Honolulu CDP	City	Hawai'i
Median Home Value	$628,300	$626,400	$563,900
Median Gross Rent	$1,411	$1,653	$1,507
Median Household Size	2.62	3.06	3.02

Source: U.S. Census Bureau, July 1, 2018 estimates

Population trends will continue to impact the housing demand on the islands. According to the 2010 Census, the total number of housing units in the City was 329,724, with 92% of the units occupied. Approximately 26,000 units were vacant, with about one-third of them or 9,477 accessible to those seeking a housing unit. Most of the units were in Waikiki and Makiki and remain unaffordable to households with low- to moderate incomes. Thus, large numbers of low- to moderate-income households have very few options for housing. Honolulu has been named as the least affordable housing market in the nation in a number of studies and is rated one of the lowest in the nation, in terms of the rental unit vacancy rate (Cassiday, 2019).

Economic and Public Fiscal Impacts

The State's main source of revenue, in terms of Gross Domestic Product (GDP), is from industries such as "Government," "Real Estate, Rental, & Leasing," and "Accommodation & Food Services." Combined, these industries account for approximately 50% of the of the State's GDP. Hawai'i's GDP reached approximately $92 billion in 2018 (DBEDT, 2018).

The City's main source of revenue is real property taxes and a 0.5% surcharge in Gross Excise Tax (GET) collections (PBR, 2019).

Employment and Earnings

According to the Bureau of Labor Statistics (BLS), Urban Honolulu has a civilian labor force of 450,000 in August 2019. A majority of persons are employed in the following sectors: Government; Trade, Transportation and Utilities, Leisure and Hospitality; and, Professional and Business Services (BLS, 2019). The most recent unemployment rate for the City published by the DLIR was 2.8% (DLIR, 2019).

Persons below the poverty level are reflected in **Table 14**. According to DBEDT's *2018 State of Hawai'i Data Book,* the poverty level in the City is 8.7% among persons aged 18 to 64 years old and 7.7% among persons aged 65 years and over. By contrast, the Project Site is located in the HUD-defined 2019 QCT 51.00 with a poverty rate of 22.5%[7], substantially higher than the poverty rates across the City.

Social Networks

While not within the Chinatown SD as defined by the City, the Project's neighborhood is generally considered Chinatown (PBR, 2019). Historic Chinatown is vibrant and home to numerous stores, restaurants, and small business establishments. Various popular recreational and cultural facilities are

[7] A QCT is any census tract (or equivalent geographic area defined by the Census Bureau) in which at least 50% of households have an income less than 60% of the Area Median Gross Income (AMGI). HUD has defined 60% of AMGI as 120% of HUD's Very Low Income Limits (VLILs), which are based on 50% of area median family income, adjusted for high cost and low income areas.

located adjacent or near the Project Site (see **Section 4.2** for further discussion). Chinatown is also home to an engaged and active social community. HSD began conducting community outreach in August 2014 with various Downtown-Chinatown community stakeholders. Further discussion is provided in **Section 7.7**.

5.1.2 Potential Impacts

Population and Housing

The Project will not have adverse impacts to the existing population, demographics or a decrease in housing stock during and after construction.

Once construction is complete, the vast majority of the tenants living at the Halewai'olu Senior Residences are expected to be existing residents of O'ahu. However, about 5% or 6 to 10 persons, are projected to move from a neighbor island or from out-of-State because of the Project. The Project is not anticipated to increase population due to employment opportunities, as the majority of 96% of the labor force is expected to be filled by persons who are already established residents of O'ahu. The Project is also not anticipated to increase population due to visitation, as the Project will not have facilities that cater to visitors or tourists (PBR, 2019). On a neighborhood level, full occupancy of the Project's 156 units, is anticipated to result in approximately 210 persons. The Project is not anticipated to have a significant long-term or cumulative adverse impact on the existing population or a change in the demographics.

The Project involves the development of a new affordable, rental housing residential facility for seniors aged 62 and over at 80% and below of the HUD AMI. Currently there are no other affordable senior housing projects planned in the immediate area. Honolulu's real estate market is anticipated to see several years of increased prices for all condominium units, and the market for rental housing will experience a similar trend. The market for the proposed Project is promising, with the majority of comparable residential facilities exhibiting stable occupancies and low vacancy rates. Thus, there is adequate demand for the Project and it can be expected that the Project will attain and maintain a 97%-100% occupancy in the first 6 to 9 months (Cassiday, 2019). The Project is not anticipated to have a significant long-term or cumulative adverse impact on the existing rental housing stock.

Economic and Public Fiscal

The Project will not have adverse impacts or lead to a decrease in tax revenue during and after construction.

The total estimated development cost (direct, indirect and induced) of the Project is $85.6 million, subject to the review of the final construction budget of which $78.6 million is estimated to result in direct benefits for Hawai'i. This excludes certain non-construction related costs such as operating and lease-up reserves, developer fees, and entitlement expenses. Construction costs include labor and materials, as well as design, engineering, legal fees, permitting, insurance, administrative and other office costs. As of October 2019, HSD had already expended some $2.9 million, demonstrating their commitment to the Project (PBR, 2019). See **Table 15: Summary of Economic and Fiscal Impacts (2019 dollars)** for a summary of the economic and fiscal impacts of the Project in Hawai'i.

Table 15: Summary of Economic and Fiscal Impacts (2019 dollars)

	2020-2022 (Development period)	2023 (Operations)	Total/Stabilized Operations
Hawai'i development costs	$78.6 million	$0	**$78.6 million**
	-		
Full-time Equivalent (FTE) Employment (av. annual)[8]			
Development-related	260	0	**0**
Operations-related			
On-site[9]	0	5	**5**
Net new jobs on Island	1	12	**12**
Total personal earnings per year (av. annual)[10]			
Development-related	$17.9	$0.0	**$0.0**
Operations-related	$0.1	$0.9	**$0.9**
Average earnings per FTE job[5]			
Development-related	$69,000	n/a	**n/a**
Operations-related	$68,000	$74,000	**$75,000**
In-migrant resident population			
To the County	5	10	**10**
To the State	5	6	**6**
Net additional government revenues (annual)			
For the County	$0.00	$0.01	**$0.01**
For the State	$0.86	$0.02	**$0.02**
Revenue/expenditure ratio			
For the County	0.4	0.3	**0.4**
For the State	27.8	1.4	**1.5**

Source: PBR, 2019

As an affordable housing development, the Project is not conceived as a means of generating income for County or State. The Project will seek exemptions under the City's HRS, Chapter 201H process, considered key to the feasibility of such affordable housing developments. The Project is not anticipated to generate any real property taxes or other County revenues at this time except for the small commercial space on the ground floor, as the Project's affordable senior rental development is eligible for real property tax exemption throughout the regulated affordability period agreed to with the County and is also expected

[8] Average annual direct, indirect and induces impacts; FTE = defined as 40 hours per week or 2,080 hours per year.

[9] On-site estimates reflect direct employment only; other categories reflect total (direct, indirect and induced) impacts on a statewide basis.

[10] Earnings are defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance, and reflect total (direct, indirect and induced) impacts on a statewide basis.

to be exempt from GET. The Project is anticipated to generate approximately $0.9 million in State taxes as a result of the income taxes from employees, spending by residents (PBR, 2019).

At a neighborhood level, the Project will have a minor beneficial impact by bringing new investment and activity to a property where the existing improvements have been abandoned. The Project will attract new residents who are expected to enhance spending at area retail, dining, entertainment, and other commercial establishments. The Project is located within the Downtown TOD Plan area, which is expected to spur economic investment in the neighborhood. Since most residents are not expected to drive, they may have a positive impact on commerce, especially within the immediate vicinity of the project.

Employment and Earnings

The Project is not anticipated to have an adverse impact or lead to a decrease in employment and earnings during and after construction.

During construction, the Project is expected to generate approximately 780 FTE jobs, when considering direct, and indirect development expenditures; approximately 122 direct FTE jobs are expected during the years 2020-2022. Development-related positions attributable to the Project are to support total earnings of some $53.6 million over the three-year period evaluated, representing an average of about $17.9 million per year. These earnings are estimated to average $81,000 per direct FTE job, and $58,000 per indirect and induced job, for an overall average of $69,000 (PBR, 2019).

Once the Project is constructed and full-operational, it is expected to create 5 FTE direct jobs on-site. The Project is also expected to create 12 FTE jobs statewide, in terms of employment supported by direct purchases from vendors or other impacts of additional spending the Project generates. The latter could include jobs that are directly created by the Project off-site, such as for elevator maintenance, utility services, and the like, as well as those supported through indirect and induced effects. On average, these net new FTE direct, indirect and induced positions, are expected to earn about $75,000 per FTE job (PBR, 2019).

Social Networks

The Project will have a minor beneficial impact and will enhance social networks in the surrounding neighborhood. The Project will include a Multi-Purpose Room, Recreation Deck, Garden Area, Retail/Commercial Area, and two Activity Rooms. See Sheets A-111 and A-113 in **Appendix A**. These areas will be available to residents and the neighboring community. The Project will attract new residents who are expected to enhance spending at area retail, dining, entertainment, and other commercial establishments.

5.1.3 Avoidance, Minimizations, and/or Mitigation Measures

The Project will provide much need affordable senior housing that is intended to support the island's aging population. The Project will result in the generation of nominal City and State tax revenues. The Project will result in FTE jobs during and after construction. The Project is further anticipated to enhance the social networks of resident seniors and seniors in the Project area.

No mitigation measures are required.

5.2 HISTORIC AND ARCHAEOLOGICAL RESOURCES

5.2.1 Existing Environment

A Draft *Archaeological Inventory Survey Report* was prepared for the Project by Cultural Surveys Hawai'i (CSH) in December 2019. See **Appendix N, Archaeological Inventory Study Report**. The Draft AIS was prepared in accordance with HRS §6E-8 and HAR §13-275, and as 24 CFR, Part 58, to comply with NHPA Section 106.

The Project's Area of Potential Effect (APE) is approximately 45 acres; however, the AIS study area is the entire 0.6181-acre Project Site. The Draft AIS consisted of subsurface testing excavations throughout the study area. The excavations identified one archaeological historic property, SIHP # 50-80-14-8840 with components 1-3. Component 1 consists of multiple, buried agricultural deposits associated with use of the Nu'uanu Stream floodplain. Component 2 consists of possibly pre- to post- Contact habitation layers, including associated pit features and a human burial site. Component 3 consists of historical infrastructure remnants associated with the residential and commercial development of Honolulu. SIHP # 50-80-14-8840 is assessed as significant under Criteria D and E and is eligible for inclusion in the Hawai'i Register of Historic Places (HRHP) and the National Register of Historic Places (NHRP) under Criterion D.

Consultation conducted for the Draft AIS has been extensive and is on-going. CSH met with SHPD on April 12, 2017 to initiate consultation under HRS §6E-8. On 8 May 2019, CSH presented the sub-surface testing strategy and discussed the need to undertake NHPA Section 106 consultation with the O'ahu Island Burial Council. On June 10, 2019, CSH sent invitations the SHPD and various consulting parties to attend a public meeting at the Blaisdell Center, which was held on June 25, 2019. Follow-up meetings were held with SHPD on July 9, 2019 and July 22, 2019. On September 19, 2019, a second public informational meeting was held at the Blaisdell Center. For a full discussion on consultation efforts, see Section 7 of the Draft AIS.

As part of the Draft AIS, a *Reconnaissance Level Survey* (RLS) was conducted by Fung and Associates in 2016 and is included in Appendix A of the Draft AIS. The RLS identified the existing building as eligible for listing on the NHRP under Criterion C. The SHPD concurred with this assessment in a letter dated, February 27, 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04). The building was constructed in 1958 and was designed by engineer Kenneth Sato. The building retains much of its historic character in terms of design, materials, workmanship, and construction methods and was determined as a very good example of a small retail/office building constructed in Hawai'i in a modern style in the 1950s. Consultation, as required, is being fulfilled with the State Historic Preservation Officer (SHPO).

5.2.2 Potential Impacts

The Project involves the construction of a new residential facility and the demolition of the existing commercial building. Additional ground disturbance will include borings related to foundation pile installation; excavations for structural footings, utility installation, roadway and parking area installation; and landscaping.

The Draft AIS determined that the Project will impact the archaeological historic property (SIHP # -8840) and thus the Project's effect determination per HAR §13-275-7 is "effect, with agreed upon mitigation commitments." In addition, under Section 106 of the NHPA, the Project will have an "adverse effect" on SIHP # -8840.

5.2.3 Avoidance, Minimizations, and/or Mitigation Measures

The agreed upon mitigation commitments included in the Draft AIS, include preparing a burial treatment plan (BTP) for the human burial site, identified as Component 3 of SIHP # -8840 and archaeological monitoring for Components 1–3 of SIHP # -8840. With the implementation of these mitigation commitments, the Project's potential adverse effect on SIHP # -8840, subsurface cultural deposits will be reduced. These mitigation measures will be detailed in a Memorandum of Agreement (MOA), which is currently being prepared pursuant to 36 CFR Part 800.6 and in consultation with SHPD. The Draft MOA is in **Appendix P, Memorandum of Agreement.**

The MOA must be signed by the City and County of Honolulu ("CCH") in its capacity as the Responsible Entity, the Hawai'i State Historic Preservation Officer ("SHPO") through the office of the Hawai'i State Historic Preservation Division, a division of the Department of Land and Natural Resources of the State of Hawai'i ("SHPD") and Halewai'olu Senior Development, LLC, ("Developer" or "HSD") (collectively "Signatory Parties"). Other consulted parties may also sign the MOA.

Under Section 106 of the National Historic Preservation Act and its implementing regulations (36 CFR Part 800), the Department of Land Management (DLM) initiated consultation with the State Historic Preservation Officer (SHPO) with a June 10, 2019 consultation letter. Subsequently, with its consultants present, the DLM furthered consultation through an in person meeting on July 9, 2019 with the SHPO, represented by Tanya Gumpac-McGuire of the State Historic Preservation Division (SHPD) Architecture Branch.

A series of Public Informational Meetings (June 25, 2019 and September 19,2019), presentations to the Oahu Island Burial Council (May 8, 2019, August 14, 2019), and consultation has taken place in an ongoing effort to keep our preservation partners informed about the project. These partners include: the Advisory Council on Historic Preservation (ACHP), SHPO, as well as area Native Hawaiian cultural descendants, NHOs, and individuals, the Historic Hawaii Foundation, and businesses and organizations who have expressed an interest in the Halewaiolu Senior Residences Project to date.

Through the Public Information Meetings, concurring parties were identified for further participation in developing the Memorandum of Agreement (MOA). An MOA integrating consultation feedback from identified concurring parties, the developer, the SHPO, and DLM is currently being prepared. This included a November 19, 2019 Section 106 Consultation meeting regarding the project's MOA that was attended by Dr. Susan Lebo (SHPD Archaeology Branch Chief) and Tanya Gumpac-McGuire (SHPD Architecture Branch [via phone]); Randy Chiu of the City and County DLM; Howard and Kehaulani Lum of Lum Sai Ho Tong; Liana Benn of the Chinatown Community Center Association; Native Hawaiian cultural descendants Mana and Kalehua Caceres; Daron Makaiwi of the Marin 'Ohana; Jay Morford of Hawaiian Memorial Life Plan; Mel Kalahiki of Borthwick Mortuary; Kiersten Faulkner of the Historic Hawai'i Foundation; and Sylvia Young of Hawaii USA Federal Credit Union. Based on consultation feedback we received, the MOA will specify parameters for how adverse effects will be minimized and/or mitigated. The Advisory Council on Historic Preservation elected not to participate.

The Halewaiolu Senior Residences Project has completed the required archaeological inventory survey (AIS) investigation, carried out pursuant to Hawai'i Administrative Rules 13-276. The AIS draft report is currently under SHPD review.

5.3 CULTURAL IMPACT ASSESSMENT

5.3.1 Existing Environment

A Draft *Cultural Impact Assessment for the Halewai'olu Senior Residence Project* was prepared for the Project by CSH in October 2019. See **Appendix Q, Cultural Impact Assessment**. It should be noted, that the preparation of a CIA is not required under NEPA and NHPA Section 106; rather the CIA was conducted by HSD on behalf of the City. The purpose of the Draft CIA is to assess the Project's potential effect on cultural beliefs, practices, and resources, through document research and cultural consultation efforts. CSH made an effort to contact kūpuna (elders), kama'āina (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs, including Hawaiian Civic Clubs and those listed on the Department of Interior's NHO list), community groups, SHPD, OHA, and the O'ahu Island Burial Council to identify cultural expertise and/or knowledge of the CIA study area and Honolulu Ahupua'a. CSH initiated its outreach effort in July 2019 via letters, emails, telephone calls, and in person contact. For a full list of the outreach contact list, see Table 2 in the Draft CIA in Section 6.3. As a result of the outreach process, CSH consulted with the following individuals:

- Gerald Lam;
- Howard Lum of Lum Sai Ho Tong;
- Kehaulani Lum of Lum Sai Ho Tong; and Ali'i Pauahi Hawaiian Civic Club
- Wesley Fong, Chinatown Community Association; and
- Bruce Keaulani, Hawaiian practitioner (CSH, 2019).

5.3.2 Potential Impacts

Based on information gathered from the cultural and historical background and the community consultation, the Project may have a potential impact on undetected *iwi kūpuna* (ancestral remains of Native Hawaiians) at the Project Site. Consultation with the aforementioned stakeholders is ongoing.

5.3.3 Avoidance, Minimizations, and/or Mitigation Measures

The following preliminary recommendations were listed in the Draft CIA:

- "Project construction workers and all other personnel involved in the construction and related activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are identified during construction activities, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the event that iwi kūpuna are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300- 40. In addition, in the event of an inadvertent discovery of human remains, the completion of a BTP, in compliance with HAR §13-300 and HRS §6E-43, is recommended.
- In the event that *iwi kūpuna* and/or cultural finds are encountered during construction, Project proponents should consult with cultural and lineal descendants of the area to develop a reinternment plan and cultural preservation plan for proper cultural protocol, curation, and long-term maintenance" (CSH, 2019).

6.0 RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

6.1 FEDERAL REGULATIONS

6.1.1 Airport Hazards (24 CFR Part 51, Subpart D)

The purpose of 24 CRF Part 51, Subpart D, "Siting of HUD Assisted Projects in Runway Clear Zones at Civil Airports and Clear Zones and Accident Potential Zones at Military Airfields" is to promote compatible land uses around civil airports and military airfields by identifying suitable land uses for Runway Clear Zones at civil airports and Clear Zones and Accident Potential Zones at military airfields and by establishing them as standards for providing HUD assistance, subsidy or insurance. Compatible developments pursuant to 24 CFR Part 51, Subpart D are at least 15,000 feet away from a military airport or 2,500 feet away from a civilian airport.

Discussion: The Project Site is located approximately 4-miles southeast of the Daniel K. Inouye Airport, and thus meets the requirements of 24 CFR Part 51, Subpart D. No military airfields are in proximity of the Project Site. No mitigation measures are required.

6.1.2 Coastal Barrier Resources

The Coastal Barrier Resources Act (CBRA) of 1982 designated relatively undeveloped coastal barriers along the Atlantic and Gulf coasts as part of the John H. Chafee Coastal Barrier Resources System (CBRS) and made these areas ineligible for most new Federal expenditures and financial assistance.

The Coastal Barrier Improvement Act of 1990 reauthorized the CBRA; expanded the CBRS to include undeveloped coastal barriers along the Florida Keys, Great Lakes, Puerto Rico, and U.S. Virgin Islands; and added a new category of coastal barriers to the CBRS called "otherwise protected areas." These areas are predominantly comprised of conservation and/or recreation areas such as national wildlife refuges, state and national parks, local conservation areas, and private conservation areas, though they may also contain private areas that are not held for conservation and/or recreation.

The law encourages the conservation of hurricane prone, biologically rich coastal barriers by restricting Federal expenditures that encourage development, such as Federal flood insurance. HUD financial assistance may not be used for most activities in CBRS units.

Discussion: According the FEMA FIRMette No. 15003C0354G, the Project Site (located about 0.4 miles from the shoreline) is not located within a designated CBRS unit. See **Figure** . No mitigation measures are proposed.

6.1.3 Flood Insurance (Flood Disaster Protection Act of 1973 and National Flood Insurance Reform Act of 1994)

The Flood Disaster Protection Act of 1973 (42 U.S.C. 4012a) requires that projects receiving federal assistance and located in an area identified by FEMA as being within a SFHA be covered by flood insurance under the NFIP. In order to be able to purchase flood insurance, the community must be participating in the NFIP. If the community is not participating in the NFIP, federal assistance cannot be used in those areas.

Discussion: The proposed Project is located in the Zone "X" floodplain and is not located within a FEMA Special Flood Hazard zone. See **Figure 11**.

DPP has noted in a memorandum to DLM that, "Although Section 6.1.3 of the DEA discloses that the project is not in a Flood Hazard District, the Federal Emergency Management Agency (FEMA) completed a Base Level Engineering (BLE) study in 2019 for flood areas on Oahu that were not

previously mapped. The BLE identified the flood areas adjacent to Nu'uanu Stream, makai of the Freeway. According to the BLE, the parcel is in the 100-year floodplain with a Base Flood Elevation (BFE) of 12.04. The BFE will be further refined when FEMA completes a detailed flood study in the near future. However, if development permit applications are submitted before that happens, the BFE from the BLE should be used for flood protection purposes. This should be disclosed in the DEA. Further, DEA Sections 3.5.1, 3.5.2, 6.1.3, and 6.1.11 should be revised to indicate that there will be compliance with flood requirements for the Project." These EA Sections have been revised to indicate there will be compliance with applicable flood requirements for the Project.

6.1.4 Clean Air Act of 1970 (as amended)

The CAA and amendments (42 U.S.C. §7401 et seq.) is the comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. This law authorizes the U.S. EPA to establish NAAQS to protect public health and the environment. These are limits on certain "criteria" air pollutants, including limits on how much of these pollutants can be in the air anywhere in the United States. Criteria pollutants include the following: CO, NO_2, O_3, PM, $PM_{2.5}$, and SO_2. Geographic areas that are in compliance with standards are called "attainment areas," while areas that do not meet standards are called "nonattainment" areas. Pursuant to the CAA and amendments, State-operated permit programs serve to control emissions. In Hawai'i, the operating permit program is implemented by HDOH, and emissions of regulated air pollutants within the State may be subject to permitting as required under HAR, §11-60.1.

Discussion: O'ahu is in attainment of both Federal and State air quality standards, as discussed in **Section 3.2**.

6.1.5 Coastal Zone Management (Coastal Zone Management Act, Sections 307(c) and (d))

The Federal Coastal Zone Management Act (CZMA), enacted 1972, provides states with financial incentives for the development and implementation of Coastal Zone Management (CZM) practices, and limited review power over Federal actions affecting the State's Coastal Zone. The law is administered at the federal level by the Coastal Programs Division within the National Oceanic and Atmospheric Administration's (NOAA) Office of Ocean and Coastal Resource Management.

As a response, HRS, Chapter 205(A), *Hawai'i Coastal Zone Law*, as amended, was enacted in 1977. The State has designated the Coastal Zone Management Program (CZMP) to manage the intent, purpose and provisions of HRS, Chapter 205(A)-2 for the areas from the shoreline to the seaward limit of the State's jurisdiction, and any other area which a lead agency may designate for the purpose of administering the CZMP. All land and water use activities in the State must comply with HRS, Chapter 205(A). The CZMP is administered by the DBEDT, OP.

The Office of Planning (OP) administers Hawai'i Revised Statutes (HRS) Chapter 205A, the Coastal Zone Management (CZM) law. The purpose of HRS Chapter 205A is to "provide for the effective management, beneficial use, protection, and development of the Coastal Zone." L. 1977, c188 §1. Special Management Area (SMA) permitting system is part of the CZM Program approved by Federal and State agencies.

Projects that can affect the coastal zone must be carried out in a manner consistent with the State CZMP under Section 307(c) and (d) of the CZMA, as amended. For HUD policy, see 24 CFR 58.5(c) or 24 CFR 50.4(c) (2).

A discussion regarding the proposed project's compliance with the CZMA is as follows (emphasis added).

A) Recreational Resources

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

A) Improve coordination and funding of coastal recreational planning and management; and

B) Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by:

i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

v) Ensuring public recreational use of county, state and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;

vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches and artificial reefs for surfing and fishing; and

viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Discussion: The Project Site (located about 0.4 miles from the shoreline) is not within the Special Management Area (coastal zone management area), but will comply with applicable rules and regulations designed to control or reduce pollution, including point and non-point source water pollution, to conserve both the natural resources and recreational value of Nu‘uanu Stream.

B) Historic Resources

Objective:

Protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

A) Identify and analyze significant archaeological resources;

B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Discussion: The Project Site is not within the coastal zone management area. However, the existing building has been deemed eligible for listing in the NRHP. See **Sections 5.2 and 5.3** for further discussion. HSD will continue to consult with SHPD and consulting parties regarding appropriate mitigation.

D) Scenic and Open Space Resources

Objective:

Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

A) Identify valued scenic resources in the coastal zone management area;

B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

D) Encourage those developments that are not coastal dependent to locate in inland areas.

Discussion: The Project Site (located about 0.4 miles from the shoreline) is not anticipated to have a significant negative impact on coastal scenic view planes or scenic resources in the Downtown Honolulu area. The proposed residential facility is planned for a height of approximately 174 feet, in an area zoned for a 350-foot height limit and will therefore be more visible than the existing building on the Project Site. However, surrounding buildings are of equal or higher elevation. The Project tower will be oriented in the mauka-makai direction to minimize impacts to mountain and ocean views from surrounding properties. The Project will not interfere with scenic views specified in the PUC DP. See **Section 3.6** for further discussion.

E) Coastal Ecosystems

Objective:

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources

B) Improve the technical basis for natural resource management

C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance

D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine water ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Discussion: The Project, although located about 0.4 miles from the shoreline, will be consistent with these policies as they relate to Nu'uanu Stream which is located northwest of the subject property and feeds into the shoreline and could affect the coastal system. The Nu'uanu Stream is classified by HDOH as a "Class 2" inland water body, as discussed in **Section 3.4**. Appropriate mitigative measures and controls will be applied consistent with sound engineering and operating practices for the protection of groundwater and surface water resources. Such measures will be developed during the design of this Project and will comply with the City's erosion and sedimentation control regulations. Storm water runoff from construction areas will be regulated through adherence to permit conditions. Any increase in runoff caused by an increase in impervious surfaces will be retained or treated on site as required to meet City standards, and onsite drainage will be designed to flow away from buildings towards landscaped areas. Drainage will be designed to maintain acceptable drainage patterns, as discussed in **Section 4.9**.

F) Economic Uses

Objective:

Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

A) Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;

B) Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:

i) Utilization of presently designated locations is not feasible;

ii) Adverse environmental effects are minimized; and

iii) Important to the State's economy.

Discussion: The proposed Project will be consistent with these policies. The proposed affordable housing Project for seniors is located in a suitable location. Because of the property location in Downtown-Chinatown, future residents and employees will have convenient access to shopping and dining needs, and senior residents will have the option to reach their destination without the use of a car. There are ample socialization and recreation opportunities for seniors in the Downtown-Chinatown area, as discussed in **Section 4.2**.

G) Coastal Hazards

Objective:

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Policies:

A) Develop and communicate adequate information on storm wave, tsunami, flood erosion, and subsidence hazard;

B) Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;

C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and

D) Prevent coastal flooding from inland projects.

Discussion: The proposed Project Site is not located in the tsunami evacuation zone, as designated by the City. The Project will be designed to meet applicable building code requirements.

H) Managing Development

Objective:

Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

A) Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;

B) Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements; and

C) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the general public to facilitate public participation in the planning and review process

Discussion: The Project will be consistent with these policies. The Project is entirely located within the PUC DP's "Urban Community Boundary." The proposed Project will upgrade a site that is currently blighted and underutilized. The Project will seek affordable housing exemptions through the HRS, Chapter 201H process, and will work with all required agencies, administration officials, and the community to ensure that the process is followed. Both the EA and HRS, Chapter 201H process requires public notification and allowance for public comment.

I) Public Participation

Objective:

Stimulate public awareness, education, and participation in coastal management.

Policies:

J) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;

K) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

L) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion: HSD began conducting community outreach in August 2014 with various Downtown-Chinatown community stakeholders. Since then, the Project has been revised to accommodate as much as possible the concerns and incorporate stakeholder suggestions. In-depth discussion regarding outreach is provided in **Section 7.7**.

M) Beach Protection

Objective:

Protect beaches for public use and recreation.

Policies:

A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion: The Project is located about 0.4 miles from the shoreline and beaches will not be impacted by this Project.

N) Marine Resources

Objective:

Implement the State's ocean resources management plan.

Policies:

A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: The Project will be consistent with these policies. The Project will avoid any negative effects to marine and coastal resources, and will incorporate appropriate LID measures to minimize impacts to streams and near-shore waters.

6.1.6 Contamination and Toxic Substances (24 CFR Part 50.3(i) & 58.5(i)(2)

It is HUD policy, as described in 24 CFR Part 50.3(i) and 24 CFR 58.5(i)(2), that:

1. All property proposed for use in HUD programs be free of hazardous materials, contamination, toxic chemicals and gasses, and radioactive substances, where a hazard could impact the health and safety of occupants or conflict with the intended utilization of the property.
2. Environmental review of multifamily and non-residential properties shall include evaluation of previous uses on the Project Site and other evidence of contamination on or near the Project Site, to assure that occupants of proposed sites are not adversely impacted by the hazards.
3. Particular attention should be given to any proposed site on or in the general proximity of such areas as dumps, landfills, industrial sites, or other locations that contain, or may have contained, hazardous wastes.
4. The responsible entity shall use current techniques by qualified professionals to undertake investigations determined necessary

Discussion: A Hazardous Materials Assessment Survey (HMAS) was performed on the Project Site. The HMAS identified ACM, LCP, PCB units, and CFC units within and around the existing property; see **Appendix L**. The existing building is planned to be demolished to make way for the new affordable housing facility. As discussed in **Section 4.10**, proper mitigation measures prior general to demolition/construction work will be employed including, but not limited to, employment of a qualified Contractor specifically trained in LBP and ACM abatement to ensure safe removal of hazardous materials and disposal of all materials potentially containing hazardous materials to an approved waste facility. Upon demolition of the existing building, the Project Site shall no longer contain any hazardous materials. All materials used for construction of the new tower will be comprised of contaminate-free material.

6.1.7 Endangered Species Act of 1973

The ESA of 1973 (16 U.S.C. 1531-1544) establishes a process for identifying and listing threatened and endangered species. The law requires Federal agencies to carry out programs for the conservation of federally-listed endangered and threatened plants and wildlife and designated critical habitats for such species, and prohibits actions by Federal agencies that would likely jeopardize the continued existence of those species or result in the destruction or adverse modification of designated critical habitat. The ESA is administered by the DOI through the USFWS, the U.S. Department of Commerce through the NOAA, National Marine Fisheries Service (NMFS). Section 7 of the ESA requires consultations with Federal wildlife management agencies, such as the USFWS and NMFS.

Discussion: As discussed in **Sections 3.8 and 3.9**, no federally-listed threatened or endangered species occur on the Project Site. Pursuant to Section 7, ESA, HSD conducted informal consultation with USFWS to determine the effect of the Project on biological resources in the Project area. USFWS concurred that the Project may affect, but is unlikely to adversely affect threatened or endangered plant or animal species, or critical habitats within the Project limits (File No.

01EP1F00-2019-I-0399, July 26, 2019). See **Appendix H**. Mitigation measures to minimize the potential for impacts to species are provided in **Sections 3.8 and 3.9**.

6.1.8 Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 760), protects migratory wild birds found in the U.S. The MBTA makes it unlawful to pursue, hunt, take, capture, possess, sell, purchase, barter, import, export, or transport any migratory bird or any part, next, or egg of any such bird, unless authorized under a permit issued by the DOI Secretary.

Discussion: During a Biological Survey conducted for the Project Site, two MBTA-protected species were observed to traverse over the Project Site: the white tern and kōlea (Hobdy, 2019). With the implementation of mitigation described in **Section 3.9.3**, impacts to MBTA-protected species would be avoided.

6.1.9 Explosive and Flammable Hazards (24 CFR Part 51 Subpart C)

There are inherent potential dangers associated with locating HUD projects near hazardous facilities which store, handle, or process hazardous substances of a flammable or explosive nature. Project Sites located too close to facilities handling, storing, or processing conventional fuels, hazardous gases or chemicals of an explosive or flammable nature may expose occupants or end-users of a Project to the risk of injury in the event of an explosion.

Blast overpressure and thermal radiation standards are used as a basis for calculating acceptable separation distances (ASDs) for HUD projects from specific, stationary hazardous operations which store, handle, or process substances of fire or explosive prone nature. HUD projects must meet ASDs or else mitigation measures must be undertaken.

Discussion: There is an aboveground stationary storage tank (propane) at Zippy's Vineyard located within one mile of the Project, about 412 feet from the south property line. The Environmental Planning Division (EPD) of HUD has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. Based on the size (250 gallon) and type of fuel (Propane), the ASD for Thermal Radiation for People (ASDPPU) is 155.23 and the ASD for Thermal Radiation for Buildings (ASDBPU) is 26.49 feet.

The Project will include a 660 gallon diesel fuel tank will be designed "in compliance with NFPA 58 (2017)" that meets the following HUD Guideline for Explosive and Flammable Facilities and is not subject to review even if within one mile of this or any other Project Site:

"Evidence that within one mile of the project site there are no current or planned stationary aboveground storage containers except:

- Containers less than 100-gallons capacity containing common liquid industrial fuels
- Containers that are 1,000 gallons or less water volume capacity and in compliance with NFPA 58 (2017)"

6.1.10 Farmlands Protection (Farmland Protection Policy Act of 1981, sections 1504(b) and 1541; 7 CFR Part 658)

The purpose of the Farmland Protection Policy Act (FPPA) (7 U.S.C. 4201 et seq, implementing regulations 7 CFR Part 658, of the Agriculture and Food Act of 1981, as amended) is to minimize the effect of Federal programs on the unnecessary and irreversible conversion of farmland to nonagricultural uses.

The FPPA does not apply to projects already in or committed to urban development or those that could otherwise not convert farmland to non-agricultural uses. However, land that meets the definition of prime or unique farmlands or is determined to be of statewide or local significance (with concurrence by the U.S. Secretary of Agriculture) is subject to the FPPA. In some states agricultural lands are protected from development by agricultural districting, zoning provisions, or special tax districts.

> **Discussion:** The Project Site is located on land classified by the State as Urban and zoned by the City as a BMX-4 district. The PUC DP further identifies this parcel as prime for "Medium and Higher-Density Residential Mixed Use" development. The Project Site is not identified by any State or City plans as suitable for agricultural activities. Furthermore, the Project does not include any activities that would convert its present commercial use to an agricultural use.

6.1.11 Floodplain Management, Executive Orders 11988 and 12148

Executive Order (E.O.) 11988, Floodplain Management, dated May 24, 1977 requires Federal agencies to take action to reduce the risk of flood loss, restore the natural and beneficial values of floodplains, and minimize the impacts of floods on human safety, health, and welfare. E.O. 12148, July 20, 1979, amended E.O. 11988. The main feature of the amendment added that agencies with responsibilities for Federal real estate properties and facilities will, at a minimum, require the construction of Federal structures and facilities to be in accordance with the criteria of the NFIP.

HUD's regulations in 24 CFR Part 55 outline HUD's procedures for complying with E.O. 11988. Part 55 applies to all HUD actions that could be harmed or cause harm if located in a floodplain, including but not limited to proposed acquisition, construction, demolition, improvement, disposition, and financing actions under any HUD program. The purpose of Part 55 is not in most cases to prohibit actions in a floodplain, but to provide the method for HUD projects to comply with E.O. 11988 and avoid unnecessary impacts.

> **Discussion:** As discussed in **Section 3.5**, the Project Site is not located within the Base Floodplain. The Project would not result in any impacts to the base floodplain or indirectly support floodplain development. However, the Federal Emergency Management Agency (FEMA) completed a Base Level Engineering (BLE) study in 2019 for flood areas on Oahu that were not previously mapped. The BLE identified the flood areas adjacent to Nu'uanu Stream, makai of the Freeway. According to the BLE, the parcel is in the 100-year floodplain with a Base Flood Elevation (BFE) of 12.04. Construction of the Project would adhere to applicable design standards as set forth in ROH, Chapter 21A, *Flood Hazard Areas*. This includes compliance with applicable flood requirements for the Project. Any increase in runoff caused by an increase in impervious surfaces will be retained or treated on site as required to meet City standards, and onsite drainage will be designed to flow away from buildings towards landscaped areas. The Project would also meet applicable NFIP requirements.

6.1.12 Historic Preservation (Section 106 of the National Historic Preservation Act of 1966)

The NHPA of 1966, as amended (PL 89-665, codified as 16 United States Code [U.S.C.] 470), recognizes the nation's historic heritage and establishes a national policy for the preservation of historic properties as well as the NRHP. Section 106 of the NHPA (16 U.S.C. 470f) requires that Federal agencies consider the effects of their projects on historic properties. Use of Federal funds sets forth the need for Section 106 consultation. The purpose of the Section 106 consultation process is to evaluate the potential for effects on existing historic sites, if any, resulting from the Project. The NHPA Section 106 review process encompasses a "good faith effort" in ascertaining the existence and location of historic properties near and within the Project Site, establishing an APE of the Project, identifying whether a potential for "adverse effects" on historic properties by the Project exists, and developing a reasonable and acceptable resolution in the monitoring and treatment of any historic sites that is agreed upon by the agency, the SHPO, consulting government agencies, NHOs, and community associations. NHPA is administered by the U.S. DOI NPS and the Advisory Council on Historic Preservation. At the State level, NHPA is implemented by the SHPO. The use of Federal funds and the requirement of Federal permits for the Project trigger the need for NHPA, Section 106 compliance.

> **Discussion:** The Draft AIS found that the Project will have an impact the archaeological historic property (SIHP # -8840) and thus the Project's effect determination under Section 106 of the NHPA is "adverse effect." The agreed upon mitigation commitments included in the Draft AIS, include preparing a BTP for the human burial site, identified as Component 3 of SIHP # -8840 and archaeological monitoring for Components 1–3 of SIHP # -8840. With the implementation of these mitigation commitments, the Project's potential adverse effect on SIHP # -8840, subsurface cultural deposits will be reduced. For further discussion, see **Section 5.2.** See also **Appendix N, Archaeological Inventory Study Report** and **Appendix P, Memorandum of Agreement.**

6.1.13 Noise Abatement and Control (Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978; 24 CFR Part 51 Subpart B)

The HUD noise standards may be found in 24 CFR Part 51, Subpart B. For proposed new construction in high noise areas, the Project must incorporate noise mitigation features. All sites where environmental or community noise exposure exceeds the DNL of 65 dB are considered noise-impacted areas. For new construction that is proposed in high noise areas, grantees shall incorporate noise attenuation features to the extent required by HUD environmental criteria and standards contained in Subpart B (Noise Abatement and Control) of 24 CFR Part 51. The interior standard is 45 dB.

The "Normally Unacceptable" noise zone includes community noise levels from above 65 dB to 75 dB. Approvals in this noise zone require a minimum of 5 dB additional sound attenuation for buildings having noise-sensitive uses if the DNL is greater than 65 dB but does not exceed 70 dB, or a minimum of 10 Db of additional sound attenuation if the DNL is greater than 70 dB but does not exceed 75 dB.

Locations with day-night average noise levels above 75 dB have "Unacceptable" noise exposure. For new construction, noise attenuation measures in these locations require the approval of the Assistant Secretary for Community Planning and Development (for projects reviewed under Part 50) or the Responsible Entity's Certifying Officer (for projects reviewed under Part 58). The acceptance of such locations normally requires an environmental impact statement.

In Unacceptable noise zones, HUD strongly encourages conversion of noise-exposed sites to land uses compatible with the high noise levels.

Discussion: An acoustic study performed for the Project found that increases in future noise levels resulting from Project-related traffic are predicted to be 0.2 DNL (negligible). The study further found that future traffic noise levels at all of the residential units of the proposed Project would not exceed 65 DNL.

A separate analysis was done on the noise level predictions from a mature rail system projected for year 2030 by R.M. Towill Corporation, based on the operational HART system along Nimitz Highway and noise impacts described in the Final Environmental Impact Statement for the Honolulu High Capacity Transit Corridor dated July 8, 2010. Based on the projected noise impact at the residential tower at 215 North King Street located 145 feet away from the centerline of the rail line with a projected 63 DNL and the projected noise impact at the residential tower at 700 Richards Street located 85 feet away from the centerline of the rail line with a projected 63 DNL, the impact at the Project Tower located 2,000 feet away from the centerline of the rail line at Nimitz Highway will be between 52 and 53 DNL. For purposes of determining noise acceptability for funding assistance from federal agencies, an exterior noise level of 65 DNL or less is considered acceptable for residences. Since the 52 and 53 DNL projected impact from the HART system is well below the acceptable 65 DNL no mitigation measures are required. See **Section 3.7** for further discussion.

6.1.14 Sole Source Aquifers (Safe Drinking Water Act of 1974, as amended)

The SDWA of 1974 requires protection of drinking water systems that are the sole or principal drinking water source for an area and which, if contaminated, would create a significant hazard to public health. SSA designations are one tool to protect drinking water supplies in areas where alternatives to the groundwater resource are few, cost-prohibitive, or nonexistent. A SSA is defined as an aquifer that supplies at least 50% of the drinking water for a community. The designation protects an area's groundwater resource by requiring EPA review of any proposed projects within the designated area that are receiving federal financial assistance. The Project Site is located on the SOBA, an EPA-designated SSA; therefore, coordination with EPA is required. See **Figure 17: National Wetland Inventory Map.**

Discussion: According to the HDOH, Safe Drinking Water Branch, Groundwater Protection Program's Groundwater Contamination Maps, there are no public drinking or non-drinking water wells, such as irrigation and industrial wells, on or near the Project Site, nor are there any sites that were flagged for potential groundwater contamination. The Project will be coordinated with the EPA, Region 9 (Pacific Southwest).

6.1.15 Wetlands Protection (Executive Order 11990)

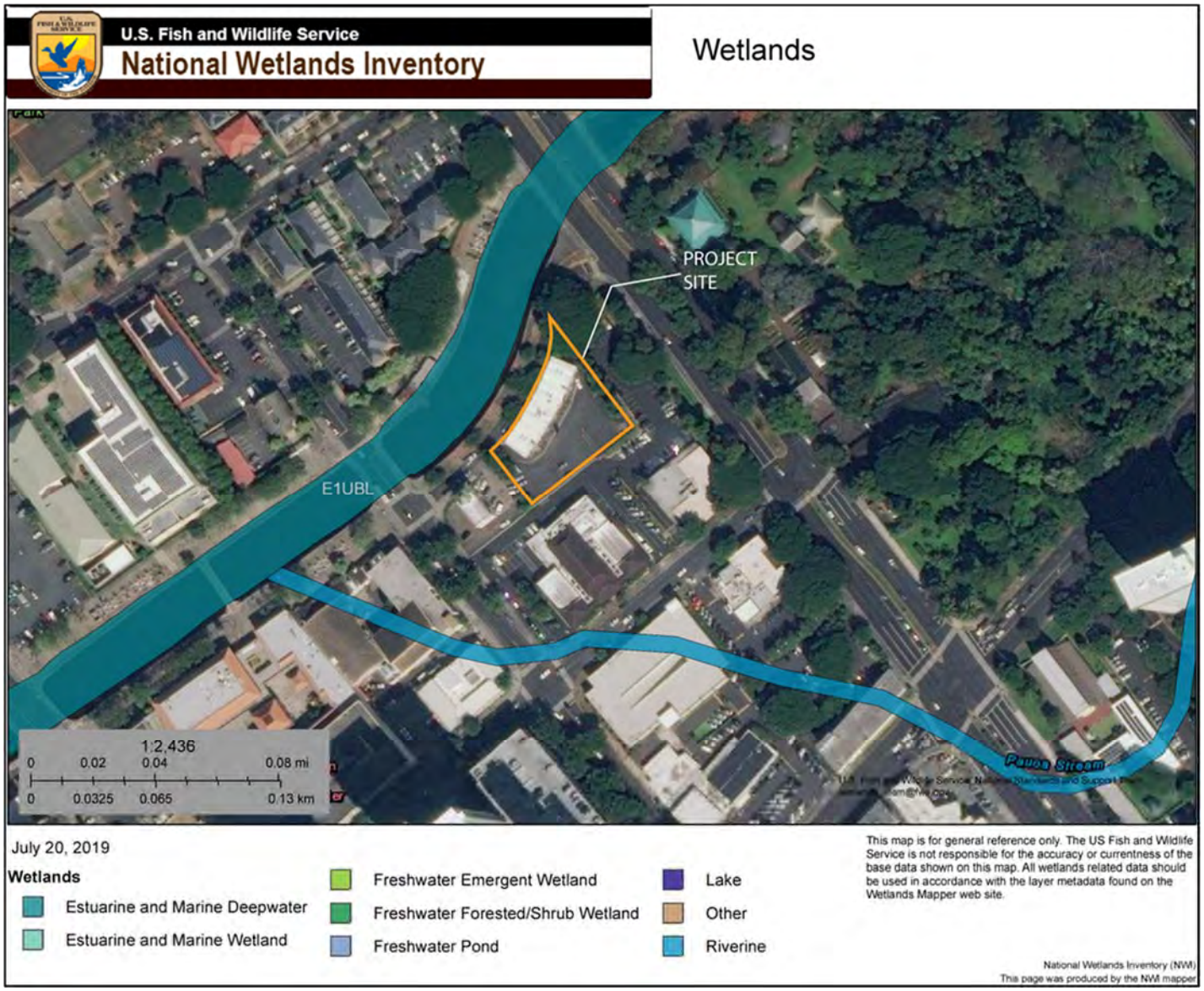
E.O. 11990, *Protection of Wetlands*, of May 24, 1977 requires Federal activities to avoid adverse impacts to wetlands where practicable. As primary screening, HUD or grantees must verify whether the Project is located within wetlands identified on the National Wetlands Inventory (NWI).

Discussion: The Project Site is not located within a wetland identified on the NWI; therefore, not adverse impact to wetlands is expected. See **Figure 17: National Wetland Inventory Map.** The Nu'uanu Stream is located approximately 54 feet northwest of the Project Site, and is considered an Estuarine and Marine Deep Water by USFWS. Mitigation measures to protect the Nu'uanu Stream during construction activities in the short-term and from storm water runoff in the long-term are discussed in **Sections 3.4.3 and 4.9.3**.

6.1.16 Wild and Scenic Rivers Act of 1968

The Wild and Scenic Rivers Act (WSRA) (16 U.S.C. 1271-1287) provides federal protection for certain free-flowing, wild, scenic, and recreational rivers designated as components or potential components of the National Wild and Scenic Rivers System. The system was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq., as amended) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The WSRA is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. The WSRA encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

Figure 17: National Wetland Inventory Map



Each river or river segment in the system is administered with the goal of protecting and enhancing the values that caused it to be eligible for inclusion in the system. Designated rivers need not include the entire river and may include tributaries. Wild and Scenic Rivers are classified into the following three types: Wild and Scenic Rivers, Study Rivers, and the Nationwide Rivers Inventory (maintained by the National Park Service).

> **Discussion:** There are no designated Wild and Scenic Rivers in the State; therefore, no impacts due to the Project are anticipated.

6.1.17 Environmental Justice, Executive Order 12898

The E.O. 12898 further directed efforts to prevent environmental injustice under Title VI of the 1964 Civil Rights Act. Title VI prohibits discrimination on the basis of race, color, or national origin. It also prohibits

recipients of federal funds, including federal and state agencies, from discriminatory actions. The U.S. Council on Environmental Quality (CEQ) and DOT define minority as persons self-identifying as any one of the following U.S. Census categories for race and ethnicity: Black/African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, or Hispanic (USDOT 2011).

To satisfy Title VI and environmental justice (EJ) requirements, a Project must illustrate that concern for EJ is integrated into every transportation decision, from the first thought about a transportation plan to the post-construction operations and maintenance. Every effort was made to ensure that a full and fair opportunity was made available to all members of all communities to participate in the development of the plan. In particular, the public outreach program was designed to ensure that this was accomplished. For example, the members of the Citizen Advisory Committees were invited from a broad spectrum of each community on each island in the state to ensure that all potential groups, interests, and points of view would be represented on each committee. This included the low-income and minority population, the elderly, the disabled or otherwise challenged individuals, and special interest groups.

All projects involving a federal action (funding, permit, or land) must comply with E.O. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President William J. Clinton on February 11, 1994. This E.O. directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the U.S. Department of Health and Human Services (HHS) poverty guidelines. The intent of E.O. 12898 is to avoid disproportionately high adverse human health or environmental effects of projects on minority and low-income populations. E.O. 12898 also requires Federal agencies ensure that minority and low-income communities have adequate access to public information related to health and the environment.

There are three fundamental EJ principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low - income populations;
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

To satisfy Title VI and EJ requirements, a project must illustrate that concern for EJ is integrated into every transportation decision, from the first thought about a transportation plan to the post-construction operations and maintenance. Every effort was made to ensure that a full and fair opportunity was made available to all members of all communities to participate in the development of the plan. In particular, the public outreach program was designed to ensure that this was accomplished. For example, the members of the Citizen Advisory Committees were invited from a broad spectrum of each community on each island in the state to ensure that all potential groups, interests, and points of view would be represented on each committee. This included the low-income and minority population, the elderly, the disabled or otherwise challenged individuals, and special interest groups.

CEQ and DOT define minority as persons self-identifying as any one of the following U.S. Census categories for race and ethnicity: Black/African American, Asian, Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, or Hispanic (USDOT 2011). See further definitions below:

- *Black* – a person having origins in any of the black racial groups of Africa;
- *Hispanic* – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
- *Asian* – a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;
- *American Indian and Alaskan Native* – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition;
- *Native Hawaiian or Other Pacific Islander* – a person having origins in any of the original peoples of Hawai'i, Guam, Samoa, or other Pacific Islands; and
- *Low-Income* – a person whose household income (or in the case of a community or group, whose median household income) is at or below the HHS's poverty guidelines.

Additionally, for the purposes of this analysis, minority also includes all other non-white racial categories that were added in the most recent Census, such as "some other race" and "two or more races." The Project Site does meet the definition of a minority population as defined by the CEQ.

> **Discussion:** Using the U.S. EPA EJ Screening and Mapping Tool (EJSCREEN) (Version 2018), data shows that 89% of the residents within one mile of the Project Site are considered a minority population. See **Table 16: EJSCREEN Report** on the subsequent page. Furthermore, according to the EJSCREEN report, 37% of the population within one mile of the property is considered low-income.

6.1.18 Potential Impacts

HSD began outreach with the surrounding community in 2014, and has made design modifications based on feedback received. HSD will continue to keep neighborhood groups and organizations apprised of Project developments. As part of the Section 106 consultation, NHOs in the Project area have been consulted regarding affected historic properties, as discussed later in **Sections 6.2 and 6.3.** Potential for adverse effects relating to EJ or Title VI populations are not anticipated or expected. A minor beneficial impact is expected through the provision of 155 affordable senior rental housing that will support the growing senior demographic. Additionally, the existing building on the Project Site contains hazardous materials. Removal of hazardous materials prior to commencement of construction will result in an improvement in the overall environmental quality.

Table 16: EJSCREEN Report

EPA United States Environmental Protection Agency

EJSCREEN Report (Version 2018)

1 mile Ring Centered at 21.315729,-157.859682, HAWAII, EPA Region 9

Approximate Population: 49,326

Input Area (sq. miles): 3.14

Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m³)	N/A	N/A	N/A	10.1	N/A	9.53	N/A
Ozone (ppb)	N/A	N/A	N/A	48.3	N/A	42.5	N/A
NATA* Diesel PM (µg/m³)	0.527	0.15	95	0.978	<50th	0.938	<50th
NATA* Cancer Risk (lifetime risk per million)	49	34	93	43	70-80th	40	80-90th
NATA* Respiratory Hazard Index	1.8	1	92	2	<50th	1.8	50-60th
Traffic Proximity and Volume (daily traffic count/distance to road)	6100	1000	95	1100	95	600	98
Lead Paint Indicator (% Pre-1960 Housing)	0.18	0.16	63	0.24	55	0.29	49
Superfund Proximity (site count/km distance)	0.061	0.096	57	0.14	50	0.12	57
RMP Proximity (facility count/km distance)	0.42	0.37	75	0.97	47	0.72	56
Hazardous Waste Proximity (facility count/km distance)	6.9	1.4	97	2.8	88	4.3	93
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0	0.04	N/A	12	59	30	40
Demographic Indicators							
Demographic Index	63%	51%	84	47%	73	36%	84
Minority Population	89%	78%	68	59%	80	38%	89
Low Income Population	37%	25%	79	35%	57	34%	60
Linguistically Isolated Population	25%	6%	94	8%	90	4%	95
Population With Less Than High School Education	21%	9%	92	17%	67	13%	79
Population Under 5 years of age	5%	6%	39	6%	38	6%	41
Population over 64 years of age	21%	16%	74	13%	84	14%	81

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

6.1.19. Avoidance, Minimization, and/or Mitigation Measures

No minimization or mitigation measures, other than those related to historic properties, are proposed.

6.2 STATE OF HAWAIʻI LAND USE PLANS AND REGULATIONS

6.2.1 Hawaiʻi State Plan

The Hawaiʻi State Plan, HRS, Chapter 226, adopted in 1978 and revised in 1986, serves as a guide for the future long range development of the State by identifying goals, objectives, policies, and priorities. The Hawaiʻi State Plan consists of three major part:

Part I, describes the overall theme including Hawaiʻi's desired future and quality of life as expressed in goals, objectives, and policies;

Part II, Planning Coordination and Implementation, describing a statewide planning system designed to coordinate and guide all major state and county activities and to implement the goals, objectives, policies, and priority guidelines of the Hawai‘i State Plan; and

Part III, Priority Guidelines, which express the pursuit of desirable courses of action in major areas of statewide concern.

The proposed Project is consistent with the objectives and policies of the Hawai‘i State Plan. An analysis of the project’s ability to meet the objectives, policies, and priority guidelines of the Hawai'i State Plan are provided in **Table 17: Hawai‘i State Plan Objectives, Policies, and Priority Guidelines** below.

Table 17: Hawai‘i State Plan Objectives, Policies, and Priority Guidelines

Hawai‘i State Plan Objectives, Policies, and Priority Guidelines	Applicability to the Proposed Project
Objectives and Policies	
§226-5 Objective and policies for population	**Applicable**
§226-6 Objectives and policies for the economy--in general	**Applicable**
§226-7 Objectives and policies for the economy-- agriculture	Not Applicable
§226-8 Objective and policies for the economy--visitor industry	Not Applicable
§226-9 Objective and policies for the economy--federal expenditures.	Not Applicable
§226-10 Objective and policies for the economy--potential growth activities	Not Applicable
§226-10.5 Objectives and policies for the economy--information industry	Not Applicable
§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.	**Applicable**
§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.	**Applicable**
§226-13 Objectives and policies for the physical environment--land, air, and water quality	**Applicable**
§226-14 Objective and policies for facility systems--in general	Not Applicable
§226-15 Objectives and policies for facility systems--solid and liquid wastes	Not Applicable
§226-16 Objective and policies for facility systems--water	Not Applicable
§226-17 Objectives and policies for facility systems--transportation	**Applicable**
§226-18 Objectives and policies for facility systems—energy/telecommunications	Not Applicable
§226-19 Objectives and policies for socio-cultural advancement--housing	**Applicable**
§226-20 Objectives and policies for socio-cultural advancement--health	Not Applicable
§226-21 Objective and policies for socio-cultural advancement--education	Not Applicable
§226-22 Objective and policies for socio-cultural advancement--social services	Not Applicable
§226-23 Objective and policies for socio-cultural advancement--leisure	Not Applicable
§226-24 Objective and policies for socio-cultural advancement--individual rights and personal well-being	Not Applicable
§226-25 Objective and policies for socio-cultural advancement--culture	Not Applicable
§226-26 Objectives and policies for socio-cultural advancement--public safety	Not Applicable
§226-27 Objectives and policies for socio-cultural advancement--government	Not Applicable
Priority Guidelines	
§226-103 Economic priority guidelines	Not Applicable

§226-104 Population growth and land resources priority guidelines	**Applicable**
§226-105 Crime and criminal justice	Not Applicable
§226-106 Affordable housing	**Applicable**
§226-107 Quality education	Not Applicable
§226-108 Sustainability	**Applicable**
§226-109 Climate change adaptation priority guideline	**Applicable**

The objectives, policies, and priority guidelines of the Hawai‘i State Plan directly applicable to the proposed Project are discussed in further detail below.

Section 226-5 Objectives and policies for population

(b)(1) Manage population growth statewide in a manner that provides increased opportunities for Hawai‘i's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.

(b)(3) Promote increased opportunities for Hawai‘i's people to pursue their socio-economic aspirations throughout the islands.

Discussion: The proposed Project is planned to be affordable rental housing for seniors with the following proposed housing mix: 8 units for seniors earning 30% of the AMI or below; 131 units for seniors earning 60% of the AMI or below; and 16 units for seniors earning 80% of the AMI or below. Demographic trends on the island show that in the next 20 years, the segments of the population that will grow the most are those aged 45 to 64, 65 to 81, and 82, as discussed in **Section 5.1**. The island as a whole is aging. The Project will create the opportunity for much-needed affordable housing for the growing senior population, and maintain socio-economic diversity in the urban core of Honolulu. Creation of additional affordable housing will allow local people to pursue other aspirations while easing the burden of rising housing costs.

Section 226-6 Objectives and policies for the economy- in general.

(b)(6) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.

(b)(8) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.

(9) Foster greater cooperation and coordination between the public and private sectors in developing Hawai‘i's employment and economic growth opportunities.

Discussion: The Project is estimated to result in the creation of approximately 260 development--related jobs and five operations-related jobs. Employees would primarily be comprised of local people, thus contributing to greater job security within the construction and building sector.

Section 226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.

(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(b)(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.

(b)(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.

(b)(8) Pursue compatible relationships among activities, facilities, and natural resources.

(b)(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Discussion: The physical attributes of this area along with the surrounding uses were taken into account in planning the proposed facility. The Project Site has already been developed, and does not contain environmentally-sensitive habitats. Northwest of the Project Site is the Nu'uanu Stream. A pedestrian mall, Sun Yat Sen Mall, runs adjacent to the Nu'uanu Stream. The Nu'uanu Stream is also considered by HDOH as impaired for various pollutants. During construction, various mitigation measures as discussed throughout will be employed to minimize impacts to the Nu'uanu Stream. In the long-term, the Project will include storm water drainage improvements. The proposed Project will not adversely impact this stream. Rather, the proposed Project will enhance the existing streetscape environment that will allow residents to interact with the natural surrounding environment.

Section 226-12 Objective and policies for the physical environment-scenic, natural beauty, and historic resources.

(b)(1) Promote the preservation and restoration of significant natural and historic resources.

(b)(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.

(b)(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.

Discussion: The Project includes the demolition of the existing building. The Draft AIS determined that the Project has the potential to impact the archaeological historic property (SIHP # -8840) and thus the Project's effect determination per HAR §13-275-7 is "effect, with agreed upon mitigation commitments." In addition, under Section 106 of the NHPA, the Project will have an "adverse effect" on SIHP # -8840. For further discussion, see **Section 5.2**. See **also Appendix N, Archaeological Inventory Study Report** and Appendix P, Memorandum of Agreement. The Project will not have an adverse impact on any views or vistas identified in the PUC DP, as discussed in **Section 3.6**.

Section 226-13 Objectives and policies for the physical environment--land, air, and water quality.

(b)(2) Promote the proper management of Hawai'i's land and water resources.

(b)(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.

(b)(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.

(b)(7) Encourage urban developments in close proximity to existing services and facilities.

> **Discussion:** The Project is located within the PUC, in an area well-served by public transit, shopping, and social and recreational resources. Furthermore, it is located within the Downtown TOD Plan area. Because of its convenient location, the Project Site is ideal for the use of residential development for seniors because it offers an opportunity to access needs and recreation without the use of a car. Construction BMPs will be implemented to protect land and water resources. The Project will incorporate LID design techniques, and effects to Nu'uanu Stream will be minimized.

Section 226-17 Objectives and policies for facility systems--transportation.

(a)(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.

(a)(2) A statewide transportation system consistent with planned growth objectives throughout the State.

(b)(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter.

(b)(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs.

(b)(6) Encourage transportation systems that serve to accommodate present and future development needs of communities.

(b)(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai'i's natural environment.

> **Discussion:** The proposed Project is located within a walkable community within the proposed Downtown TOD SD. The Project Site is also in proximity to bus service, as discussed in **Section 4.1**. Close proximity to public transit alternatives will offer seniors the ability to access shopping and recreational resources without the need of a car. Additionally, secured, long-term bicycle storage within the parking structure will be available to residents. The location of the residential facility will allow residents to utilize alternative modes of transportation, thus contributing to a reduction in GHG emissions.

Section 226-19 Objectives and policies for socio-cultural advancement – housing

(b)(1) Effectively accommodate the housing needs of Hawai'i's people.

(b)(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.

(b)(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.

(b)(4) Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.

(b)(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.

Discussion: The Project will provide 155 rental housing units for seniors earning 80% or below AMI within the PUC. The proposed housing mix is presented in **Table 1**. The provision of affordable rental housing will achieve the State Plan objective of increasing rental opportunities and choice for various income groups. The Project will meet the needs of the island's progressively aging population. The Project Site is located in an area of Downtown-Chinatown that will allow residents to take advantage of the surrounding social and recreational opportunities, which will greatly contribute to seniors' quality of life. The demolition of the existing, dilapidated, vacant building and improvements to the Project Site will enhance the surrounding community.

Section 226-104 Population growth and land resources priority guidelines.

(a)(1) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.

Discussion: The Project site is located within the PUC, which is home to almost half of the island's population. While growth is expected to be directed towards the 'Ewa region, City projections still forecast an increase of the population within the PUC as discussed in **Section 5.1**. The Project would provide 155 rental housing units for seniors, which will be essential in accommodating the expected population growth. *Section 226-109 Climate change adaptation priority guidelines. Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy shall:*

(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;

(6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;

(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;

(8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities.

(9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and

(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy.

Discussion: The Project will consider sea level rise and climate change adaptation policies as recommended in the *Hawai'i Sea Level Rise Vulnerability and Adaptation Report*. (2017) and updated by the Guidance from the Honolulu Climate Change Commission, the City and County of Honolulu has found that a planning benchmark of six feet of sea level rise (SLR) is appropriate for projects with a life-span beyond mid- century, and for critical infrastructure. High tide flooding and nuisance flooding may be present and precede global mean SLR by decades. The National Oceanic and Atmospheric Administrators (NOAA) have come up with a viewer to view impacted areas at different levels of sea level rise. At six feet the Project Site will not be affected by sea level rise. The Project is pursuing LEED certification and will be designed to meet LEED silver, which is understood to contribute to overall resilience of the Project site and wider community. Design features may include, but are not limited to, the use of landscape buffers and other LID measures. Additionally, smart growth policies advocate compact development and neighborhood design that reduces the use of cars, which emit GHGs. The Project Site is well-served by public transit, and is in close proximity to the future Chinatown Rail station. The Project will also improve the streetscape along the frontage of the new building, which will improve the pedestrian environment. The convenient location of the Project near services and the existing transportation network will allow seniors the freedom to move about without the need of a car.

6.2.2 Hawai'i State Land Use Law

The Hawai'i State Land Use Law (HRS, Chapter 205), adopted in 1961, is intended to preserve and protect Hawai'i's lands and encourage the uses to which the lands are best suited. All land in Hawai'i is classified in one of the following four SLUDs: Urban, Rural, Agricultural or Conservation.

The subject Project site is located in the "Urban" district. See **Figure 18: State Land Use Map.** HRS, Chapter 205-2, "Districting and classification of lands" states the following:

(a) There shall be four major land use districts in which all lands in the State shall be placed: urban, rural, agricultural, and conservation. The land use commission shall group contiguous land areas suitable for inclusion in one of these four major districts. The commission shall set standards for determining the boundaries of each district, provided that:

(1) In the establishment of boundaries of urban districts those lads that are now in urban use and a sufficient reserve area for foreseeable urban growth shall be included.

In establishing the boundaries of the districts in each county, the commission shall give consideration to the master plan or general plan of the county.

(b) Urban districts shall include activities or uses as provided by ordinances or regulations of the county within which the urban district is situated.

Discussion: The Project is located in the Urban district. A SLUD Boundary Amendment is not needed to redevelop the property as proposed. The proposed use of the subject property for residential development would be consistent with the Urban designation.

6.2.3 Affordable Rental Housing Report and Ten-Year Plan (July 2018)

In July 2018, the DBEDT-OP published the *Affordable Rental Housing Report and Ten-Year Plan* ("Ten-Year Plan"), in accordance with Act 127 signed by Governor David Y. Ige on June 29, 2016, which established a goal of developing 22,500 affordable rental units statewide by December 31, 2026. However, the Ten-Year Plan cites DBEDT statistics that project statewide demand to be 64,693 units statewide by 2025, with nearly 70% needed for households earning 80% or less of the AMI. The DBEDT-OP's Ten-Year Plan further specified the housing production goals for each HUD income group. The goal stipulated for Honolulu under Act 127 is to develop 9,002 new affordable rental units (while the need is projected to be and 25,847 units by 2025) with the greatest need being as follows:

- Less than 30% AMI: 2,160 units
- 30% to 50% AMI: 1,740 units
- 50% to 60% AMI: 884 units

Figure 18: State Land Use Map



6.2.4 Coastal Zone Management Act (CZMA), HRS, 205(A)

The Federal CZMA enacted in 1972, provides states with financial incentives for the development and implementation of CZM practices, and limited review power over Federal actions affecting the State's Coastal Zone. As a response, HRS, Chapter 250(A), Hawai'i Coastal Zone Law, as amended, was enacted in 1977. The State has designated CZMP to manage the intent, purpose and provisions of HRS, Chapter 250(A)-2 for the areas from the shoreline to the seaward limit of the State's jurisdiction, and any other area which a lead agency may designate for the purpose of administering the CZMP. All land and water use activities in the State must comply with HRS, Chapter 205(A). The CZMP is administered by the DBEDT, OP.

Discussion: The Project Site is not within a Coastal Zone Management Area. See **Section 6.1.5** for a full discussion.

6.3 CITY AND COUNTY OF HONOLULU LAND USE PLANS AND REGULATIONS

6.3.1 General Plan for the City and County of Honolulu (Proposed Revised Plan, 2017)

The City's General Plan (GP) is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of O'ahu residents, as well as strategies of action needed to achieve such goals. It is the focal point of a comprehensive planning process that addresses physical, social, economic, and environmental concerns affecting the City. This planning process serves as the coordinative means by which the City provides for the future growth of the metropolitan area of Honolulu.

The GP was adopted in 1992, and amended in 2002. DPP completed its Proposed Revised GP in December 2017. The Proposed Revised GP has been reviewed by the Planning Commission, and is currently being reviewed by the Honolulu City Council for adoption. An update to the GP is underway. Its working title is *O'ahu 2035: General Plan Focused Update*. The update considers critical issues of growth, development, and quality of life that island residents are most concerned about, including regional population, economic health, affordable housing, and sustainability.

The following sections highlight excerpts of the Proposed Revised GP that are particularly relevant to this Project (emphasis added).

PART I: POPULATION.

- *Objective A: To plan for anticipated population growth in a manner that acknowledges the limits of O'ahu's natural resources, that protects the environment, and that minimizes social, cultural, and economic disruptions.*
  - *Policy 1: Allocate efficiently the money and resources of the City and County in order to meet the needs of O'ahu's anticipated future population.*
  - *Policy 3: Seek a balanced pace of physical development in harmony with the County's environmental, social, cultural, and economic goals by effecting and enforcing City and County regulations.*
- *Objective B: To establish a pattern of population distribution that will allow the people of O'ahu to live and work in harmony.*
  - *Policy 1: Facilitate the full development of the primary urban center.*

Discussion: The Project will be developed on a City property that is currently underutilized and considered urban blight. City support for the Project represents an efficient use of their resource. The Project will also be developed under the HRS, Chapter 201H Affordable Housing exemption

program. The Project exceeds the minimum requirements of HRS, Chapter 201H because it provides 100% of the units to seniors earning 80% or below of the AMI.

As discussed throughout this EA, the Project Site is located within the PUC, which is home to almost half of the island's population. City projections still indicate an increase of the population within the PUC of 67,000 people from 2000 to 2025, for a total of 486,000 persons (DPP, 2004). As discussed in **Section 5.1**, population aging is one of the most prominent features of the State's population trend, increasing by 3.3% annually on average. The proposed Project would provide 155 affordable senior rental housing units, which will be essential in accommodating the expected population growth amongst the senior demographic.

PART IV: HOUSING.

- *Objective A: To provide decent housing for all the people of O'ahu at prices they can afford.*
  - *Policy 5: Make full use of State and Federal programs that provide financial assistance for low- and moderate-income homebuyers.*
  - *Policy 12: Promote higher-density, mixed use development, including transit-oriented development, to increase the supply of affordable and market homes convenient to jobs, shops, and public transit.*
  - *Policy 13: Encourage the provision of affordable housing designed for the elderly and the handicapped.*

- *Objective C: To provide the people of O'ahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.*

  - *Policy 1: Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.*
  - *Policy 3: Encourage residential development near employment centers.*
  - *Policy 4: Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.*
  - *Policy 5: Support mixed-use, higher-density redevelopment in areas surrounding future transit stations.*

Discussion: The Project will be a direct fulfillment of the GP policy to provide affordable housing for the elderly. LIHTC has been approved by the HHFDC, and units will be affordable for seniors earning 80% or below of the AMI, with a majority of units available for seniors earning 60% of the AMI or below (refer to Table 1) for the proposed housing mix. The Project would include units that range from one to two-bedrooms, further contributing to a mix of housing.

As discussed throughout this EA, the Project Site is located within 0.4-mile of the future Chinatown Rail Station. The proposed Project would be consistent with the Downtown TOD Plan goals in providing affordable housing near Rail and other public transit. The Project Site is currently underutilized, but near various shopping, cultural, and social/recreational opportunities for seniors. Therefore, the Project will result in an optimization of use of the property.

PART V. TRANSPORTATION & UTILITIES.

- *Objective A: To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel.*

    - *Policy 7: Promote the use of public transportation as a means of moving people quickly and efficiently, of conserving energy, and of guiding urban development.*

Discussion: The Project Site is located within 0.4-mile of the future Chinatown Rail Station and within the proposed Downtown TOD SD. The Project will be consistent with the Downtown TOD SD goals in providing affordable housing near Rail and other public transit. The Project location is near services, recreation, and cultural resources for seniors that will allow seniors the opportunity to forgo the costs of supporting a vehicle.

PART VII: PHYSICAL DEVELOPMENT AND URBAN DESIGN.

- *Objective A: To coordinate changes in the physical environment of O'ahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.*
    - *Policy 1: Provide infrastructure improvements to serve new growth areas, redevelopment areas, and areas with badly deteriorating infrastructure.*
    - *Policy 5: Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.*
    - *Policy 6: Facilitate transit-oriented development in rail transit station areas to create live/work/play multi-modal communities that reduce travel and traffic congestion.*
    - *Policy 13: Promote opportunities for the community to participate meaningfully in planning and development processes, including new forms of communication and social media.*
- *Objective F: To create and maintain attractive, meaningful, and stimulating environments throughout O'ahu.*

    - *Policy 1: Encourage distinctive community identities for both new and existing communities and neighborhoods.*

- *Objective G: To promote and enhance the social and physical character of O'ahu's older towns and neighborhoods.*

    - *Policy 1: Encourage new construction in established areas to be compatible with the character and cultural values of the surrounding community.*

    - *Policy 2: Encourage, wherever desirable, the rehabilitation of existing substandard structures.*

    - *Policy 6: Support and encourage cohesive neighborhoods which foster interactions among neighborhoods, promote vibrant community life, and enhance livability.*

Discussion: The Project will revitalize a currently underutilized property considered to be urban blight. The existing building will be demolished to make way for the new facility. The building is currently vacant, dilapidated, and contains hazardous materials. The proposed Project has been designed in consultation with the community and Feng Shui advisors as discussed in detail in **Section 7.7**. As discussed throughout this EA, the Project Site is located within 0.4-mile of the future Chinatown Rail Station. The proposed Project will be consistent with the Downtown TOD SD goals in encouraging compact development and providing affordable housing near Rail and other public transit. Residents of the Project would also be provided various amenities on the ground floor, including an outdoor courtyard, multi-purpose room and activity rooms, along with a computer room. The proposed Project will also place senior residents near cultural, social, and recreational opportunities that contribute to the vibrancy of the Chinatown neighborhood.

Part IX: Health and Education: To protect the health and well-being of residents and visitors.

- *Objective A: To protect the health and well-being of residents and visitors.*
  - *Policy 9: Support becoming an age-friendly city that provides people of all ages with user-friendly parks and other public gathering places, that offers safe streets and multi-modal transportation options, that provides an adequate supply of affordable housing, that encourages growth in needed and desirable jobs, that provides quality health-care and support services, and that encourages civic participation, social inclusion, and respect between interest groups.*
  - *Policy 10: Plan for our aging population's growing health-care, personal service, and diverse daily activity needs, and encourage these services to be provided in a timely manner, including age-specific social activities.*

Discussion: The Project is a direct fulfillment of the City's Age-Friendly policies. As discussed, the Project will provide units affordable to seniors earning 80% of the AMI or below, with a majority of units for seniors earning 60% of the AMI or below (see **Table 1**). The Project is intended to meet the demand of the island's growing senior population. Furthermore, the Project Site's location will put senior residents near cultural, social, and recreational opportunities/amenities and reduce their need to drive.

X. Culture and Recreation

- *Objective A: To foster the multiethnic culture of Hawai'i and respect the host culture of the Native Hawaiian people.*
  - *Policy 2: Promote the preservation and enhancement of local cultures, values, and traditions.*
  - *Policy 4: Encourage opportunities for better interaction among people with different ethnic, social, and cultural backgrounds.*
  - *Policy 5: Preserve the identities of the historical communities of O'ahu.*
- *Objective B: To protect, preserve and enhance O'ahu's cultural, historic, architectural, and archaeological resources.*

- *Policy 2: Identify and, to the extent possible, preserve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.*
- *Cooperate with the State and Federal governments in developing and implementing a comprehensive preservation program for social, cultural, historic, architectural, and archaeological resources.*

Discussion: The Project is located within the Downtown-Chinatown neighborhood of Honolulu (though not within the Chinatown SD or Punchbowl SD). Various cultural establishments that contribute to the unique character of the neighborhood are located in close proximity to the Project Site. The Project will revitalize a currently underutilized property considered to be urban blight. The existing building will be demolished to construct the new residential facility. The existing building is currently vacant, dilapidated, and contains hazardous materials. Additionally, the new residential facility has been designed in consultation with the community and Feng Shui advisors as discussed in **Section 7.7**. NHPA Section 106 consultation was conducted, as discussed in **Section 5.2**.

XI. Government Operations and Fiscal Management

- *Objective A: To promote increased efficiency, effectiveness, and responsiveness in the provision of government services by the City.*
  - *Policy 3: Ensure that government attitudes, actions, and services are sensitive to community needs and concerns.*

Discussion: As discussed in **Section 2.6.2**, the community preferred the construction of a senior residence facility as opposed to a "Housing First" alternative. The City therefore entered into a Development Agreement with HSD to develop the Project on its property as such. Since 2014, HSD has consulted extensively with the community and made design modifications in response to stakeholder needs and concerns.

6.3.2 Primary Urban Center Development Plan

Supporting the GP are the sustainable communities plans and development plans (DPs) for various regions of O'ahu. Each plan explains the role of the particular region in O'ahu's overall development pattern; the vision statement for the area; land use policies, principles and guidelines; public facilities and infrastructure policies and principles; implementation strategies; and maps of Open Space, Land Use and Public Utilities. The PUC DP was adopted by the City Council via Ordinance 04-14 in June 2004, and is currently being updated by DPP. The plan was prepared as a community-developed guidance document for orderly and coordinated public and private sector development in the PUC DP area in a manner that is consistent with applicable GP provisions, including the designation of the PUC as the principal region for future growth in residential population and jobs.

The Project site is located within the PUC DP area, specifically within the "Urban Community Boundary" and has been designated as "Medium and Higher-Density Residential Mixed Use." See **Figure 4**.

The following sections highlight excerpts of the PUC DP that are particularly relevant to this Project (emphasis added).

Chapter 2: The Vision for the PUC's Future

- *Livable neighborhoods have business districts, parks and plazas, and walkable streets.*
- *The PUC offers in-town housing choices for people of all ages and incomes.*
- *A balanced transportation system provides excellent mobility for residents and visitors.*

Discussion: The proposed Project would help fulfill the development vision set forth in the PUC DP. The proposed Project Site is near shopping, restaurants, cultural, social, and recreational opportunities and reduces the need to drive. The use of bus and rail transit, bicycling and walking will be encouraged by the Project proximity to the future Chinatown Rail Station. The courtyard and improvements to the River Street streetscape will help integrate the Project with neighboring uses. HSD will contribute to the supply of affordable rental units by supporting housing for seniors in the 30% AMI, 60% AMI, and 80% AMI or below income brackets. All units will be ADA compliant or adaptable and equipped with energy saving kitchen appliances, along with air conditioning.

Chapter 3: Land Use and Transportation

Protecting and Enhancing Natural, Cultural and Scenic Resources

- *Preserve historic and cultural sites*
- *Preserve panoramic views of natural landmarks and the urban skyline*
- *Provide parks and active recreation areas*

Discussion: Section 106, NHPA consultation was conducted for the Project. The Draft AIS determined that the Project has the potential to impact the archaeological historic property (SIHP # -8840) and thus the Project's effect determination per HAR §13-275-7 is "effect, with agreed upon mitigation commitments." In addition, under Section 106 of the NHPA, the Project will have an "adverse effect" on SIHP # -8840. The agreed upon mitigation commitments included in the Draft AIS, include preparing a BTP for the human burial site, identified as Component 3 of SIHP # -8840 and archaeological monitoring for Components 1–3 of SIHP # -8840. With the implementation of these mitigation commitments, the Project's potential adverse effect on SIHP # -8840, subsurface cultural deposits will be reduced. For further discussion, see **Section 5.2.**

As discussed in **Section 3.6**, the proposed building will not interfere with any panoramic views. The Project Site is well-served by parks and recreational resources, as discussed in **Section 4.2**. Additionally, the new building will include a multi-purpose room with warming kitchen, restrooms, storage, a computer room, social services activity rooms, social services office, a courtyard, and retail space. The fourth floor will include a covered recreation deck and dog area for additional recreation opportunities.

Cultivating Livable Neighborhoods

- *Develop a system for collaborative neighborhood planning:*
- *Cultivate existing and new "neighborhood centers"*
- *Make streets "pedestrian-friendly"*

Discussion: The existing Project Site is underutilized and considered urban blight. The proposed Project would renew the Project Site and enhance the design and safety of the surrounding neighborhood through streetscape enhancements. The Project will include a multi-purpose room for resident and neighborhood use. HSD started consultation with the surrounding community and

other stakeholders on the Project in 2014 and has incorporated various design recommendations. The Project has also been conceived with input from Feng Shui professionals.

In-Town Housing Choices

- *Reduce costs for apartment homes.*
- *Preserve and expand the current inventory of affordable rental housing units.*
- *Provide incentives and cost savings for affordable housing.*
- *Provide for high-density housing optiotemp to deletens in mixed-use developments around transit stations.*

Discussion: The Project will consist of one- and two-bedroom affordable rental units for seniors earning 30% of the AMI, 60% of the AMI, and 80% of the AMI or below. In order to construct the Project, HSD will seek Chapter HRS, 201H exemptions to ameliorate the cost of the Project.

The proposed Project is a recipient of various affordable housing financing tools, including LIHTC, as discussed in **Section 2.7**. HSD will also seek affordable housing exemptions under HRS, Chapter 201H as discussed in **Section 6.3.4**.

Develop a Balanced Transportation System

- *Implement land use strategies to achieve a balanced transportation system.*
- *Implement Transportation Demand Management strategies.*
- *Implement the Honolulu Bicycle Master Plan.*
- *Enhance and improve pedestrian mobility.*
- *Encourage the full use of existing private and public parking garages.*

Discussion: Because the Project is targeted to seniors and is located in close proximity to shopping, cultural, social, and recreational resources/amenities, HSD will seek exemptions to off-street parking and loading requirements through the HRS, Chapter 201H process. The Project will be constructed with 51 parking stalls. Sidewalks along River Street will be improved with landscaping and trees that enhance the pedestrian environment. The proposed Project is consistent with these policies and guidelines.

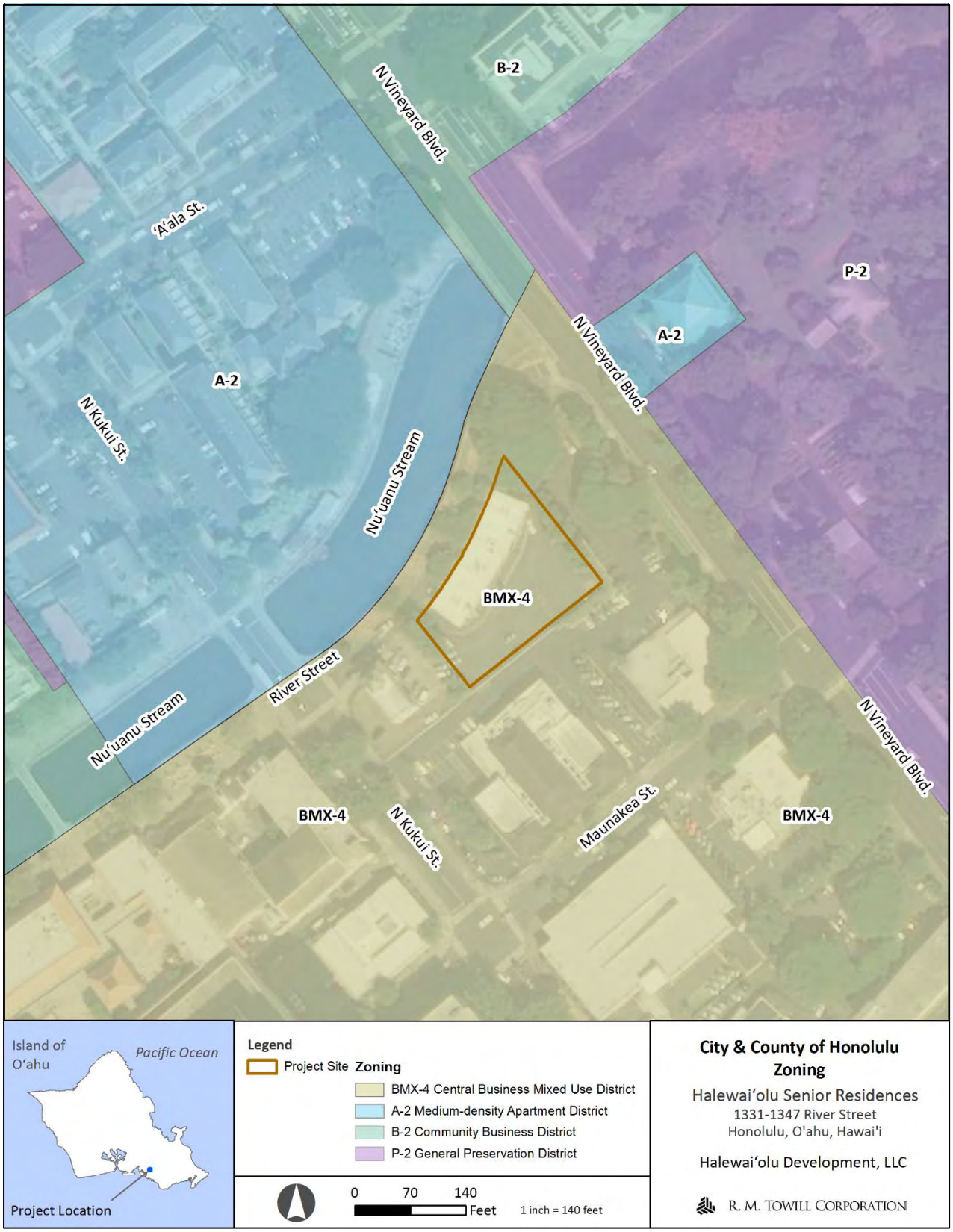
6.3.3 City and County of Honolulu Zoning

The subject property is in the BMX-4 district. See **Figure 19: City and County of Honolulu Zoning**. Land uses within the City jurisdiction are regulated under the ROH, Chapter 21, LUO. The LUO regulates land use in a manner that encourages the orderly development in accordance with the GP and DPs. The intent of the Business Mixed Use (BMX) district is to:

> *"Set apart that portion of Honolulu which forms the city's center for financial, office and governmental activities and housing. It is intended for the downtown area and not intended for general application. It provides the highest land use intensity for commerce, business, and housing."*

The residential housing proposed by this Project is a permitted use within the BMX-4 district, per ROH, Sec. 21-3, Table 21-3, *Master Use Table*. See Table 18: Land Use Development Standards below for the development standards for BMX-4 district as compared to the proposed Project.

Figure 19: City and County of Honolulu Zoning



Discussion: The Project use will be conforming with respect to land use and most zoning development standards. For those standards it does not meet, the Project will seek HRS Chapter 201H exemptions for affordable housing.

Table 18: Land Use Ordinance Development Standards

Development Standard	BMX-4	Proposed
Minimum Lot Area	5,000 square feet	26,925 square feet Compliant
Minimum Lot Width and Depth	50 feet	200 feet/143 feet Compliant
Front Yard	10 feet for dwellings 5 feet for other uses	0 feet Noncompliant
Side and Rear Setbacks	0 feet	3 feet Compliant
Maximum Building Area (square feet)	Not regulated	20,976 square feet
Maximum Height (feet)	350 feet	about 174 feet Compliant
Height Setbacks	"…for a minimum of 50% of any contiguous street frontage, no portion of a structure located on a lot adjacent to a street may exceed a height that is intersected by a plane over the buildable area that makes an angle of 65 degrees with the horizontal at ground elevation at the centerline of	54% provided Compliant
Maximum Allowable Floor Area	FAR 4.0 4.0 x 26,925 = 107,700 square feet	FAR 5.9 or 157,946 square feet Noncompliant
Minimum Off-street Parking Requirements	1. Dwelling units: 1 stall per unit = 156 stalls 2. Multi-purpose Room: 1 stall per 300 square feet = 35 stalls 3. Retail: 1 stall per 600 square feet (if > 4,000 square feet) = 0 stalls 4. Office: (1 stall per 600 square feet over 4,000 square feet) = 0 stalls Accessible Stalls: 4 Total Required: 191 stalls	51 stalls provided, includes 4 accessible stalls Noncompliant

Development Standard	BMX-4	Proposed
Off-street Loading Requirements	2 Loading Stalls: • One 12 feet x 35 feet x 14 feet • One 8.5 feet x 19 feet x 10 feet	1 Loading Stall (8 feet x 24 feet x 10 feet) Noncompliant
Bicycle Parking	Residential • Short-term: 1 space for every 10 units = 16 spaces • Long-term: 1 space for every 2 dwellings = 78 spaces	• 6 short-term stalls (Noncompliant) • 76 long-term stalls (Noncompliant)
	Non-Residential • Short-term: 1 per 2,000 square feet = 3 stalls • Long-term: 12,000 square feet = 1 stall	• 3 short-term stalls • 1 long-term stall

The Project will provide 51 off-street parking stalls that will include stalls to meet ADA requirements (the Development Agreement which projected 75 parking stalls and 10 ADA stalls for the Project will need to be modified, after the parameters of the 201H Approval by City Council, which may involve other changes to the Project described in the Development Agreement). One off-street loading area will be provided. DPP has recommended 25 parking stalls, since the Project Site is in walking distance to the future transit station and bus stops. The proposed 51 parking stalls represents a middle ground between the Development and DPP's recommendation. As necessary, the number of accessible parking stalls provided will be based on the requirements of the HDOH, DCAB Interpretive Opinion 2014-05.

Bicycle parking stalls located on the ground floor will be used for short-term bicycle parking.

Table 19: Land Use Ordinance Development Standards – Special District – Transit Oriented Development (TOD)

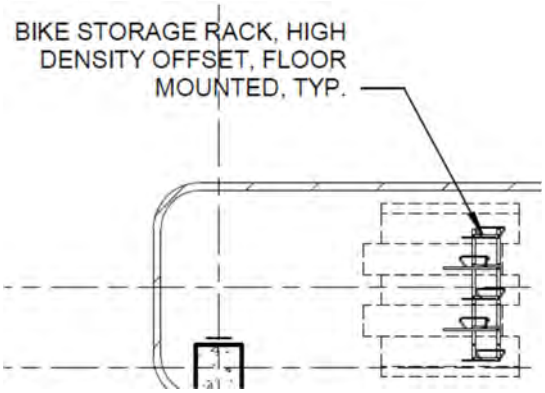
Development Standard	TOD	Proposed
Front Yard Setback ROH,21-9.100-8(a)(3)(D)(iii)	On a lot with a street frontage greater than 100 feet per frontage, the ground floor building facade must be placed within the maximum front setback for at least 65 percent of the linear street frontage.	Activities Center to be setback 0 feet and makes up 40% of street frontage. Noncompliant
Front Yard Setback ROH, 21-9.100-8(a)(3)(E)(ii)	For ground-floor residential uses, covered porches, stoops, or lanais may encroach into the required front yard. Other portions of the front yard must be landscaped, except for necessary access drives and walkways.	An open paved courtyard will encroach into the required front yard and as proposed landscaping will include potted trees. Noncompliant

Development Standard	TOD	Proposed
Building Orientation and Entrances ROH, 21-9.100-8(a)(4)(C)	At least one entrance must be placed every 50 feet of the building facade facing a street or pedestrian plaza.	One entrance facing the street along the 217-foot street frontage and two entrances facing the courtyard. Noncompliant
Building Transparency ROH, 21-9.100-8(a)(5)(A)	Building facades within 20 feet of a front or street-facing property line must contain windows, doors, or other openings for at least 60 percent of the building facade area located between 2.5 and 7 feet above the level of the sidewalk. Blank walls cannot extend for more than 25 feet in a continuous horizontal plane without an opening on the ground floor of a building.	Compliant
Minimum Off-street Parking Requirements ROH,21-9.100-8(c)(1)	1. Dwelling units 301-600 sq.ft. – 0.50 stalls – 130 = 65 601-800 sq.ft. – 0.75 stalls – 26 = 26 2. No minimum parking requirements for non-residential uses Multi-purpose Room: 0 stalls Retail: 0 stalls Office: 0 stalls Total Required: 91 stalls	51 stalls provided, includes 4 accessible stalls Noncompliant

Requested Exemptions and Deferrals

Although the Downtown TOD Plan was adopted by the City by Resolution 16-247, CD1, FD1, the boundaries of the Downtown TOD SD have not yet been designated, as defined in the ROH, Chapter 21, LUO. Therefore, there is some uncertainty as to whether or not the Project is also within the Downtown TOD SD. Therefore, **Table 20: Summary of Requested Exemptions and Deferrals** includes a summary of requested exemptions and deferrals related to both the BMX-4 district and the anticipated Downtown TOD SD, pursuant to HRS, Chapter 201H.

Table 20: Summary of Requested Exemptions and Deferrals

Development Standard / Requirement	Relevant Section	Requested Exemption	Applicable Agency
Front Yard Setback	ROH, Table 21-3.4	Exemption from 5-foot minimum front yard setback to 0 feet.	DPP/LUPD
FAR	ROH, Table 21-3.4	Maximum allowable density is 4.0; proposed FAR is 5.9.	DPP/LUPD
Off-street Parking Requirements	ROH, Table 21-6.2	Reduction in off-street parking requirement of 191 stalls per Sec. 21-6.20 to 51 stalls.	DPP/LUPD
Loading Space Requirements	ROH, 21-6.100	Reduction in required loading from 2 spaces to 1 space (large).	DPP/LUPD
Loading Space Requirements Size	ROH, 21-6.120	Exemption from loading stall sizes to allow a loading stall sized at 8 x 24 x 10.	DPP/LUPD
Bicycle Parking	ROH, 21-6.150(a)	Reduction in number of bicycle parking stalls for residential uses from 16 short-term spaces to 6 spaces, and 78 long-term spaces to 76 spaces for a total of 82 spaces for residential stalls. Reduce bicycle stall dimensions from 2'-0" x 6'-0" to 1'-4" x 6'-0" (to allow high-density, offset bike parking). See image 	DPP/LUPD
Location	ROH, 21-6.150(b)	Short-term bicycle parking should be located as close as possible to the entrances of the principal uses on a lot so that it is highly visible and easily identifiable.	
Front Yard Setback	ROH,21-9.100-8(a)(3)(D)(iii)	Exemption from standard to allow for the Activities Center to be setback 0 feet and make up 40% of street frontage.	DPP/LUPD
Front Yard Setback	ROH, 21-9.100-8(a)(3)(E)(ii)	Exemption from standard to allow an open paved courtyard to encroach into the required front yard and to approve proposed landscaping (potted trees).	DPP/LUPD

Development Standard / Requirement	Relevant Section	Requested Exemption	Applicable Agency
Structured Parking and Podiums	TOD Design Guidelines	Exemption from standard requiring parking podium be lined with habitable spaces or screened with a green wall or architecturally integrated false façade or screen.	DPP/LUPD
Structured Parking and Podiums	TOD Design Guidelines	Exemption from standard requiring structured parking to be located underground.	DPP/LUPD
Structured Parking and Podiums	TOD Design Guidelines	Exemption from standard requiring that parking podiums must be built with standard ceiling heights and level floors.	DPP/LUPD
Vehicle Parking, Loading, and Bicycle Parking	ROH,21-9.100-8(c)(3)	Exemption from standard to locate service areas and loading stalls at the side or rear of the site.	DPP/LUPD
Vehicle Parking, Loading, and Bicycle Parking	ROH,21-9.100-8(c)(5)	Exemption from standard that ground floor of parking structures on all streets must be designed and used for active ground floor activities within 40 feet of the front property line.	DPP/LUPD
Building Orientation and Entrances	ROH, 21-9.100-8(a)(4)(C)	Exemption from standard to allow for one entrance facing the courtyard along the 217-foot street frontage instead of one entrance placed every 50 feet of the building façade.	DPP/LUPD
Building Permit Fees	ROH, 18-6.2	Exemption from building permit fees (including demolition, building, foundation, plumbing, electrical, fire sprinkler, etc.).	DPP
Plan Review Fees	ROH, 18-6.1	Exemption from plan review fees.	DPP
Grading, Grubbing, and Stockpiling permit	ROH, 14-14.4	Exemption grading stockpiling, trenching, grubbing and de-watering fees.	DPP
Storm Drain Connection	ROH, 14-12.12	Exemption from storm drain connection license fee to facilitate the achievement of Project economic feasibility.	DPP and ENV
Trenching	ROH, 14-17.1	Exemption from trenching, repair and service permit fees.	DPP

Development Standard / Requirement	Relevant Section	Requested Exemption	Applicable Agency
Water System Connection	1-102, 2-202(2), and 2-202(3) of the Board of Water Supply Rules and Regulations	Exemption from water system connection and facility charges attributed to affordable dwelling units. If required, deferral of fees until certificate of occupancy.	BWS
Sewer Lateral Connection and Facility	ROH, 14-3.2	Exemption of payment of sewer lateral connection and installation charges.	DPP/ Wastewater Branch
Wastewater System Facility Charge	ROH, 14-10.3	Exemption from payment of wastewater connection fees. If required, deferral of fees until certificate of occupancy.	DPP/ Wastewater Branch
Park Dedication	ROH, 22-7	Exemption from park dedication requirements as proposed and exemption from the park dedication process.	DPP and DPR
Fire Department Plan Review Fees	ROH, 20-1.1(3)10.a	Exemption from HFD plan review fees.	HFD
Downtown TOD Special District Permit Process	ROH, 21-2.40-2 Major Permits	Exemption from Major Permit process for the Downtown TOD Special District.	DPP

6.3.4 Downtown Neighborhood TOD Plan (2017)

The City has prepared neighborhood TOD plans that integrate land use and transportation planning around the rail stations in anticipation of the rail. These plans are intended to address opportunities for new development, including rehabilitation and adaptive reuse of existing buildings and assets, increased density and height limits in appropriate areas around the stations to leverage locational advantages, and a holistic plan for orderly growth and improved accessibility around the stations. The Downtown TOD Plan addresses land use, local transportation, public facilities and services, economics, infrastructure planning, and options for implementation around the three Downtown stations: Downtown, Chinatown, and Iwilei. The Honolulu City Council adopted the August 2017 version of the Downtown TOD Plan on September 6, 2017 as City, Council Resolution No. 16-247, CD1, FD1. The Downtown TOD Plan defines TOD as follows:

> *"Transit-oriented development (TOD) typically refers to development within easy walking distance of a major transit stop that both capitalizes on and supports transit ridership. TOD may be redevelopment of existing facilities or new development. Transit stops may be rail stations, major bust stops, or other well-used transit hubs. The area where TOD typically occurs is the 1/4 -or 1/2-mile radius around the station/stop (a five or ten-minute walk). TOD should be designed at the pedestrian scale since all transit trips begin and end as walking trips. TOD is typically moderate to higher density development, with a mix of residences, employment, and shopping. Higher densities are an important part of the TOD definition in order to encourage use of transit, reduce the area developed to parking, and support shopping, open space and pedestrian facilities."*

The Project is located within the proposed Downtown TOD SD and 0.4-mile from the future Chinatown Rail Station. The Project Site has been designated as "Mixed Use – High Intensity" per the plan's vision and guiding principles. See **Figure 20: Downtown Neighborhood TOD Plan - Plan Concept**. The plan's vision for the Chinatown Station and neighborhood are as follows:

> *"The scale and character of historic buildings and historic Chinatown are maintained following rail's arrival, but transit access is improved, and key opportunities for development are pursued on parking lots along Nimitz Highway. An enhanced promenade along Nu'uanu Stream creates a stronger open space link between the waterfront and Foster Botanic Garden and expanded places for gathering. New uses and public services accommodate the needs of seniors, children and families, and a multi-cultural community."*

The following sections discuss the Halewai'olu Senior Residence Project consistency with applicable recommendations for the Chinatown Station and the Downtown TOD Plan (emphasis added).

Section 1.3: Corridor Vision and Planning Principle

Community Vision: Downtown Honolulu will continue to be the region's premier employment center with a substantial residential population and easy access to stores and everyday amenities. An accessible and activated waterfront with promenades and community uses, a vibrant, historic Chinatown, and a new high-intensity mixed-use Iwilei district as an extension of Downtown will create a new image for Downtown Honolulu.

Guiding Principles:

1. Develop a Vibrant Mixed-Use Downtown

2. Expand Housing Opportunities and Provide a Range of Housing Types.

3. Balance Density with Green Space

Discussion: The Project will expand housing opportunities in the Downtown TOD Plan area by providing one- and two-bedroom affordable rental units for seniors earning 30% of the AMI, 60% of the AMI, and 80% of the AMI or below. The Project's Multi-Purpose Room at the ground floor will contribute to the lively environment envisioned in the Downtown TOD Plan. The courtyard/plaza will provide a balance between density and green space with an opportunity for plants as envisioned in the guiding principles.

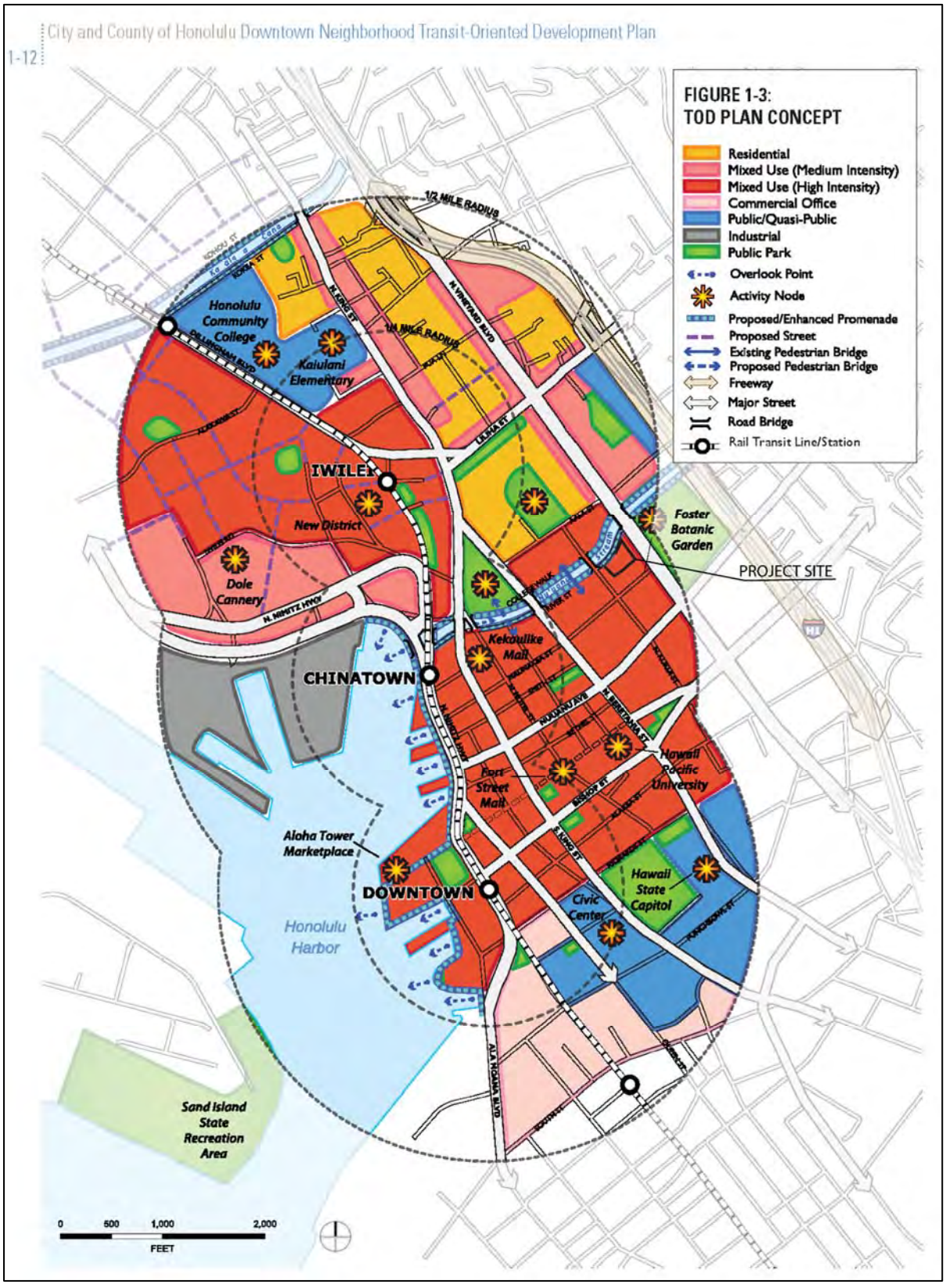
Chapter 2. Land Use

2.2. Development Framework

Land Use Classification: Specific allowed uses will be regulated through a TOD Special District in the Land Use Ordinance, which will also reflect the building intensity and heights established in this plan.

Active Ground-Floor Frontage and Pedestrian-Oriented Design: The Plan seeks to create concentrated areas of vitality by identifying streets where "active" ground-floor frontages are required.

Figure 20: Downtown Neighborhood TOD Plan – Plan Concept



Building Intensity: Allowable intensities decline with distance from the station. In the Downtown Mixed Use designation, in exchange for additional publicly accessible open space, streets/connections, and/or affordable housing (beyond what is required), sites within the TOD Zone are eligible for building intensity bonuses

Building Heights - The tallest building heights will continue to be located in the Downtown core. Low building heights are shown in the Chinatown core and in the Capital District area, consistent with the existing requirements of those special districts.

Discussion: The Project Site has been designated as "Downtown Mixed Use." See **Figure 21: Downtown Neighborhood TOD Plan – Land Use Plan**. The Downtown TOD Plan defines this designation as follows:

"Intended to support Downtown and Chinatown's role as a center of regional importance, allowing a variety of uses in the central business district including: office, government, retail, and multi-family residential uses, as well as public/quasi-public facilities.

Discussion: As a residential Project, Halewai'olu Senior Residence would comply with the uses appropriate for this designation. The multi-purpose room will be available to residents and the neighborhood. Active frontages are not required for the Project Site; however, pedestrian-oriented design is required. The Project will include an entry courtyard and improvements will be implemented to the River Street frontage that will make the property more inviting than its existing condition. The maximum building intensity for the Project Site is 7.5 FAR. See **Figure 22: Downtown Neighborhood TOD Plan – Maximum Building Intensity.** The Project will be developed at 5.9 FAR, which is consistent with the vision articulated in the Downtown TOD Plan.

As an affordable housing development, HSD will be requesting exemptions, including fee waivers/deferrals and exemptions from certain LUO requirements in order to achieve a greater density than what is currently allowed.

Although the Downtown TOD Plan (and current BMX-4 district) allows a maximum building height of 350 feet tall, the Project will be constructed at about 174 feet tall. This will limit the visual impact of the Project on existing panoramic public views.

Chapter 2. Land Use

2.3 Potential Development

TOD could result in approximately 6,500 additional housing units, which translates to 13,400 new residents based on the City's projections for future household size

Discussion: The Downtown TOD Plan estimates that the development potential for the Chinatown Station Area is 1,466 net new residential dwelling units. As discussed in **Section 6.3.4,** HSD will add 156 new rental dwelling units to Honolulu's housing inventory, which aligns with goals articulated in the Downtown TOD Plan.

2.4 Land Use Goals and Policies

Goals:

- *LU-G1: Develop vibrant mixed-use districts with a range of residential, shopping, employment, and cultural uses that provide activities during the day and evening and support rail transit ridership.*
- *LU-G3: Establish a contiguous pedestrian-oriented area within the corridor to enhance walkability and pedestrian comfort.*
- *LU-G7: Expand housing opportunities with a range of housing types—townhomes, mid-rise, and high-rise—to create a new mixed-income neighborhood in Iwilei with a full range of amenities and services, including parks and open space, a walkable street grid, and enhanced connectivity to the waterfront.*
- *LU-G11: Preserve the height and scale of development in the core of Chinatown's historic district.*

Policies:

- *LU-P6: Chinatown - Buildings and open spaces should be designed to highlight the identity of the district and its rich multi-cultural character.*
- *LU-P19: Residential, office, or hotel uses should include accessible and inviting lobbies, architectural features such as stoops or porticoes, or public plazas at the sidewalk.*

Discussion: The Project is consistent with the Land Use Goals and Policies specifically related to expanding affordable housing opportunities and creating a pedestrian-friendly environment, articulated in the Downtown TOD Plan. The Project will include a courtyard entryway (pubic plaza at the sidewalk) and Feng Shui elements have been incorporated into the design. The courtyard and Multi-Purpose Room will enhance the pedestrian experience along River Street.

Chapter 3. Mobility Goals and Policies

3.4 Goals and Policies

Goals:

- *MB-G1: Create an integrated multi-modal transportation system that fosters livable, walkable communities around the stations, and supports increased rail ridership.*
- *MB-G2: Prioritize pedestrian, bicycle and bus transit access to the rail stations through strategic improvements.*
- *MB-G3: Design transportation infrastructure as an integrated component of the neighborhoods and greater public realm of streets, landscaping, plazas, and parks.*
- *MB-G4: Prioritize pedestrian and bicycle safety, including for students going to and from local schools.*
- *MB-G5: Accommodate existing and future on- and off-street parking demand through a coherent parking management strategy that includes support for alternative travel modes.*

Policies:

- *MB-P3: Create a well-connected network of streets and pedestrian routes to improve access for all modes to the stations and to new and existing destinations within the station areas.*
- *MB-P15: Design safe, well-lit promenades along the harbor front and both sides of Nu'uanu Stream to enable continuous pedestrian and bicycle travel.*

- *MB-P30: Allow exemptions from parking minimums in the area (No exemptions for Project Site)*

- **Discussion:** The Project will include improvements to the River Street frontage, which will enhance the Sun Yat Sen Mall pedestrian corridor and contribute to the walkability of the community. It is anticipated that senior development will not require much parking due to the proximity to necessary services and the existing transit network. Bicycle parking will also be provided on site.

Figure 21: Downtown Neighborhood TOD Plan – Land Use Plan

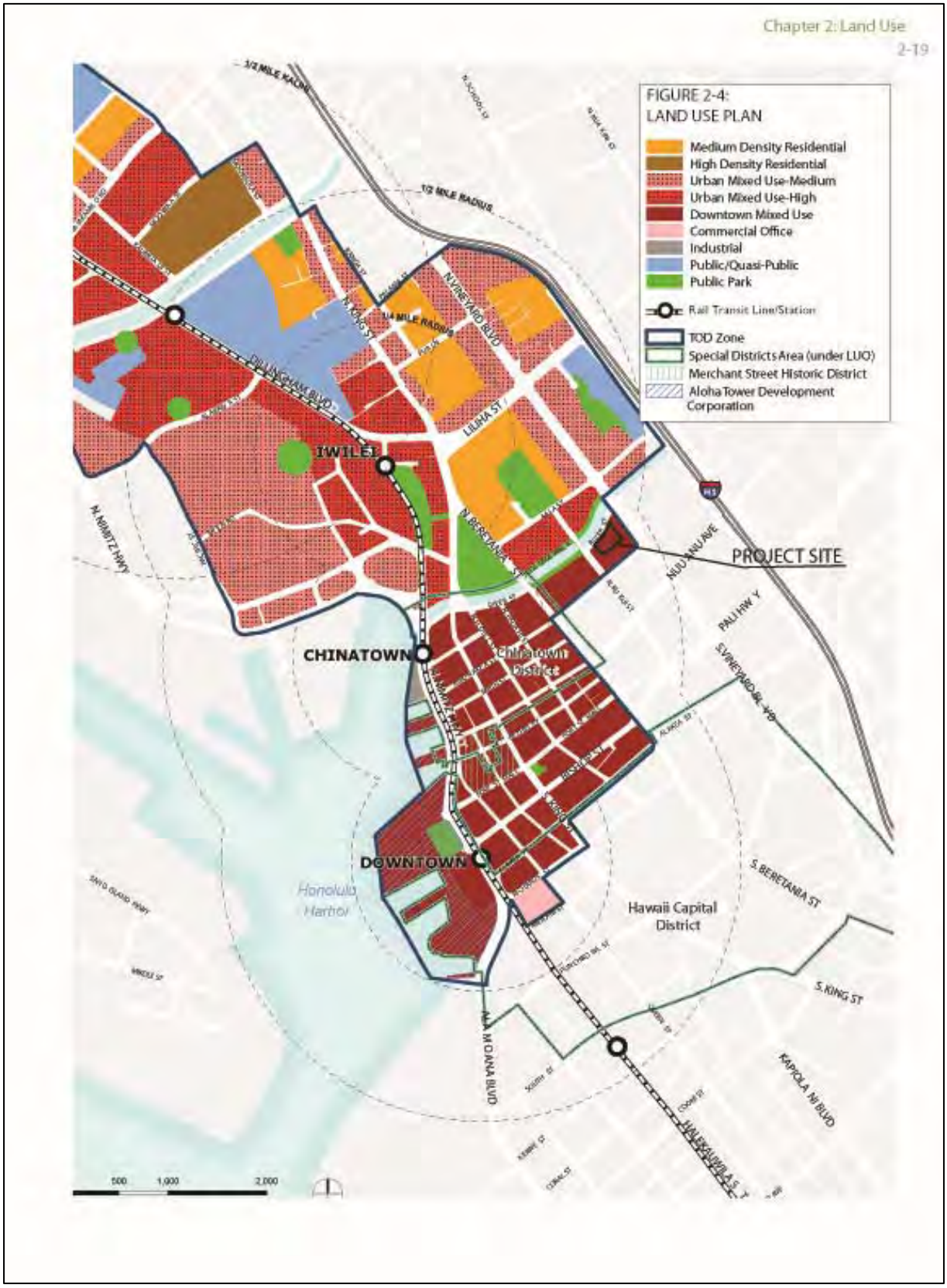
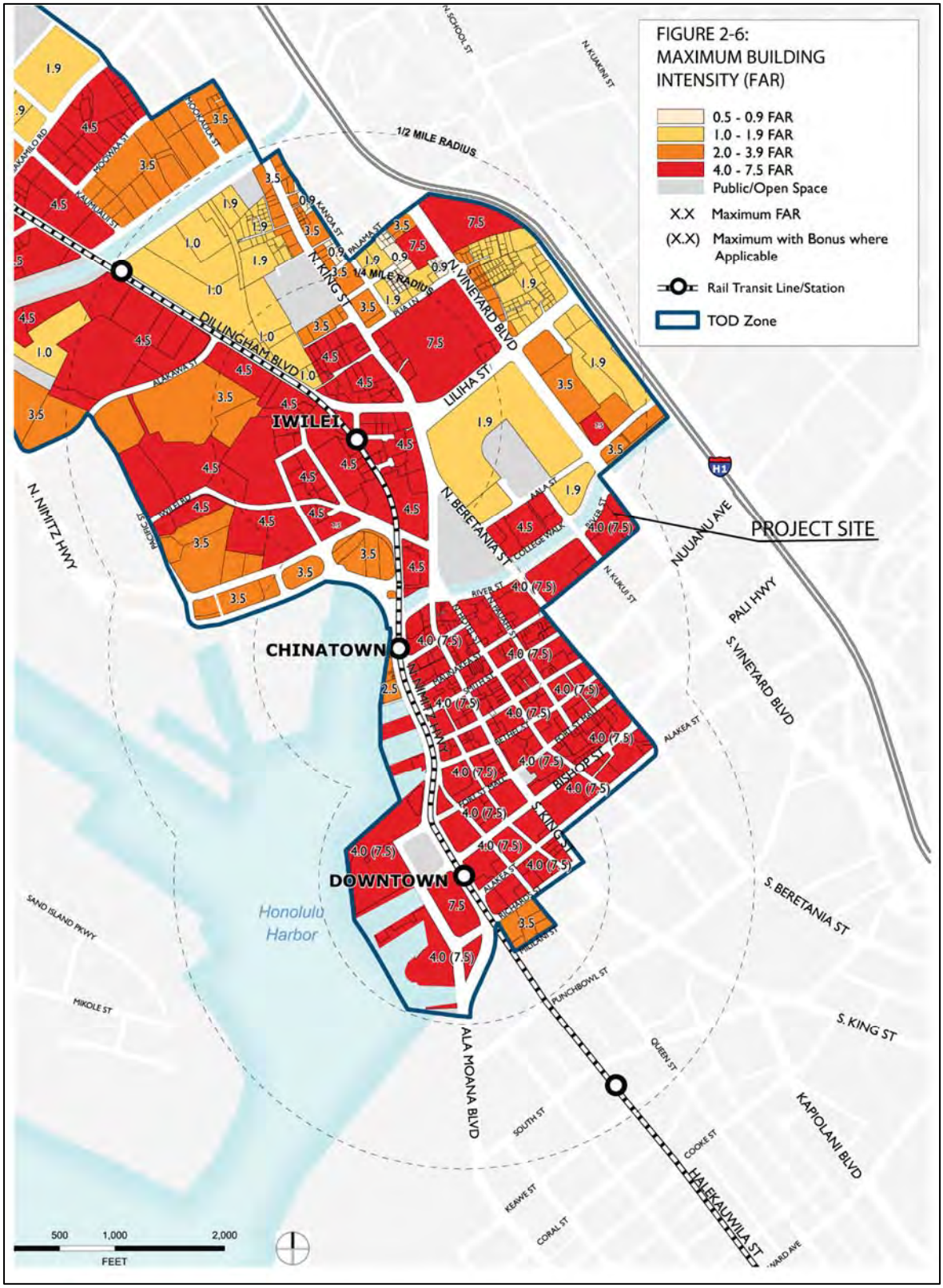


Figure 22: Downtown Neighborhood TOD Plan – Maximum Building Intensity



Chapter 4. Urban Design Goals and Policies

4.4 Goals and Policies

Goals:

- *UD-G3: Create memorable and livable streets and streetscapes that promote identity and enhance pedestrian comfort and safety.*
- *UC-G4: Enable high-quality architecture and site plans that are well-integrated with public streets and enhance the livability of the districts.*
- *UD-G7: Integrate parks and plazas throughout new development along pedestrian and bike paths to create a cohesive and connected open space network.*
- *UD-G9: Design high quality open spaces and a public realm that is safe, accessible, and integrated into the existing community, balancing new high-density development.*
- *UD-G10: Improve access to a variety of transportation modes and opportunities for physical activity that enhances health and supports community members of all ages, lifestyles, income, and abilities.*

Policies

- *UD-P5: Design sidewalks to include an unobstructed path for travel, separate from street landscaping and street furniture areas.*
- *UD-P7: Scale development along pedestrian-oriented retail streets and pedestrian connections with fine-grained, highly articulated facades, changes in materials, ample fenestration, and visible entryways.*
- *Equip pedestrian paths with shade trees, seating, kiosks, lighting, and other amenities.*
- *UD-P12: Maintain a continuous street wall along public streets. Articulate building facades with three dimensional elements that create a visual play of light and shadow, including balconies, recesses, reveals, and brackets:*
    - *Maximize transparency of ground floor non-residential uses through large windows and architectural features.*
    - *On blocks where active frontage is required, limit the length of blank walls to 20 feet. Where active frontages are allowed, limit the length of blank walls to 60 feet. Use murals, public art, living walls, and landscaping where windows and articulation are not feasible.*
    - *Provide awnings, overhangs over the sidewalk, and arcades to enhance pedestrian comfort.*
    - *Orient public entrances to face a public street or open space and ensure that they are visible and accessible from the street.*
- *UD-P13: Locate buildings close to the sidewalk in order to define the public realm and provide active uses next to the sidewalk. Buildings may be set back to allow for outdoor dining, plazas, or other active public spaces.*
- *UD-P32: Where possible, orient private open spaces, such as courtyards, balconies, and building entrances, toward open spaces to provide a transition between private and public activities and to increase safety*

Discussion: The Project will enhance this portion of River Street, which is currently considered urban blight. A courtyard/plaza will line the River Street frontage and will result in setting back the building in accordance with UD-P13. The courtyard will be a gathering area and outdoor extension of the Project and will provide a transition between the public sidewalk and the private structure.

The proposed multi-purpose room will also be located along River Street, which will create a more vibrant street environment. The makai setback will include landscaping to enhance the streetscape. In order to protect the senior residents, the building will have a secure entry and an on-site resident manager.

Chapter 5. Public Facilities, Services, and Infrastructure

5.4 Goals and Policies

Goals:

- *PF-G1: Provide public facilities—including police and fire services—commensurate with the needs of existing and future community members.*
- *PF-G3: Foster adequate provision of social and health services, such as housing and reintegration services for homeless; youth activities; and senior programs.*
- *PF-G4: Support maintenance of existing and development of new affordable housing units and associated services for low- and very low-income households.*
- *PF-G5: Encourage mixed-income housing and distribute affordable housing throughout the planning area. Mitigate potential for gentrification and avoid displacing low- and moderate-income residents.*
- *PF-G6: Facilitate development of infrastructure—including wastewater, water, drainage, and high-speed broadband internet systems—that is designed and timed to be consistent with project capacity requirements and development occupancy.*

Policies

- *PF-P6: Encourage housing and social service providers to serve seniors with recreation and programs that encourage their health, safety, and welfare. Work in partnership with community organizations and institutions to maintain the availability of appropriate senior and medical services.*

Discussion: The Project Site is well-served by public services as discussed throughout **Section 4.0**. Development will also include upgrades to existing infrastructure, as discussed in **Sections 4.5, 4.6, 4.7, and 4.9**. A Social Services Coordinator will be available to assess and coordinate the activities and services for the residents.

6.3.5 Making Honolulu an Age-Friendly City: An Action Plan (2015)

In 2013, the City applied for and was accepted into the World Health Organization's (WHO) Global Network of Age-Friendly Cities and Communities and AARP's National Network of Age- Friendly Communities. This initiative was driven by the fact that Hawai'i is the most diverse state, and is growing older at a faster pace than the rest of the nation. The UH's Center on Aging coordinated Honolulu's Age-Friendly City effort, facilitated CAC workgroups and conducted focus groups and key informant interviews, which resulted in the *Making Honolulu an Age-Friendly City Action Plan* ("Action Plan"), published in June 2015. The Action Plan includes a vision for an Age-Friendly Honolulu. The vision in the Action Plan is as follows:

> *"In an age-friendly Honolulu, inter-connected communities embrace older adults who want to remain socially involved and physically active; the city infrastructure remains responsive to capabilities and safety of its people; equitable services enable communitywide health promotion; robust opportunities for intergenerational exchanges exist; and, quality of life thrives among all residents. Honolulu's leadership understands active aging is a lifelong process and this initiative embodies the city's commitment to Honolulu being livable for all ages, not just for older adults. Safe*

and affordable transportation benefits for all people, young and old. Families experience less stress when they have access to community support and health services for older adults under their care. A barrier-free city infrastructure enhances the mobility and independence of people of all ages with disabilities."

With this vision of an age-friendly Honolulu, the City embarked on a two year- long community input and planning process to develop this Age-Friendly City Action Plan which was completed in 2015. The Action Plan includes a set of visions, goals, and recommendations for Honolulu's age-friendly "domains," which encompasses all facets of community life. The first three domains, Outdoor Space and Buildings, Transportation, and Housing are key features of the built environment and have a strong impact on mobility, safety, and security. The next three domains, include health and social welfare and ensure that we live vibrant and healthy lives over of life course. These domains are Communications and Social Involvement, Civic Participation and Employment, and Community Support and Health Services.

Discussion: As discussed in **Section 5.1**, demographic trends in the City point to an increasingly aging population. The Project's consistency with the relevant visions, goals, and recommendations of the Action Plan are discussed below, emphasis added.

Outdoor Spaces and Buildings

Vision

We envision an outdoor environment that is clean, well designed and well maintained. There are many trees to offer shade, paths for walking and spaces to rest that can be used by people of all ages. Sidewalks are wide and include street trees and lighting. Public restrooms are available, clean, and safe. Buildings are accessible, even to people with limited mobility. People of all ages and abilities are able to move about with ease, enjoy Honolulu's sunshine and natural beauty, and share the Aloha spirit with one another.

Goals and Recommendations for Outdoor Spaces and Buildings

- *Goal A: Outdoor spaces free of criminal activity and vandalism*
- *Goal B: Accessible spaces that accommodate persons with a range of disabilities*
- *Goal C: Outdoor spaces with services and amenities nearby*
- *Goal D: Clean and attractive outdoor spaces*
- *Goal E: Multigenerational/multiuse spaces*

Discussion: The existing building on the Project Site is currently dilapidated and considered urban blight. The Project proposed demolishing the existing building in order to construct a 155-unit senior affordable rental housing facility with one additional resident manager's unit. All units will be ADA compliant or adaptable. The redevelopment will include enhancements to the River Street streetscape, thereby enhancing Sun Yat Sen Mall overall and activating a part of Downtown-Chinatown that is not heavily trafficked by pedestrians. The new facility will include a multi-purpose room, warming kitchen, restrooms, storage rooms, utility rooms, computer room, social services activity rooms, social services office, property management offices, mail and package boxes, and elevator lobby on the ground level. On the ground level will also be a courtyard (plaza), retail space, and parking access, along with bicycle parking, the trash compactor room and loading area. The fourth floor will include a covered recreation deck and dog area for additional resident recreation opportunities. These spaces would provide senior residents with recreation and social spaces and

complement the neighborhood resources, such as parks, community centers, and cultural centers that are located nearby.

Transportation

Vision

We envision a city where everyone has access to safe, clean, and timely transportation island wide. People are able to choose their preferred mode of transportation, whether it's walking, and biking, driving, or specialized transport such as TheHandi-Van. It is easy to get where you want to go, even without a car. Public transportation is clean and safe, and streets are designed for all types of users.

Goals and Recommendations for Transportation

- *Goal A: Timely and responsive public transport*
- *Goal B: Increased pedestrian safety*
- *Goal C: Safe and maintained roadway design/infrastructure*
- *Goal D: Increased bicycle safety*

Discussion: The Project Site is well-served by existing public transit and is located within the proposed Downtown TOD SD approximately 0.4-mile from the future Chinatown Rail Station. Furthermore, the Project Site is near health centers, shopping, restaurants, and cultural and recreational resources. This Project location allows senior residents the option to access multiple neighborhood resources without the use of a car. Bicycle parking will also be provided on site.

Housing

Vision

We envision a city where people have the ability to choose where they want to live as their needs change. Housing is clean, safe, and accessible for all. People are able to connect with their neighbors, and the communities they live in are safe. Public transportation is nearby for those who desire it, along with services like grocery stores, pharmacies, and doctor's offices. People are able to stay in their homes for as long as they desire, and those who chose to relocate to be closer to family or have more help with daily living have affordable options.

Goals and Recommendations for Housing

- *Goal A: Affordable housing options are widely available*
- *Goal B: Home modifications are affordable and widely available to older adults and persons with disabilities*
- *Goal C: Age-friendly design is incorporated in new housing communities and units*

Discussion: The purpose of the Project is to provide senior affordable rental housing for seniors earning 80% of the AMI or below, with a majority of units designated as affordable for 60% of the AMI or below (see **Table 1**). There are 155 units plus one resident manager's unit planned, and units will range from one- to two-bedrooms. All units will be ADA compliant or adaptable. Each unit will include a kitchen with energy efficient appliances and air conditioning.

Communication and Social Involvement

Vision

We envision a Honolulu where people have information about events, activities, services, and resources that help them stay connected. This information is available in many languages and formats (radio, TV, newspaper, at local community centers). For people who want to use computers, they have access to them in multiple places, and classes are available for those who want them. For people who don't want to use computers, they still have access to the same information through their families, schools, churches, social clubs, or neighborhood associations. We also envision a Honolulu where people can participate in a wide range of events and activities (cultural, leisure, recreational) that bring generations together. There are opportunities for older adults to share knowledge with younger generations, and build friendships. The places where these events are held are easy to get to, for example, near public transportation routes. For those who cannot leave their homes, neighbors reach out to them through friendly visits or phone calls.

Goals and Recommendations for Communication and Social Involvement

- *Goal A: Intergenerational opportunities to share knowledge, encourage mentorship, cultural exchange, and volunteer opportunities are available*
- *Goal B: Programs, events, volunteer opportunities, and opportunities for lifelong learning are available*
- *Goal C: Information and data are easily accessible and user-friendly*
- *Goal D: People have the support to understand and use new technology*
- *Goal E: All segments of the population have access to information via a variety of modalities*

Discussion: The Project will include a computer room, multi-purpose room with warming kitchen, social services activity rooms, social services office, and a courtyard. These spaces would serve as spaces for seniors to socialize with one another, participate in activities, utilize the provided computers, and attain various services.

6.3.6 City and County of Honolulu Special Management Area

HRS, Chapter 205A outlines control, policies, and guidelines for development within an area along the shoreline referred to as the SMA. CZM policies are administered by each County. The management of lands located within the SMA is regulated through ROH, Chapter 25, *Special Management Area*. Chapter 205A, HRS also establishes the Shoreline Setback Area (SSA) to further manage uses along the shoreline. The City is the delegated authority to regulate uses located within the established SSA for the island of O'ahu.

Discussion: The Project is not located within the SMA or SSA. The Project's conformance to CZM policies are described in Section 6.1.5.

6.3.7 Chinatown Action Plan, March 2016

"Honolulu's Chinatown is one of the oldest neighborhoods in Hawaii, and one of the oldest Chinatowns in the United States. Today, it remains a vibrant place with a dynamic mix of newcomers, multigenerational residents and multicultural businesses in continuous evolution. Despite ongoing challenges, the Chinatown community continues to be actively engaged in neighborhood improvement.

Several community plans have been developed for Chinatown over the last decade, so the purpose of the Action Plan is to identify and prioritize near-term implementation actions, while refining longer-term strategies that are consistent with the previous visioning efforts. Longer-term

redevelopment strategies are outlined in the Downtown Neighborhood TOD Plan, which covers Chinatown."

6.3.7.1. Streets as Places

6.3.7.2 Revitalize the Nu'uanu Stream Corridor

"Funding for planning is being requested for FY2017-18, with additional appropriations in future years for design and construction

The Chinatown community expressed strong interest in revitalizing the Nu'uanu Stream corridor, which includes Nu'uanu Stream, River Street, 'A'ala Park, Sun Yat-sen Mall, College Walk, and Foster Botanical Garden. The City is requesting capital funds to address pedestrian safety, crumbling street pavement, aggressive tree roots, seating and other amenities, landscaping and shade, opportunities to interact with the water, and improved bicycle access. Some of these improvements may be included in upcoming street rehabilitation projects. Events and activities to increase usage of the corridor are addressed in other proposed actions."

The Applicant is in strong support of this action to provide activities and events along an improved mall to engage the public and the residents of the Project.

6.3.7.3 Provide Pedestrian Crossing of Vineyard Blvd at River Street

"In 2016, there was no pedestrian crossing of Vineyard Boulevard (a state roadway) at River Street or College Walk. Increased pedestrian and bicycle activity was expected in the area due to new development and the future Chinatown rail station. The State of Hawai'i Department of Transportation has installed a pedestrian crossing across Vineyard Boulevard to facilitate mauka-makai connectivity. This improvement also enhances the connection between the Nu'uanu Stream Corridor and Foster Botanical Garden."

This signalized pedestrian crossing has since been installed and is operating.

6.3.7.4. A Cleaner and Safer Chinatown

"Improving safety and sanitation remains a priority for the Chinatown community. These objectives are essential to improving the district's image and depend on continued cooperation between the community and the City. Potential strategies relate to waste management and recycling, street cleaning, graffiti prevention, lighting, and close collaboration on security issues. Creation of a business improvement district would expand the solutions available to address many of these issues."

- Establish a Business Improvement District (Bid) for Chinatown
- Develop Improved Food Waste Management Practices
- Increase the Frequency of Sidewalk Power Washing on Particular Streets

- Revise the Street Sweeping Schedule Based on Alternate Side Parking Restrictions
- Pilot a Mobile Public Restroom

The Applicant supports these initiatives to be led by City Agencies and is willing to participate to the extent required in the Business Improvement District for Chinatown.

6.3.7.5. Chinatown's Vibrant Economy

- Host Activities on River Street
- Repurpose and Market Vacant and Underutilized Properties
- Provide High-Speed Public Wi-Fi
- Preserve the Neighborhood's Cultural and Historic Resources

The Applicant supports these initiatives and recognizes that under item 3.2, the Project Site is one of the underutilized properties planned for repurposing.

The Project is also participating in the preservation and protection of the Neighborhood's Cultural and Historic Resources, through Section 106 of the National Historic Preservation Act of 1966. The Applicant will be signing a Memorandum of Agreement with other parties, agreeing to mitigate impacts to culturally, historically and archaeologically significant properties and finds.

7.0 AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED

The agencies, organizations, and individuals listed below have been contacted during the NEPA environmental review process to review and comment on the environmental conditions of the Project Site, the proposed undertaking, and/or the potential impacts and mitigation measures that will be applied to ensure against adverse impacts.

Although not a requirement of NEPA as set forth in 40 CFR Parts 1500-1508, HUD environmental review compliance pursuant to 24 CFR 58, and, other environmental compliance requirements and implementing regulations, the Applicant will extend the NEPA EA process to include a public and agency 30-day review period.

The Applicant will request that the OEQC (Office of Environmental Quality Control) publish in their Environmental Notice the availability of the NEPA EA for review and comment and the deadline for comments. We will have a 30-day comment period. All the agencies, organizations, and individuals listed in Section 7.1 through 7.8 will be contacted at the start of the 30-day comment period.

After receipt of comments, relevant comments will be addressed in the NEPA EA prior to finalizing.

If the Department of Land Management determines that the Project will not have a significant environmental impact, it will issue a FONSI that will allow the Project to proceed. The public will have 15 calendar days after publication of the FONSI in a local newspaper to comment.

7.1 FEDERAL AGENCIES

- HUD

- U.S. Fish and Wildlife Service, Pacific Islands Office, Honolulu, Hawai'i **(Appendix I and J)**

7.2 STATE AGENCIES

- Department of Business and Economic Development
- Department of Land and Natural Resources
    - O'ahu Island Burial Council
    - State Historic Preservation Division

7.3 CITY AND COUNTY OF HONOLULU

- Board of Water Supply **(Appendix K, Civil Attachment C-3)**
- Department of Planning and Permitting **(Appendix K, Civil Attachment C-6)**
- Honolulu Police Department
- Downtown-Chinatown Neighborhood Board (No. 13) **(Appendix O)**

7.4 ELECTED OFFICIALS

- State Senator Karl Rhoads, District 13
- State Representative Calvin Say, District 20
- State Representative Daniel Holt, District 29
- Councilwoman Carol Fukunaga, District 6

7.5 UTILITIES

- Hawaiian Electric Company **(Appendix K, Electrical Attachment E-1)**
- Hawaiian Telcom **(Appendix K, Electrical Attachment E-1)**

7.6 PRIVATE ORGANIZATIONS AND INDIVIDUALS

1. Ali'i Pauahi Hawaiian Civic Club
2. Better Tomorrows
3. Borthwick Mortuary
4. Bruce Kehaulani
5. Care Companions and Consulting
6. Chinatown Community Center Association
7. Cultural Surveys Hawai'i
8. Donna and Daron Makaiwi (Marin Ohana)
9. Faith Action
10. Fung Associates Inc.
11. Gerry lam
12. Halewa'iolu Senior Development, LLC
13. Hawaiian Memorial Life Plan Ltd, dba Borthwick Mortuary
14. Hiehie Caceres
15. Historic Hawai'i Foundation
16. Kalehua Caceres
17. Kaleikini 'Ohana
18. Kamaehu Caceres
19. Kamana Caceres
20. Keala Norman Ohana
21. Kehaulani Lum
22. Kepo'o Keli'ipa'akaua

23. Logan Keola
24. Lum Sai Ho Tong
25. Mana Caceres Ohana
26. Mun Lun School
27. Royal Kitchen
28. Tuahine Kaleikini

7.7 CONSULTANT LIST FOR SECTION 106 NATIONAL HISTORIC PRESERVATION ACT

1.	Adam Woltag	Project Proponent
2.	Alika Luka	Cultural Descendant
3.	Alison Chiu	Director, Architecture
4.	Allen Stack, Jr.	Chinatown
5.	Ann Kobayashi	Councilmember, Agency/Govt
6.	Anni Peterson	Director, Other
7.	Anthony Chang	Member, Agency/Govt
8.	Brandon Hegland	Project Proponent
9.	Bruce Keaulani	Cultural Descendant, Hawaiian
10.	Buck Yong Lee	Chinatown
11.	Calvin Say	State Representative, Agency/Govt
12.	Carol Fukunaga	Councilmember, Agency/Govt
13.	Carolyn Norman	Cultural Descendant
14.	Cathy Au Hoy	Chinatown
15.	Christy MacPherson	Executive Director, Chinatown
16.	Chu Lan Shubert-Kwock	Chinatown, Agency/Govt
17.	Daniel Holt	State Representative, Agency/Govt
18.	Dayleen Yokooji	Cultural Descendant
19.	Denton Chun	Chinatown
20.	Dolores Mollring	Chinatown
21.	Donna Makaiwi	Cultural Descendant
22.	Dr. Susan Lebo	Archaeology Branch Chief, Agency/Govt
23.	Dr. Tim Myaing Thein, Ph.D.	Executive Director, Chinatown
24.	Eddie Flores, Jr.	Chinatown
25.	Ennilaee Anulao	Chinatown
26.	Eric Wong	Chinatown
27.	Ernest Caravalho	Agency/Govt
28.	Ernest Loo	Chinatown
29.	Gerald Lam	Cultural Descendant
30.	Gifford Chang	Chinatown
31.	Hailama Farden	Vice President, Hawaiian
32.	Henry Chan	Chinatown
33.	Henry Ou	President Chinatown
34.	Hinaleimoana Wong-Kalu	OIBC Chair, Chair - Kona Moku Representative, Agency/Govt
35.	Howard Lum	Chinatown

36.	Jay Morford	Funeral Services, Chinatown
37.	Jeff Mull	Other
38.	Jeff Warner	Project Proponent
39.	Joey Manahan	Councilmember, Agency/Govt
40.	John Chang	Agency/Govt
41.	Johnny Ng	Chinatown
42.	Joseph Chow	Chinatown
43.	Joseph Young	Honorary Mayor of Chinatown; D.D.S Retired, Chinatown
44.	Ka'ahiki Solis	Cultural Historian (Oahu, Kauai, Niihau), Agency/Govt
45.	Kaleo Paik	Cultural Descendant
46.	Sylvia Hussey	Interim CEO, Ka Pouhana, Agency/Govt
47.	Karen Seddon	Project Proponent
48.	Karl Kao	Other
49.	Karl Rhoads	State Senator, Agency/Govt
50.	Kehaulani Lum	Chinatown
51.	Keith Lim	Chinatown
52.	Kiersten Faulkner	Executive Director, Architecture
53.	Kim Tran	Chinatown
54.	Kristi Quon Esquef	Chinatown
55.	Larry Siu	Chinatown
56.	Lee Stack	President, Chinatown
57.	Leimana DaMate	Executive Director, Agency/Govt
58.	Leina'ala Lopes	Cultural Descendant
59.	Leon Letoto	Cultural Descendant
60.	Leotele Togafau	Executive Director, Other
61.	Liana Benn	Chinatown
62.	Luther Chong	Chinatown
63.	Major Ryan T. Nishibun	District 1 Commander, Agency/Govt
64.	Mana Caceres	ʻEwa Moku Representative, Agency/Govt
65.	Mary Keshishian	Other
66.	Merle Chong	Chinatown
67.	Michael Lee	Cultural Descendant
68.	Michelle Bartell	Director of Communication and Community Advancement, Chinatown
69.	Milton Hee	Chinatown
70.	Mona Choy-Beddow	Chinatown
71.	Michele Choy	President, Chinatown
72.	Nanette Napoleon Purnell	Trustee of Oahu Cemetery, Author and Researcher, Interested party
73.	Natasha Baldauf	Cultural Descendant
74.	Nicole Reid	Chinatown
75.	Norman “Mana” Christopher Moore	Cultural Descendant
76.	Kaleilani Caceres	Cultural Descendant
77.	Pono Shim	Other
78.	Questor Lau	Project Proponent

79.	Regina Hilo	Burial Sites Specialist (O'ahu), Agency/Govt
80.	Richard Miyao	Chinatown
81.	Robert Wu	Chinatown
82.	Rochelle Nagata-Wu	Project Proponent
83.	Roddy Akau	Cultural Descendant
84.	Roland Louie	Chinatown
85.	Roy K. Amemiya Jr.	Managing Director, Agency/Govt
86.	Elizabeth O'Brien	Director of Programming, Chinatown
87.	Sandra Pohl	Chinatown
88.	Sandra Siu	Chinatown
89.	Sharon L. Pang	Other
90.	Sharon L. Pang	Chinatown
91.	Sherry Menor-McNamara	Agency/Govt
92.	Soulee LKO Stroud	Hawaiian
93.	Stacie Brach	Other
94.	Stanford Yuen	Neighborhood Board President and Community Leader, Chinatown
95.	Stanley Yon	US China People's Friend, Chinatown
96.	Ted Li	Chairman, Chinatown
97.	Tom Dang	Interested party
98.	Tom Smyth	Agency/Govt
99.	Tonia Moy	Architecture
100.	Tuahine Kaleikini	Cultural Descendant
101.	Victor Lim	Chinatown
102.	Vina Quick	Chinatown
103.	Walter Chang	Chinatown
104.	Wesley Fong, President	Chinatown
105.	William Mendel	Chinatown, Kamaaina of Honolulu, Hawaiian
106.	Shannon Wilson	Geographic/Environmental

7.8 OTHER GROUPS TO BE CONSULTED ON THIS EA

Federal

Corps of Engineer (U.S. Army Engineer District)

State of Hawaii

Department of Business, Economic Development & Tourism
  Energy, Resources & Technology Division
  Office of Planning
Department of Education
Department of Hawaiian Home Lands
Department of Health - Environmental Planning Office
Department of Land & Natural Resources

State Historic Preservation Division
Office of Environmental Quality Control
Department of Transportation
Office of Hawaiian Affairs
UHM Water Resources Research Center
UHM Environmental Center
Office of the Governor

City and County of Honolulu

Board of Water Supply
Department of Design & Construction
Department of Environmental Services
Department of Facility Maintenance
Department of Parks and Recreation
Department of Planning & Permitting
- Zoning Plans Review Branch
- Civil Engineering Branch
- Subdivision Branch
- Traffic Review Branch
- Wastewater Branch
- Land Use Permits Division
- Planning Division

Department of Transportation Services
Honolulu Fire Department
Honolulu Police Department
Waikiki Neighborhood Board
Office of the Mayor
Members of the City Council

Organizations

Hawaiian Electric Company
Historic Hawaii Foundation
Honolulu Star Advertiser
The Outdoor Circle

7.9 PUBLIC INVOLVEMENT

7.9.1 Public Information Meetings

HSD began conducting community outreach in August 2014 with various Downtown-Chinatown community stakeholders. Community input was also included in developing the Community Provisions section of the Development Agreement between HSD and the City, and in consideration of the Project design. In addition to government agencies and public officials, consultation has been ongoing with the members of the Downtown-Chinatown NB No. 13 and the numerous Downtown-Chinatown community members listed in **Section 7.6**. Between August 2014 and October 2019, HSD conducted 22 community meetings and modified the Project in consideration of the feedback received at the meetings. A table of all meetings to

date is provided in **Table 21: Community Outreach Timeline** below (note that the below table does not include numerous individual stakeholder meetings conducted since 2014 until publication of This EA):

Table 21: Community Outreach Timeline

No.	Date (Year-Month-Date)	Stakeholders
1	2015-05-26	Chinatown Business Leaders Presentation
2	2015-05-26	Participated in Mayor's Press Conference
3	2015-06-30	Design Workshop
4	2015-07-14	Development Agreement Community Provisions Discussion
5	2015-08-06	Presentation to NB No. 13
6	2015-09-11	Chinatown Community Tours of the Towers of Kūhiō Park
7	2015-11-05	Presentation at NB No. 13 (Concept Unanimous Approval)
8	2015-12-01	Presentation to Chinese Media (World Journal, Sing Tao Newspaper)
9	2015-12-08	Presentation at Community Planning for Kalihi to Kaka'ako Meeting
10	2016-02-04	HSD /City Update to Downtown Chinatown NB No. 13
11	2016-02-24	Neighbor Meeting
12	2016-03-01	Neighbor Meeting
13	2016-03-03	HSD / City Update to NB No. 13
14	2016-03-08	Community Meeting
15	2016-03-14	Community Meeting
16	2017-04-12	Meeting with State Historic Preservation Division
17	2017-06-01	HSD / City Update to NB No. 13
18	2019-04-04	HSD / City Update to NB No. 13
19	2019-05-01	Community Meeting
20	2019-05-08	Presentation to O'ahu Burial Council
21	2019-05-25	Public information meeting for NEPA, HRS, Chapter 6E-8 & Section 106

No.	Date (Year-Month-Date)	Stakeholders
22	2019-06-25	Interested Parties Meeting
23	2019-07-09	Community Meeting
24	2019-08-14	Presentation to O'ahu Burial Council
25	2019-09-19	Public information meeting for NEPA, HRS, Chapter 6E-8 & Section 106
26	2019-10-03	NB No. 13 (HRS, Chapter 201H)
27	2019-10-29	O'ahu Island Burial Council recognizes "Ohana Caceres as cultural descendants to burials encountered during AIS fieldwork
28	2019-11-19	Memorandum of Agreement Meeting
29	2020-01-23	On-site meeting with recognized cultural descendants and potential cultural descendants to discuss burial treatment

Based on the comments from the Downtown-Chinatown business and community members that have attended various presentations, workshops and meetings, along with input from different Feng Shui Masters, HSD worked with architect firm WRNS to refine the conceptual plan, while retaining the essential components expected by the City from the Request for Proposals and Development Agreement.

The revisions from the original concept related to height, mass, adjacency, cultural reference, design, building code and budget include the following:

- **Massing** – The various revisions involved a massing change from two towers at different heights to a single tower that was shifted Mauka from the Makai boundary, along with a reduction in unit square footages, which helped to reduce the residential tower footprint and lessen its visual impact. The footprint of the parking podium and the community room have remained essentially the same, but were shifted slightly to increase building setbacks from zero to about three 3 feet from the Mauka and Diamond Head property lines and about 13 feet from the Makai property line.
- **Height –** Revisions also included a height reduction from 25 levels to 17 levels and design efficiencies allowed for an increase from 151 units to 156 units. Parking was reduced from three (3) to two (2) levels, decreasing the number of parking stalls from the conceptual 67 to 51.
- **Adjacency and Makai Façade** – When the Makai setback was increased to about 13 feet, a green landscape buffer was added between the Project and its Makai neighbor. The recreation deck was modified to improve openness and airflow, which reduced the solid portion of the Makai parking podium wall to about 30-foot high, which is closer to the existing building height on the Makai property. The parking podium wall was also pulled back away from the River Street property line to improve visibility at the corner, reduce the bulkiness of the building and improve airflow. Additional openings were added in the Makai and Diamond Head side of the parking podium walls to reduce bulk and improve airflow. The Makai setback to the residential tower was also increased by about 10 feet. The result is an open distance from building to building of approximately 60 feet (from the residential tower to the existing building on the Makai neighboring lot).
- **Sustainability** – Each unit will have openable windows and will also have air conditioning.

- **Color and Cultural References** – All building materials are now denoted with natural materials and colors, including stone, wood and metal with earth tones. Cultural references may include the Longevity symbol at the entrance to the building. There will also be opportunity to include culturally inspired plantings in the courtyard with judicious inclusion of colors, such as red and yellow, reflective of Chinese culture.
- **Green Space** – Open space will be provided by the courtyard at the ground floor entrance and green space will be provided at the Makai landscape area. The garden area and the recreation deck on the 4th level will create additional open / green space for the residents. Chinese heritage plantings will be used as much as practical in the Makai property green landscape and in pots and planters in the Courtyard.
- **Feng Shui** – HSD worked with different Feng Shui professional consultants to address community concerns related to Feng Shui principles. Dr. Simona Mainini generated a Feng Shui Evaluation report indicating that in general, the concept design, entrance, location, position, and orientation will be good for health, relationships, and prosperity.
- **Multi-purpose and Activity Rooms** – These ground-floor facilities will be used to support the senior residents and will be available for neighborhood events. Better Tomorrows will be coordinating with the Downtown-Chinatown NB No. 13; United Chinese Society, Chinese Chamber of Commerce, and Chinatown Community Center Association, along with a cross section of other interested organizations to form an Advisory Committee. Better Tomorrows will coordinate activities and consider requests with input from the Advisory Committee.
- **Retail Shop** – Careful consideration will be given to the type of business to assure that the needs of the facility are serviced.

Section 106 consultation for the Project, as required, is being fulfilled. See **Sections 5.2** and **5.3** for further discussion.

7.9.2 Downtown-Chinatown Neighborhood Board No. 13

The Project was presented at seven NB meetings from August 2015 to October 2019. See **Table 21** for the dates. A motion to support the Project's conceptual design passed unanimously at the Board's November 5, 2015 meeting. The City and HSD continue to give updates to the Board, presenting design revisions based on community comments. A full record of consultation with and presentations made to the Board is included in **Appendix O, Downtown Neighborhood Board No. 13 Meeting Record**. HSD will continue to present updates and consult with the community as the Project design moves forward.

8.0 CUMULATIVE IMPACT ANALYSIS AND CONCLUSION

In accordance with the content requirements of NEPA, the CEQ's *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR 1500-1508), and 23 CFR Part 771, *Environmental Impact and Related Procedures*, no significant adverse environmental impact will be anticipated resulting from the proposed Project. Temporary short-term potential impacts will occur during the Project construction phase. Long-term impacts to noise, traffic, and historic properties are anticipated, but will be addressed with mitigation measures as prescribed throughout this EA. Long-term, beneficial impacts are expected based on the evaluation of the surrounding resources. See **Table 1: Halewai'olu Senior Residence Project Impacts Summary** at the end of this section for a summary of impacts and proposed mitigation.

8.1 RELATIONSHIP BETWEEN THE SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The relationship between the short-term uses of the environment and the long-term productivity of the proposed Halewai'olu Senior Residence Project primarily involve the short-term impacts during construction and the long-term land use change of the property f rom a commercial use to a mixed-use property consisting primarily of residential use.

Short-term impacts during construction include temporary noise, air, and vibration impacts from the demolition of the existing buildings, site work as needed, and construction of the new facility. Construction efforts are required to adhere to all federal, state, and City regulations and to ensure the use of proper equipment and regular vehicle maintenance. Additional mitigation measures are required during demolition of the existing building due to hazardous materials on site. See **Section 4.9** for further discussion.

Traffic, including pedestrian, bicycle, bus, and vehicle circulation, may also be impacted temporarily during construction when materials and equipment are transported to the Project Site and if any lane or road closures are required (**Section 4.1**). Groundwork will disturb soils and construction must stop if any inadvertent archaeological finds are unearthed. Construction BMPs to minimize soil erosion, sediment runoff, and dust such as installation of dust screens and silt fences and careful dewatering practices will be implemented. Construction will be limited to daylight hours to minimize impacts to neighboring residents during construction.

Short-term impacts during construction will also include social impacts. The Lum Sai Ho Tong temple is located adjacent to the Project Site. Construction noise may impact the Project Site in the short-term. Construction BMPs, as described throughout this EA, will be employed, and HSD will continue to consult with adjacent neighbors as the Project progresses. In the long-term, no adverse impacts to surrounding cultural resources are expected.

8.2 CUMULATIVE IMPACTS

Cumulative impacts are defined by the CEQ as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions" (40 CFR, Section 1508.7, "Cumulative impact").. The following section briefly describes the potential cumulative impacts the proposed Project may have in conjunction with other area improvements and projects. Known major projects or long-range development plans within the vicinity of the Halewai'olu Senior Residence include the HART Rail Transit project spanning from East Kapolei to Honolulu. The Project Site is located approximately 0.4-mile northeast of the Chinatown Rail Station, which will allow resident seniors to take advantage of a new mode of transportation, thus reducing their need for a car.

As discussed in **Sections 6.3.1, 6.3.2, and 6.3.5**, which highlights the GP, PUC DP, and Downtown TOD Plan, the overall intensification of land uses and creation of senior affordable housing are major goals of the City's long-range vision for O'ahu and general development pattern goals. All of these plans emphasize the need for the existing Honolulu urban core to remain the PUC of the island with a secondary center in 'Ewa in order to keep the remaining rural areas rural. Although there will be cumulative impacts to the Downtown-Chinatown area's infrastructure, roadways and traffic, transit ridership, density, medical services, and public services such as police, fire, and emergency, they are all consistent with the City's intention to construct additional affordable housing units in the urban core.

The cumulative intensification of development on the Project Site will also change the cityscape and view planes; however, no panoramic view planes noted in the PUC DP would be impacted. The proposed building height of about 174 feet would not exceed what is already allowed within the BMX-4 district, and is comparable to surrounding buildings. The Project will generate few additional vehicular trips compared to the previous commercial development on the Project Site and is expected to have a negligible impact on traffic operations in the vicinity of the Project. The existing building is dilapidated and considered urban blight. The proposed building will be designed to enhance the streetscape, and incorporate cultural elements in keeping with the surrounding Downtown-Chinatown neighborhood. Community open space will be provided at the entry courtyard, and may include streetscape enhancements, such as planters, which will also add to the vibrancy of this portion of the Sun Yat Sen Mall along River Street. Chinese heritage plantings will be used as much as practicable. Furthermore, the multi-purpose and activity rooms will be available for use by the neighborhood community, which will activate this portion of River Street.

Two known housing redevelopments are planned within the vicinity of the Project, including the Emma Building Affordable Housing project located approximately 0.35-mile southeast of the Project (Dudek, 2019) and the proposed Mayor Wright Homes Redevelopment, located approximately 0.33-mile northwest of the Project, which is planned to include a mix of uses, including retail, office space, and community services (HPHA, 2019). Cumulative impacts may also occur to the economy as the mix of uses in the area diversifies and is able to support an additional business or service in the proposed retail space. Cumulative impacts may also include a change the demographics of the area, impacting social networks and increasing the interactions between different income and ethnic groups. See **Section 5.1** for further discussion on the potential impacts to the socio-economic aspects of the Project. However, the overall cumulative impact of increased affordable housing options for seniors is anticipated to improve the overall social-economic conditions of the area, as well as improve safety as natural surveillance will increase with additional residents and increased activity. Individual health and well-being are also anticipated to improve as resident seniors of all abilities will be located in close proximity to services, shopping, restaurants, and social, cultural and recreational resources/amenities, as discussed in **Section 4.2**. The convenient location of the Project will reduce the need for residents to own a car. It is anticipated that many of the senior residents will take advantage of transit, bicycling, and walking, rather than driving, thus no cumulative impacts to vehicle traffic are expected.

Temporary cumulative impacts related to construction may also occur. Potential temporary impacts to air quality, surface waters from storm water runoff, and noise are expected. Temporary traffic and pedestrian and bicycle circulation impacts if other construction occurs at the same time as construction of the Project.

All short-term impacts from the proposed Project are not anticipated to result in secondary or cumulative impacts. Negative short-term impacts will be prevented and minimized with the use of mitigative measures as provided in this document.

8.3 SECONDARY IMPACTS

Secondary impacts include those that are indirectly caused by the action and are later in time or are farther removed in distance, but are still reasonably foreseeable.

The Project Site is already well-served by first-responders, such as the HFD and HPD. However, the Project would increase the population in the Downtown-Chinatown neighborhood. The Project may result in a need to shift or reallocate existing resources and staff to serve the increased population at the Project Site, as stated in **Section 4.3**.

The increase in resident population to the area may have a secondary impact on public transit facilities as more people may gather at transit stops and need additional space to safely accommodate those waiting at the stops. The Project Site is currently well-served by transit; however, if ridership increases beyond the capacity of the current service, an increase in service may be required. The Project Site would also see an increase in the use of pedestrian corridors along Sun Yat Sen Mall due to the neighborhood visitors of the multi-purpose and activity rooms and residents walking or bicycling to Downtown-Chinatown to patronize shops, restaurants and other services, such as banks. This will have the secondary impact of activating a portion of River Street that is not as commonly traversed.

The multi-purpose and activity rooms will stimulate new social networks and relationships between the senior residents and the surrounding community, fulfilling the vision set forth in the City's Age-Friendly Action Plan (**Section 6.3.6**). Future residents may also be able to walk, bicycle, or take transit to their places of work or for errands. This presents an opportunity to experience improved health benefits from increased physical activity, along with decreasing living costs by not supporting a vehicle, which then allows for increased savings or reinvestment in the community through increased spending on other items. Those reducing the use of a vehicle would contribute to the positive secondary impact of reducing the impacts on regional traffic, vehicle emissions, and fuel consumption. They would also have more time to spend on other social, cultural, or recreational activities.

8.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Construction of the Project will require the irreversible and irretrievable commitments of construction materials and the various resources used to demolish existing improvements. Demolition of the existing building will remove hazardous materials, such as LBP and ACM and create a healthier and more sustainable living environment.

Benefits of the Project include the increase in the amount of much-needed senior affordable rental housing within the Honolulu urban core, the increase in economic and social activity generated by the commercial and social services, as well as the safe place to recreate and gather in the multi-purpose and activity rooms onsite, overall improved public health and community well-being, and the transformation of a single use, blighted property that is relatively isolated from the surrounding neighborhood, to a mixed-use development that is well-connected to neighborhood community where residents will be able to walk, bike, and take public transit to nearby jobs and businesses, reducing potential traffic impacts and increasing health and wellness and economic benefits. The Project is pursuing LEED certification and will be designed to meet LEED silver, which is understood to contribute to overall resilience of the Project, Project Site, and wider community.

8.5 PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

During construction, there may be short term interruptions to existing infrastructure and utility services and temporary impacts to air quality and the acoustic environment. However, as discussed throughout This EA, temporary impacts associated with construction will be mitigated to the fullest extent possible and all federal, State, and City regulations, and control measures will be implemented. Construction BMPs will be employed and energy efficient design measures will be incorporated in the Project to reduce long term impacts to the extent feasible.

Once constructed, there may be visual impacts with the increase in building height compared to current conditions. However, the Project will be oriented in a mauka-makai direction and no impacts are expected to panoramic views as articulated in the PUC DP. Surrounding buildings are also of comparable height to

the Project. The visual character of the streetscape will be enhanced by the multi-purpose room, courtyard and landscaping. Cultural references, such as a Longevity symbol at the entrance of the building, may be incorporated into the design of the building in honor of the Downtown-Chinatown neighborhood history and culture. The parking podium height was reduced to in order to be close to the same height as the adjacent neighboring buildings.

The Project involves the demolition of the existing building. The Draft AIS determined that the Project has the potential to impact the archaeological historic property (SIHP # -8840) and thus the Project's effect determination per HAR §13-275-7 is "effect, with agreed upon mitigation commitments." In addition, under Section 106 of the NHPA, the Project will have an "adverse effect" on SIHP # -8840. The agreed upon mitigation commitments included in the Draft AIS, include preparing a BTP for the human burial site, identified as Component 3 of SIHP # -8840 and archaeological monitoring for Components 1–3 of SIHP # -8840. With the implementation of these mitigation commitments, the Project's potential adverse effect on SIHP # -8840, subsurface cultural deposits will be reduced. For further discussion, see **Sections 5.2** and **5.3**.

8.6 RATIONALE FOR PROCEEDING WITH THE PROJECT NOTWITHSTANDING UNAVOIDABLE EFFECTS

As discussed throughout this EA, O'ahu residents are experiencing a housing inventory crisis, with increasingly unattainable housing sales prices and apartment rents. Furthermore, demand for housing is strong and will continue to grow as the population of O'ahu continues to age and there is already a shortage of rental housing options in the urban core. The proposed Project will provide 155 units for seniors earning 30% of the AMI or below, 60% of the AMI or below, and 80% of the AMI or below.

The Project will be near shopping, restaurants, services, and social, cultural, and recreational resources/amenities, offering seniors the opportunity to age in place. The Project Site is currently well-served by bus transit (with future rail transit) that will allow seniors the option of not owning a car to access everyday needs.

The Project will also improve an area of Downtown-Chinatown that is considered urban blight and is currently underutilized. The neighborhood community will benefit from the construction of the multi-purpose and activity rooms with the availability of programs and activities to enhance their lives and activate the neighborhood. The redevelopment is an efficient use of resources by leveraging both public and private funding to redevelop the existing site. There is a balance of the potential impacts onsite with the social and environmental considerations of creating a high-quality, comfortable, and inviting community for seniors in the vibrant, social neighborhood of Downtown-Chinatown.

8.7 SUMMARY OF FINDINGS AND CONCLUSIONS

Based on the information in this EA and coordination with local, state, and federal regulatory agencies and public, it is anticipated that, with the incorporation of mitigation measures, this Project will have no significant impact on the natural or human environment. See **Table 22** for a full list of anticipated impacts and mitigation measures. Therefore, in accordance with the provisions set forth in NEPA of 1969, as amended, CEQ Regulations for Implementing the Procedural Provisions of NEPA, 23 CFR Part 771, a FONSI is determined.

Table 22: Halewai'olu Senior Residence Project Impacts Summary

Resources Impacted	Potential Short-term Impacts	Long-term Impacts	Mitigation and BMPs	EA Section
Climate and Air Quality	Construction-related fugitive dust and equipment emissions.	• Increased resident vehicular traffic. • No Adverse Impact.	• Construction equipment and vehicles shall be maintained in proper working order to reduce air emissions. • During construction, work activities will be in compliance with HAR, Chapter 11-59 and 11-60. • Incorporation of LID greening measures. • Encouragement of active and public transportation. • Reduction in parking requirements through HRS, Chapter 201H process.	3.1, 3.2
Geology, Topography, and Soils	No Adverse Impact.	No Adverse Impact.	• Erosion control measures and BMPs will be employed during construction. • Disposal will be at an approved facility or location in accordance with Federal, State, and City regulations. • Project design will incorporate mitigation measures included in the Geotechnical Report; see **Appendix F**. No mitigation for long-term impacts required.	3.3
Water Resources & Hydrology	Potential storm water runoff during construction.	No Adverse Impact.	• Construction will be regulated in accordance with Clean Water Act of 1972 (CWA) regulations. • During construction, work activities will be in compliance with HAR, §11-54 and HAR, §11-55. • Discharge pollution prevention measures will be employed in all phases of the Project. • Following construction all areas of ground disturbance will be stabilized with appropriate materials including the use of vegetative ground cover. • BMPs will be installed as described in **Section 3.4** and as shown on Sheets C002, C005, and C006 in **Appendix A**. No mitigation for long-term impacts required.	3.4

Resources Impacted	Potential Short-term Impacts	Long-term Impacts	Mitigation and BMPs	EA Section
Natural Hazards	No impacts from tsunamis, flood zones, seismic hazards and hurricanes and high winds.	• Increase in impervious surfaces on the Project Site. • Development within the XTEZ. • No Adverse Impact.	• Incorporation of LID greening measures. • Proper design criteria will be applied to structures associated with this Project to ensure structures are protected against hurricane and high winds. No mitigation for long-term impacts required.	3.5
Visual Resources	Temporary visual impacts from the presence construction equipment	• Visual alteration of the Project area. • No Adverse Impact.	• Equipment will be confined to work areas. • All construction related equipment will be removed following the completion of work. No mitigation for long-term impacts required.	3.6
Noise Conditions	Temporary source of noise above ambient levels from construction noise.	Minimal long-term increase of noise along Vineyard Boulevard. No Adverse Impact.	• All residences will include air conditioning. • Mufflers will be used on all combustion powered construction vehicles and machinery, and all noise attenuation equipment maintained in good operating condition • Heavy truck and equipment staging areas would be located at areas which are at least 500 feet from noise sensitive properties whenever possible. • Truck routes which avoid residential communities should be identified wherever possible. • Construction activities and use of heavy equipment would be scheduled as much as possible during daylight hours to avoid disturbing area residents during the evening. • Noise reduction measures such as rough, non- painted driving surfaces and acoustical absorption on the ceiling may be implemented if necessary. • Design of the exterior elements of the building may incorporate features that reduce noise levels to the interior spaces of the apartment unit. • No additional mitigation required.	3.7
Flora and Fauna	• Increased lighting during construction	• Permanent exterior street	• Protection or potential relocation of the single endangered *Brighamia sp.* should relocation occur, the USFWS will be notified and concurrence	3.8, 3.9

Resources Impacted	Potential Short-term Impacts	Long-term Impacts	Mitigation and BMPs	EA Section
	of the proposed Project could pose potential impact to protected seabirds. • Potential impact to the Hawaiian hoary bat during the clearing and grubbing phase of construction.	lighting. • No Adverse Impact	with a plan to protect the specimen(s) obtained. • Light fixtures utilized for this Project will be designed and installed to reduce glare and shield light from migrating and/or nocturnally flying seabirds. • Design features for lighting will be based on guidance in the *The Newell's Shearwater Light Attraction Problem, A Guide for Architects, Planners, and Resort Managers*. • In the few areas that have trees or shrubs greater than 15 feet (5.6 meters), trees will be removed or trimmed during the breeding season of June 1 to September 15. • The use of barbed wire fencing will be prohibited.	
Transportation Facilities	Temporary increase in construction-related traffic, particularly during mobilization and demobilization of the construction area.	No Adverse Impact.	• To minimize traffic disruption, traffic control barricades, cones, signage, and lighting will be used as necessary to alert drivers and delineate construction boundaries. • Approach signs and a flag person will be positioned to direct traffic through temporary traffic control zones as necessary. • To minimize traffic impacts to nearby residents, the Contractor will schedule heavy truck activity as much as possible between the hours of 9:00 a.m. and 3:00 p.m. on weekdays. • Work on weekends will also be avoided to minimize traffic disruptions. • The HPD will be notified prior to periods of heavy truck activity or during transport and operation of heavy equipment.	4.1
Parks, Open Space, and Recreation Facilities	No Adverse Impact.	No Adverse Impact.	No mitigation required.	4.2
Fire, Police, and Medical Facilities	No Adverse Impact.	Additional residents may result in a need to	No mitigation required.	4.3

Resources Impacted	Potential Short-term Impacts	Long-term Impacts	Mitigation and BMPs	EA Section
		shift public safety resources to the region.		
Education Facilities	No Adverse Impact.	No Adverse Impact.	No mitigation required.	4.4
Potable Water	No Adverse Impact.	• Increase in need for potable water; however, BWS confirmed there is capacity. • No Adverse Impact.	HSD will continue to consult with BWS.	4.5
Electrical and Communications Facilities	No Adverse Impact.	• Increase in need for electricity; however, HECO confirmed there is capacity. • No Adverse Impact	• Final placement of utility lines would be determined as Project design progresses. • Continued consultation with HECO. • No additional mitigation required.	4.6
Wastewater Facilities	No Adverse Impact.	• Increase in need for potable water; however, DPP confirmed there is capacity. • No Adverse Impact.	Continued consultation with the City. No mitigation required.	4.7
Solid Waste Collection and Disposal	No Adverse Impact.	No Adverse Impact.	No mitigation required.	4.8
Storm water and Drainage	No Adverse Impact.	No Adverse Impact.	• Construction will be regulated in accordance with CWA regulations.	4.9

Resources Impacted	Potential Short-term Impacts	Long-term Impacts	Mitigation and BMPs	EA Section
System			• Erosion control measures and BMPs, including storm drain inlet protection and biofiltration cells will be installed as shown on Sheets C002, C005, and C006 in **Appendix A**. LID measures will be incorporated.	
Hazardous Wastes and Materials	Disturbance of hazardous materials during site demolition.	No Adverse Impact.	• HSD will coordinate with HDOH's Asbestos Abatement Office of the Noise, Radiation and Indoor Air Quality Branch prior to demolition and work with Contractors who are specifically trained in LBP and ACM abatement to safely remove these hazardous materials and limit any potential exposure to anyone who may be onsite during demolition. • All hazardous materials will be properly removed and disposed of at an approved waste facility prior to general demolition/construction activities.	4.10
Socio-Economic Environment	No Adverse Impact.	No Adverse Impact.	No mitigation required.	5.1
Historic, Archaeological, and Cultural Resources	No Adverse Impact.	Demolition of existing two-story building. Adverse Impact.	• The agreed upon mitigation commitments included in the Draft AIS, include preparing a BTP for the human burial site, identified as Component 3 of SIHP # -8840 and archaeological monitoring for Components 1–3 of SIHP # -8840. With the implementation of these mitigation commitments, the Project's potential adverse effect on SIHP # -8840, subsurface cultural deposits will be reduced. • HSD will implement the MOA. • "Project construction workers and all other personnel involved in the construction and related activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are identified during construction activities, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the event that iwi kūpuna are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300- 40. In addition, in the event of an inadvertent discovery of human remains, the completion of	5.2, 5.3

Resources Impacted	Potential Short-term Impacts	Long-term Impacts	Mitigation and BMPs	EA Section
			a BTP, in compliance with HAR §13-300 and HRS §6E-43, is recommended" (CSH, 2019). • "In the event that iwi kūpuna and/or cultural finds are encountered during construction, Project proponents should consult with cultural and lineal descendants of the area to develop a reinternment plan and cultural preservation plan for proper cultural protocol, curation, and long-term maintenance" (CSH, 2019).	

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Environmental Assessment

Prepared in Accordance with 24 Code of Federal Regulations Part 58,
Environmental Review Procedures for Entities Assuming HUD Environmental Responsibilities

Halewai'olu Senior Residences

Downtown Honolulu, Honolulu (Kona) District, Island of O'ahu



Volume 2: APPENDICES

April 1, 2020

Proposing Applicant:
Halewai'olu Senior Development, LLC
737 Bishop Street, Suite 1520
Honolulu, Hawai'i 96813

Accepting Agency:
City & County of Honolulu
Department of Land Management
530 South King Street, Room 208
Honolulu, Hawaii 96813

Appendices

Appendix A	Drawings
Appendix B	2019 Market Study
Appendix C	Air Quality Impact Assessment
Appendix D	Odor and Other Nuisance Impact Assessment
Appendix E	Focused Mobility Analysis Report
Appendix F	Preliminary Geotechnical Engineering Exploration
Appendix G	Acoustic Study
Appendix H	Biological Resources Survey
Appendix I	U.S. Fish and Wildlife Service – Technical Assistance
Appendix J	U.S. Fish and Wildlife Service – Informal Consultation
Appendix K	Preliminary Engineering Report
Appendix L	Hazardous Materials Assessment Survey
Appendix M	Economic and Fiscal Impact Assessment
Appendix N	Archaeological Impact Study
Appendix O	Downtown Neighborhood Board No. 13 Meeting Record
Appendix P	Memorandum of Agreement
Appendix Q	Cultural Impact Assessment
Appendix R	Phase I Environmental Site Assessment
Appendix S	Phase II Environmental Site Assessment

Appendix A

Drawings

WRNS Studio and Gary, Hong, Nojima & Associates, Inc.

March 20, 2020



THE MICHAEL'S ORGANIZATION

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817

TMK: 1-7-006:012

REVISION 2 - PERMIT RESPONSE

20 MARCH 2020

WRNS STUDIO

677 ALA MOANA BLVD
3RD FLOOR, STE. 307
HONOLULU, HI 96813
HAWAII 96813
415.358.9100 TEL
415.358.9150 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WRNS
LICENSED PROFESSIONAL ARCHITECT
No. 16027
HAWAII, U.S.A.

EXPIRATION DATE 04/30/2020

SIGNATURE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (AS DEFINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 16, CHAPTER 115).

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

THE MICHAEL'S ORGANIZATION
PROJECT NO.: 19005.00

AHJ #

ISSUES	DATE
30% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

REVISION LIST	DATE
1 REVISION 1 - PERMIT RESPONSE	01/16/2020
2 REVISION 2 - PERMIT RESPONSE	03/17/2020

COVER

G-000

APPLICABLE CODES & AGENCIES

THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO CONSTRUCT REFERENCED PROJECT IN ACCORDANCE WITH CHAPTER 180 OF TITLE 3 HAWAII ADMINISTRATIVE RULES ("STATE BUILDING CODE") WITH LOCAL AMENDMENTS AND CITY AND COUNTY OF HONOLULU. REVISED ORDINANCES OF HONOLULU CHAPTER 21 LAND USE ORDINANCE (LIO):

CHAPTER 16: BUILDING
(ADOPTED & AMENDED 2006 INTERNATIONAL BUILDING CODE)
(ADOPTED & AMENDED 2006 INTERNATIONAL EXISTING BUILDING CODE)

CHAPTER 17: ELECTRICITY
(ADOPTED & AMENDED 2008 NATIONAL ELECTRICAL CODE)

CHAPTER 19: PLUMBING
(ADOPTED & AMENDED HAWAII STATE PLUMBING CODE INCORPORATING 2006 UNIFORM PLUMBING CODE)

CHAPTER 20: FIRE
(ADOPTED & AMENDED HAWAII STATE FIRE CODE - INCORPORATING 2012 NFPA1 UNIFORM FIRE CODE)

CHAPTER 32: BUILDING ENERGY CONSERVATION CODE
(ADOPTED & AMENDED 2015 INTERNATIONAL ENERGY CONSERVATION CODE)

CHAPTER 21: LAND USE ORDINANCE, ROH, FEBRUARY 20'8

DEPARTMENT OF HEALTH, TITLE 11, CHAPTER 39

THIS PROJECT HAS BEEN DESIGNED FOR ACCESSIBLE ACCESS IN ACCORDANCE WITH HAWAII STATE BUILDING CODE SECTION 3-180-28, WHICH INCLUDES: 2010 ADA GUIDELINES FOR ACCESSIBLE DESIGN ADMINISTERED BY THE US DEPARTMENT OF JUSTICE; THE FAIR HOUSING ACT DESIGN MANUAL ADMINISTERED BY THE US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT; AND OTHER PERTINENT LAWS. THE CONTRACTOR SHALL ENSURE THAT ALL WORK ACCOMPLISHED WITHIN THIS PROJECT MAINTAINS CONFORMANCE WITH THESE STANDARDS AND LAWS AS INDICATED OR REASONABLY INFERRED.

DEFERRED SUBMITTALS

1. EMERGENCY GENERATOR
2. FIRE PROTECTION STANDPIPE AND SPRINKLER SYSTEM
3. FIRE ALARM SYSTEM
4. TWO-WAY COMMUNICATION SYSTEM
5. HANDRAILING AT RAMPS
6. MECHANICAL ENCLOSURE
7. GARDEN DECK DECKING AND FENCING
8. COLD-FORMED STEEL DESIGN (SEE 05 4000)

NOTE:
THE DEFFERED SUBMITTAL(S) SHALL FIRST BE SUBMITTED TO THE ARCHITECT AND/OR ENGINEER FOR REVIEW AND COORDINATION. FOLLOWING THE COMPLETION OF ARCHITECT/ENGINEER REVIEW AND COORDINATION, A SUBMITTAL TO THE CITY SHALL BE MADE (FOR CITY REVIEW AND APPROVAL), WHICH SHALL INCLUDE A LETTER STATING THIS REVIEW AND COORDINATION HAS BEEN PERFORMED AND COMPLETED AND PLANS AND CALCULATIONS FOR THE DEFERRED ITEMS ARE FOUND TO BE ACCEPTABLE (I.E., WITH REGARD TO GEOMETRY, LOAD CONDITIONS, ETC.) WITH NO EXCEPTIONS.

DESIGN ALTERNATES

1. ADDITIVE: APR DOUBLE DOORS IN LIEU OF SLIDING DOORS
2. ADDITIVE: 1 MINI-BLIND WINDOW TREATMENTS AT ALL UNIT WINDOWS
3. ADDITIVE: CEILING FANS IN ALL UNIT BEDROOMS
4. DEDUCTIVE: RESIDENT ELEVATOR ACCESS CONTROLS
5. DEDUCTIVE: CALL BOX AT PARKING GATE ARMS
6. DEDUCTIVE: STAIR TOWER DOOR LOCKS AND ASSOCIATED FIRE COMMAND UNLOCK PANEL
7. ADDITIVE: OFF-SITE TRANSIT FIRE MODIFICATIONS
- 8A. DEDUCTIVE: SINGLE AWNING WINDOWS IN LIEU OF DOUBLE AWNING WINDOWS AT ALL UNIT WINDOWS
- 8B. DEDUCTIVE: DOUBLE AWNING WINDOWS IN LIEU OF SINGLE AWNING WINDOWS AT ALL UNIT WINDOWS
9. ADDITIVE: TOTAL DOOR SYSTEM IN LIEU OF DOUBLE DOOR AT L4-17 ELEVATOR LOBBY
10. ADDITIVE: PROVIDE LVT FLOORING IN UNIT BEDROOMS IN LIEU OF CARPET
11. DEDUCTIVE: REMOVE CABLE VINE SYSTEM AT COURTYARD

PROJECT INFO

PROJECT LOCATION

1333 RIVER STREET
HONOLULU, HI 96817
TMK: 1-7-006-012

PROJECT SUMMARY

HALEWAI'OLU SENIOR RESIDENCES PROJECT IS A NEW AFFORDABLE RENTAL SENIOR HOUSING PROJECT PROPOSED AT 1333 RIVER STREET ALONG RIVER STREET IN HONOLULU. THE PROPOSED DEVELOPMENT REPLACES AN EXISTING TWO-STORY BUILDING AND PARKING LOT BEHIND THE EXISTING BUILDING.

THE 17 STORY APPROXIMATELY 190,000 SF BUILDING WILL HOUSE A MIX OF ONE AND TWO BEDROOM APARTMENTS AS WELL AS A GROUND LEVEL COMMUNITY MEETING FACILITY. TWO STORIES OF PARKING WILL PROVIDE PARKING FOR RESIDENTS AND VISITING COMMUNITY MEMBERS UTILIZING THE MEETING FACILITY.

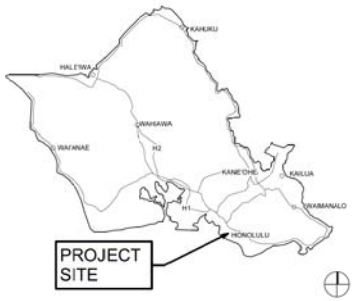
THE PROJECT IS BEING PARTIALLY FUNDED WITH TAX CREDITS AND STATE RENTAL HOUSING FUNDS AND QUALIFIES THE PROJECT AS "STATE BUILDING CONSTRUCTION PER HRS PART II, SECTION 107-21.

TYPE OF CONSTRUCTION: 1A

OCCUPANCY GROUPS: R-2 (RESIDENTIAL), A-3 (ASSEMBLY), B (BUSINESS), F-1 (EQUIPMENT/MAINTENANCE), M (MERCANTILE), S-1 (STORAGE) AND S-2 (PARKING GARAGE)

THIS BUILDING IS PROVIDED WITH A FULLY AUTOMATIC FIRE SPRINKLER SYSTEM THROUGHOUT.

LOCATION MAP



VICINITY MAP



DRAWING SHEET INDEX

SHEET #	SHEET NAME	REV 1	REV 2
00 GENERAL			
G-000	COVER		
G-001	DRAWING INDEX, PROJECT DIRECTORY, PROJECT INFO	X	X
G-101	ZONING SUMMARY	X	
G-102	CODE SUMMARY	X	
G-103	OCCUPANT LOAD PLAN - LEVELS 1..7	X	X
G-104	OCCUPANT LOAD PLAN - LEVELS 3-17	X	X
G-201	FIRE LIFE SAFETY PLANS		X
G-202	SOUND RATED CONSTRUCTION PLANS		X
6			
01 ARCHITECTURAL SITE			
AD-101	DEMOLITION SITE PLAN		X
AS-101	SITE PLAN	X	X
AS-201	SITE ACCESSIBILITY PLAN		X
AS-401	ENLARGED COURT AND PASSAGEWAY	X	X
4			
02 CIVIL			
C-001	CIVIL COVER SHEET		
C-002	GENERAL NOTES - 1		
C-003	GENERAL NOTES - 2		
C-004	DEMOLITION AND GRADING PLAN		
C-005	ESCP + POST-CONSTRUCTION BMP PLANS		
C-006	EROSION + SEDIMENT CONTROL NOTES + DETAILS		
C-007	SITE + UTILITY PLANS		
C-008	FM METER PLAN + MISCELLANEOUS PROFILES		
C-009	MISCELLANEOUS DETAILS - 1		
C-010	MISCELLANEOUS DETAILS - 2		
C-011	TRAFFIC CONTROL PLAN AND NOTES		
ES-101	ELECTRICAL SYMBOLS LIST		
ES-102	HECO NOTES		
ES-103	HTI NOTES AND CATV NOTES		
ES-104	DUCT SECTION DETAILS		
ES-201	OVERALL ELECTRICAL SITE PLAN		
ES-202	DEMOLITION ELECTRICAL SITE PLAN 1		
ES-203	DEMOLITION ELECTRICAL SITE PLAN 2		
ES-204	DEMOLITION ELECTRICAL SITE PLAN 3		
ES-205	NEW ELECTRICAL SITE PLAN 1		
ES-206	NEW ELECTRICAL SITE PLAN 2		
ES-207	NEW ELECTRICAL SITE PLAN 3		
ES-208	HECO PLAN AND PROFILE		
ES-301	DEMOLITION ONE-LINE DIAGRAM		
ES-302	NEW ONE-LINE DIAGRAM		
25			
03 LANDSCAPE			
L-100	LANDSCAPE SITE PLAN		X
L-100A	STREET TREE PLAN		X
L-101	LANDSCAPE DETAILS		X
L-200	IRRIGATION PLAN		X
L-201	IRRIGATION DETAILS		
5			
04 STRUCTURAL			
S-000	SHEET INDEX + 3D VIEWS		X
S-001	GENERAL NOTES	X	
S-002	GENERAL NOTES		X
S-003	ABBREVIATIONS, REINF. SCHEDULE & BAR BENDS		
S-004	FLOOR LOAD DIAGRAMS	X	
S-005	COMPONENTS & CLADDING WIND LOAD PLAN	X	
S-101	FOUNDATION PLAN	X	X
S-102	SECOND FLOOR PLAN	X	X
S-103	THIRD FLOOR PLAN	X	X
S-104	FOURTH FLOOR PLAN	X	X
S-105	FIFTH FLOOR PLAN	X	X
S-106	SIXTH-SEVENTEEN FLOOR PLAN	X	X
S-107	ROOF PLAN	X	X
S-201	MICROPILE DETAILS	X	
S-202	GRADE BEAM SCHEDULE & DETAILS	X	X
S-203	GRADE BEAM SCHEDULE & DETAILS		

SHEET #	SHEET NAME	REV 1	REV 2
A-000			
S-204	PILE CAP ENLARGED PLANS AND DETAILS	X	X
S-205	PILE CAP ENLARGED PLANS AND DETAILS		
S-206	PILE CAP ENLARGED PLANS AND DETAILS	X	
S-211	FOUNDATION DETAILS	X	X
S-221	SLAB ON GRADE DETAILS	X	X
S-301	COLUMN DETAILS		
S-302	COLUMN SCHEDULE AND DETAILS	X	
S-303	TOWER COLUMN TRANSITION ELEVATIONS	X	
S-304	TOWER COLUMN TRANSITION ELEVATIONS	X	
S-307	TRANSFER BEAM ELEVATION	X	
S-308	LINK BEAM SCHEDULE AND DETAILS	X	
S-309	CONCRETE BEAM SCHEDULE AND DETAILS	X	
S-401	TYPICAL CONCRETE WALL DETAILS		
S-402	TOWER CONCRETE WALL PLANS AND SCHEDULE		
S-403	TOWER CONCRETE WALL PLANS AND SCHEDULE	X	
S-404	TOWER CONCRETE WALL ELEVATIONS	X	
S-501	P.T. DETAILS	X	
S-502	P.T. DETAILS		
S-503	P.T. DETAILS		
S-601	STUDRAIL SCHEDULE	X	
S-701	FRAMING DETAILS	X	X
S-711	ROOF FRAMING DETAILS	X	
S-801	TYPICAL STEEL DETAILS	X	
S-901	TYPICAL CMU WALL DETAILS		
40			
05 ARCHITECTURAL			
AN-001	GENERAL NOTES, ARCHITECTURAL SYMBOLS AND ABBREVIATIONS		X
A-111	FLOOP PLAN - LEVEL 1	X	X
A-112	FLOOP PLAN - LEVEL 2	X	X
A-113	FLOOP PLAN - LEVELS 3 + 4	X	X
A-114	FLOOP PLAN - LEVEL 5 (TYPICAL)	X	X
A-121	FLOOP PLAN - LEVELS ROOF + PENTHOUSE	X	X
A-151	EDGE 3F SLAB PLAN - LEVEL 1	X	X
A-152	EDGE 3F SLAB PLAN - LEVEL 2	X	X
A-153	EDGE 3F SLAB PLAN - LEVELS 3 + 4	X	X
A-154	EDGE 3F SLAB PLAN - LEVEL 5 (TYPICAL)	X	X
A-157	EDGE 3F SLAB PLAN - ROOF + PENTHOUSE	X	X
A-201	REFLECTED CEILING PLAN - LEVEL 1	X	X
A-202	REFLECTED CEILING PLAN - LEVEL 2	X	X
A-203	REFLECTED CEILING PLAN - LEVEL 3 + 4	X	X
A-204	REFLECTED CEILING PLAN - LEVEL 5 (TYPICAL)	X	X
A-205	REFLECTED CEILING PLAN - LEVEL 17, ROOF BULKHEADS	X	X
A-301	3D OVERALL VIEWS		
A-302	BUILDING ELEVATIONS - WEST	X	X
A-303	BUILDING ELEVATIONS - NORTH	X	X
A-304	BUILDING ELEVATIONS - EAST	X	X
A-305	BUILDING ELEVATIONS - SOUTH	X	X
A-306	BUILDING ELEVATIONS - MPR	X	X
A-312	BUILDING ELEVATIONS - WEST PANELIZATION	X	
A-313	BUILDING ELEVATIONS - NORTH PANELIZATION	X	
A-314	BUILDING ELEVATIONS - EAST PANELIZATION	X	
A-315	BUILDING ELEVATIONS - SOUTH PANELIZATION	X	
A-321	PARTIAL BUILDING ELEVATIONS	X	X
A-331	BUILDING SECTION - LONGITUDINAL	X	X
A-332	BUILDING SECTION - LONGITUDINAL	X	X
A-333	BUILDING SECTION - CROSS		X
A-334	BUILDING SECTION - CROSS		X
A-400	ACCESSIBILITY CLEARANCE S - PLUMBING ELEMENTS & FACILITIES	X	
A-401	ENLARGED PLANS AND REFLECTED CEILING PLANS - UNITS	X	
A-402	ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS	X	
A-403	ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS	X	
A-404	ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS	X	
A-405	ENLARGED PLANS - ACCESSIBLE UNITS	X	
A-406	ENLARGED PLANS - ACCESSIBLE UNITS	X	
A-407	ENLARGED PLANS AND INTERIOR ELEVATIONS - UNIT KITCHENS	X	
A-408	ENLARGED PLANS AND INTERIOR ELEVATIONS - ACCESSIBLE UNIT KITCHENS	X	
A-409	ENLARGED PLANS AND INTERIOR ELEVATIONS - UNIT BATHROOMS	X	
A-410	ENLARGED PLANS AND INTERIOR ELEVATIONS - ACCESSIBLE UNIT BATHROOMS	X	
A-421	STAIR 1 PLANS AND SECTIONS - LEVELS 1-9	X	
A-422	STAIR 1 PLANS AND SECTIONS - LEVELS 9-ROOF	X	
A-423	STAIR 2 PLANS AND SECTIONS - LEVELS 1-4	X	X
A-424	STAIR 2 PLANS AND SECTIONS - LEVELS 4-17	X	
A-425	STAIR 1 PLAN AND SECTION AND STJR DETAILS	X	X
A-426	PASSAGEWAY RAMP PLANS ELEVATIONS AND STAIR DETAILS	X	X
A-431	ELEVATOR PLANS AND SECTIONS	X	
A-432	ELEVATOR SECTIONS	X	
A-433	ELEVATOR DETAILS	X	X
A-500	TYPICAL MOUNTING HEIGHTS	X	
A-501	LOBBY PLANS, ELEVATIONS, AND RCPS	X	
A-502	MANAGEMENT OFFICE PLANS, ELEVATIONS, AND RCPS	X	
A-503	TOILET ROOM PLANS, ELEVATIONS AND RCPS	X	X
A-504	INTERIOR ELEVATIONS - LEVEL 1	X	
A-505	INTERIOR ELEVATIONS - LEVEL 1		
A-506	INTERIOR ELEVATIONS - LEVEL 4		X
A-507	INTERIOR ELEVATIONS - LEVEL 4	X	
A-601	INTERIOR PARTITION SCHEDULE	X	
A-602	INTERIOR DETAILS	X	X
A-603	HORIZONTAL ASSEMBLIES	X	
A-605	SHAFT DETAILS		
A-610	TRASH CHUTE PLANS SECTIONS AND ELEVATIONS		
A-611	PARTITION DETAILS		
A-641	TYPICAL CEILING DETAILS		
A-651	CASEWORK SCHEDULE AND DETAILS	X	X
A-701	DOOR SCHEDULES AND FRAME TYPES	X	X
A-711	GATE SCHEDULES AND FRAME TYPES	X	X
A-711	DOOR DETAILS	X	
A-801	SWALL SECTIONS - TOWER	X	
A-802	WALL SECTIONS	X	X
A-821	ROOF DETAILS	X	
A-822	ROOF DETAILS - MPR ROOF		X
A-831	EXTERIOR WALL ASSEMBLIES	X	X
A-841	EXTERIOR DETAILS - AT GRADE	X	
A-843	EXTERIOR DETAILS - EIFS	X	
A-871	EXTERIOR WINDOW & LOUVER TYPES	X	X
A-872	EXTERIOR WINDOW DETAILS	X	X
A-881	STOREFRONT TYPES		X
A-882	STOREFRONT DETAILS		X
A-901	EXTERIOR FINISH SCHEDULE	X	
A-902	INTERIOR FINISH SCHEDULE	X	X
A-903	UNIT FINISH SCHEDULE	X	X
AG-101	SIGNAJE FLOOR PLAN - LEVEL 1	X	X
AG-102	SIGNAJE FLOOR PLAN - LEVEL 2	X	X
AG-103	SIGNAJE FLOOR PLAN - LEVEL 3 + 4	X	X
AG-104	SIGNAJE FLOOR PLAN - LEVEL 5	X	X
AG-106	SIGNAJE TYPES	X	X
AG-107	SIGNAJE TYPES	X	X
AG-108	SIGNAJE TYPES	X	X
AG-109	SIGNAJE TYPES	X	X

SHEET #	SHEET NAME	REV 1	REV 2
92			
06 MECHANICAL			
M-001	SYMBOLS LIST AND GENERAL NOTES - MECHANICAL	X	
M-201	FLOOR PLAN - LEVEL 1 - MECHANICAL	X	
M-202	FLOOR PLAN - LEVEL 2 - MECHANICAL	X	
M-203	FLOOR PLAN - LEVEL 3 - MECHANICAL	X	
M-204	FLOOR PLAN - LEVEL 4 - MECHANICAL	X	
M-205	FLOOR PLAN - LEVEL 5-17 - MECHANICAL		
M-206	FLOOR PLAN - ROOF PLAN - MECHANICAL	X	
M-401	ENLARGED UNIT PLANS - MECHANICAL		
M-402	ENLARGED UNIT PLANS - MECHANICAL		
M-501	AIR RISER DIAGRAM - MECHANICAL		
M-601	SCHEDULES - MECHANICAL	X	
M-602	SCHEDULES - MECHANICAL	X	
M-701	DETAILS - MECHANICAL		
13			
07 PLUMBING			
P-001	SYMBOLS LIST AND GENERAL NOTES - PLUMBING	X	
P-200	FLOOR PLAN - UNDERGROUND - PLUMBING		
P-201	FLOOR PLAN - LEVEL 1 - PLUMBING		
P-202	FLOOR PLAN - LEVEL 2 - PLUMBING		
P-203	FLOOR PLAN - LEVEL 3 - PLUMBING		
P-204	FLOOR PLAN - LEVEL 4 - PLUMBING		
P-205	FLOOR PLAN - LEVEL 5-16 - PLUMBING		
P-206	FLOOR PLAN - LEVEL 17 - PLUMBING		
P-207	FLOOR PLAN - ROOF PLAN - PLUMBING		
P-401	ENLARGED PLANS - PLUMBING		
P-402	ENLARGED PLANS - PLUMBING		
P-501	RISER DIAGRAM - WASTE AND VENT - PLUMBING		
P-502	RISER DIAGRAM - INDIRECT WASTE - PLUMBING		
P-503	RISER DIAGRAM - WATER - PLUMBING		
P-504	RISER DIAGRAM - STORM DRAIN - PLUMBING		
P-505	RISER DIAGRAM - STORM DRAIN - PLUMBING		
P-506	RISER DIAGRAM - CONDENSATE - PLUMBING		
P-507	RISER DIAGRAM - DIESEL FUEL - PLUMBING		
P-508	ISOMETRICS - PODIUM WASTE AND VENT - PLUMBING		
P-509	ISOMETRICS - TOWER WASTE AND VENT - PLUMBING	X	
P-510	ISOMETRICS - INDIRECT WASTE - PLUMBING		
P-511	ISOMETRICS - WATER - PLUMBING		
P-512	TYPICAL ISOMETRIC AND RISER DIAGRAMS - PLUMBING		
P-601	SCHEDULES - PLUMBING	X	X
P-701	DETAILS - PLUMBING		
25			
08 FIRE PROTECTION			
FP-001	SYMBOLS LIST AND GENERAL NOTES - FIRE PROTECTION	X	X
FP-201	REFLECTED CEILING PLAN - LEVEL 1 - FIRE PROTECTION	X	X
FP-202	REFLECTED CEILING PLAN - LEVEL 2 - FIRE PROTECTION		
FP-203	REFLECTED CEILING PLAN - LEVEL 3 - FIRE PROTECTION		X
FP-204	REFLECTED CEILING PLAN - LEVEL 4 - FIRE PROTECTION		X
FP-205	REFLECTED CEILING PLAN - LEVEL 5-17 - FIRE PROTECTION		X
FP-206	REFLECTED CEILING PLAN - ROOF PLAN - FIRE PROTECTION		X
FP-501	DETAILS - FIRE PROTECTION		X
FP-502	DETAILS - FIRE PROTECTION		X
9			
09 FIRE ALARM			
FA-001	SYMBOLS LIST AND GENERAL NOTES - FIRE ALARM	X	
FA-201	FLOOR PLAN - LEVEL 1 - FIRI ALARM		
FA-202	FLOOR PLAN - LEVEL 2 - FIRI ALARM		
FA-203	FLOOR PLAN - LEVEL 3 - FIRI ALARM		
FA-204	FLOOR PLAN - LEVEL 4 - FIRI ALARM		
FA-205	FLOOR PLAN - LEVEL 5-17 - FIRE ALARM		
FA-206	FLOOR PLAN - ROOF PLAN - FIRE ALARM		
FA-501	RISER DIAGRAM - FIRE ALARM		
8			
10 ELECTRICAL			
E-001	SYMBOLS LIST AND GENERAL NOTES - ELECTRICAL	X	X
E-002	LUMINAIRE SCHEDULE	X	X
E-101	SITE PLAN - ELECTRICAL		
E-201	REFLECTED CEILING PLAN - LEVEL 1 - LIGHTING		
E-202	REFLECTED CEILING PLAN - LEVEL 2 - LIGHTING		
E-203	REFLECTED CEILING PLAN - LEVEL 3 - LIGHTING		
E-204	REFLECTED CEILING PLAN - LEVEL 4 - LIGHTING		
E-205	REFLECTED CEILING PLAN - LEVEL 5 - LIGHTING		
E-206	REFLECTED CEILING PLAN - LEVEL 6-17 - LIGHTING	X	
E-301	FLOOR PLAN - LEVEL 1 - POWER		
E-302	FLOOR PLAN - LEVEL 2 - POWER		
E-303	FLOOR PLAN - LEVEL 3 - POWER		
E-304	FLOOR PLAN - LEVEL 4 - POWER	X	
E-305	FLOOR PLAN - LEVEL 5 - POWER		
E-306	FLOOR PLAN - LEVEL 6-17 - POWER		
E-307	ROOF PLAN - POWER		
E-401	ENLARGED PLAN - ELECTRICAL	X	
E-402	ENLARGED UNIT PLANS - ELECTRICAL	X	X
E-501	SINGLE LINE DIAGRAMS - ELECTRICAL	X	X
E-502	MAIN SWITCHBOARD ELEVATION - ELECTRICAL		
E-601	SCHEDULES - ELECTRICAL		
E-602	SCHEDULES - ELECTRICAL	X	
E-603	SCHEDULES - ELECTRICAL		
E-604	SCHEDULES - ELECTRICAL		
E-605	SCHEDULES - ELECTRICAL	X	
E-701	DETAILS - ELECTRICAL		
E-702	DETAILS - ELECTRICAL		
E-703	DETAILS - ELECTRICAL		
E-801	ENERGY COMPLIANCE REPORT - ELECTRICAL		
29			
11 TECHNOLOGY			
T-001	SYMBOLS LIST AND GENERAL NOTES - TECHNOLOGY		
T-201	FLOOR PLAN - LEVEL 1 - TECHNOLOGY		
T-202	FLOOR PLAN - LEVEL 2 - TECHNOLOGY		
T-203	FLOOR PLAN - LEVEL 3 - TECHNOLOGY		
T-204	FLOOR PLAN - LEVEL 4 - TECHNOLOGY		
T-205	FLOOR PLAN - LEVEL 5 - TECHNOLOGY		
T-206	FLOOR PLAN - LEVEL 6-17 - TECHNOLOGY		
T-207	FLOOR PLAN - ROOF PLAN - TECHNOLOGY		
T-301	ENLARGED PLANS AND ELEVATIONS - TECHNOLOGY		
T-302	ENLARGED UNIT PLANS - TECHNOLOGY		
T-401	DIAGRAMS - TECHNOLOGY		
T-501	DETAILS - TECHNOLOGY		
12			

PROJECT DIRECTORY

OWNER
THE IKOHAEL'S ORGANIZATION
737 BISHOP ST, MAUKA TOWER
SUITE 1520
HONOLULU, HI 96813

CONTACT: KAREN SEDDON
808-517-3064

ARCHITECT
WRNS STUDIO
677 ALA MOANA BLVD
SUITE 307
HONOLULU, HI 96813
808-356-5860

CONTACT: ADAM WOLTAG
415-489-2232

CIVIL
GRAY HONG NOJIMA
201 MERCHANT STREET
HONOLULU, HI 96813
808-521-0306

CONTACT: LUREEN KOMODA
808-521-0306 x104

STRUCTURAL
BALDRIDGE & ASSOCIATES
STRUCTURAL ENGINEERING, INC.
1164 BISHOP STREET
SUITE 1600
HONOLULU, HI 96813
808-534-1300

CONTACT: FERNANDO FRONTERA
808-394-7028

MECHANICAL
INTERFACE ENGINEERING, INC.
1132 BISHOP STREET
SUITE 1930
HONOLULU, HI 96813
808-445-9169

CONTACT: MARK KOLLER
808-440-0182

PLUMBING
INTERFACE ENGINEERING, INC.
1132 BISHOP STREET
SUITE 1930
HONOLULU, HI 96813
808-445-9169

CONTACT: MIKE COTTER
808-440-0188

ELECTRICAL
INTERFACE ENGINEERING, INC.
1132 BISHOP STREET
SUITE 1930
HONOLULU, HI 96813
808-445-9169

CONTACT: SCOTT SATO
808-591-2728

ACOUSTICS
CHARLES M SALTER ASSOCIATES, INC.
14 KIHAPAI STREET
KAILUA, HI 96743
808-400-3519

CONTACT: BLAKE WELLS
808-400-3519

WATER PROOFING
WISS, JANNEY, ELSTNER ASSOCIATES, INC
165 FORT STREET, SUITE 2200
HONOLULU, HI 96813
808-591-2728

CONTACT: RICHARD FURST
808-983-1943

PARKING
WALKER CONSULTANTS
601 CALIFORNIA STREET
SUITE 820
IAN FRANCISCO, CA 94108

CONTACT: DAVID KOSAI
415-644-9630

ELEVATORS
ELEVATIONS, INC
3514 MALAMA PLACE
HONOLULU, HI 96822

CONTACT: NEIL KUNIHISA
808-988-9583

All drawings and written material appearing herein constitute original and unpublished work of the Architect/Engineer and may not be duplicated, used or disclosed without consent of Architect/Engineer

If this drawing is not 30"x42", then the drawing has been revised from its original size. Noted scales must be adjusted. This line should be equal to one inch.

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.356.5860 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

KEAU D. WOLTAG
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2026

SIGNATURE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION (AS DEFINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 16, CHAPTER 115).

ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020
2	REVISION 2 - PERMIT RESPONSE	03/20/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006-012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: 1" = 1'-0"

SHEET TITLE:

DRAWING INDEX, PROJECT DIRECTORY, PROJECT INFO

SHEET NO:

G-001

3/20/2020 7:52:04 AM

ENERGY CODE SUMMARY

IECC 2015

CLIMATE ZONE:	1		TABLE C301.1
	CODE REQUIREMENT	PROPOSED:	TABLE C402.1.3
INSULATION REQUIREMENTS: ROOF: MASS FLOORS: MASS WALLS: UNHEATED SLAB-ON-GRADE:	R-20CI (ALL OTHER) / R-25CI (GROUP R) U-0.322 R-5 TCI (ALL OTHER & GROUP R) NON-RATED	R-20CI (ALL OTHER) / R-25CI (GROUP R) U0.322 R-5 TCI (ALL OTHER & GROUP R) NONE RATED	TABLE C402.1.3 TABLE C402.1.4
FENESTRATION REQUIREMENTS: FIXED: OPERABLE: ENTRANCE DOORS:	U FACTORS / SHGC / ORIENTATION 0.50 PF < 0.2 0.25 SEW 0.33 N 0.65 0.2 < PF < 0.5 0.30 0.37 1.10 PF > 0.5 0.40 0.40	U FACTORS / SHGC 0.42 0.28 0.42 0.28 1.10 0.28	TABLE C402.4
MAXIMUM AREAS: VERTICAL FENESTRATIONS (EXCLUDING OPAQUE): SKYLIGHTS:	40% OF WALL AREA ALLOWABLE 5% ROOF AREA ALLOWABLE	25% OF WALL AREA ACTUAL (65,527 SF OVERALL WALL AREA DIVIDE BY 16,464 SF GLAZING) NO SKYLIGHTS	C402.4.1
AIR BARRIER:	REQUIRED. SOLID OR HOLLOW MASONRY, SHALE OR CLAY WALLS ARE DEEMED TO COMPLY WITH THE REQUIREMENT.	AIR BARRIER PROVIDED AT EXTERIOR WALLS ADJACENT TO CONDITIONED SPACE.	C405.5.1.2.1
VESTIBULE:	NOT REQUIRED IN CLIMATE ZONE 1	N/A	C402.5.7

ENERGY CONFORMANCE

STATE OF HAWAII & CITY AND COUNTY OF HONOLULU
2015 INTERNATIONAL ENERGY CONSERVATION CODE

TO THE BEST OF MY KNOWLEDGE, "THIS PROJECT'S DESIGN SUBSTANTIALLY CONFORMS TO THE 2015 INTERNATIONAL ENERGY CONSERVATION CODE AS AMENDED FOR BUILDING ENVELOPE COMPONENTS (SECTION C402) FOR:

COMPLIANCE METHOD

- [X] 2015 IECC AS AMENDED MANDATORY AND PRESCRIPTIVE
- [ ] 2015 IECC AS AMENDED MANDATORY AND TOTAL BUILDING PERFORMANCE
- [ ] ASHRAE STANDARD 90.1-2013 MANDATORY AND PRESCRIPTIVE
- [ ] ASHRAE STANDARD 90.1-2013 MANDATORY AND ENERGY-COST BUDGET METHOD

INFORMATION IN CONSTRUCTION DOCUMENTS	YES	N/A	INFORMATION LOCATION
ROOF INSULATION R-VALUE	X		G-101, ENERGY CODE SUMMARY
ROOF INSULATION TYPE AND LOCATION	X		A-121 & A-831
ROOF MEMBRANE SOLAR REFLECTANCE AND THERMAL EMITTANCE	X		SPEC SECTION 07 5423 - 5
WALL INSULATION R-VALUE	X		A-831
WALL INSULATION TYPE AND LOCATION	X		SPEC SECTION 07 2100 & A-831
WINDOW SHGC	X		G-101, ENERGY CODE SUMMARY
WINDOW U-FACTOR	X		G-101, ENERGY CODE SUMMARY
SKYLIGHT SHGC		X	
SKYLIGHT U-FACTOR		X	

NOTES:

SIGNATURE:

DATE: 10/30/19
NAME: ADAM WOLTAG
TITLE: PRINCIPAL
LICENSE NO.: AR-16327

ALTERNATIVE CODE COMPLIANCE

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR

KATHY K. SOKUGAWA
ACTING DIRECTOR

TIMOTHY F. HO
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI
DEPUTY DIRECTOR

2019/ELOG-1993
B19-166 (WN)

October 17, 2019

Mr. Adam Woltag, AIA, LEED AP, Partner
WRNS Studio
677 Ala Moana Boulevard, Suite 307
Honolulu, Hawaii 96813

Dear Mr. Woltag:

SUBJECT: Request for Confirmation of Alternative Building Code Use for Areas of Refuge
1333 River Street
Permit Application No. A2019-08-1296
Tax Map Key: 1-7-006: 012

This is in response to your letter dated October 7, 2019, regarding the above subject matter.

We have no objections to your request to use the 2012 International Building Code, Section 1007.3, which exempts the requirements of an area of refuge if equipped throughout by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

Should you have any questions, please contact Mr. Willard Nishigata of our Plan Review Section, at 768-8232.

Very truly yours,

Wendel Ko, Acting Chief
Building Division

ZONING SUMMARY

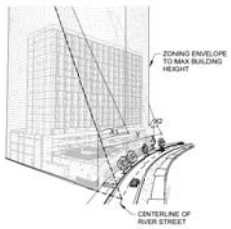
REVISED ORDINANCE OF HONOLULU 2018, CHAPTER 21 - LAND USE ORDINANCE, ULO

TRANSIT-ORIENTED DEVELOPMENT DESIGN STANDARDS, ORDINANCE 17-54, WHICH AMENDS CHAPTER 21 AS RELATED TO TOD SPECIAL DISTRICTS.

BUILDING FORM	MAXIMUM FLOOR AREA RATIO (FAR): WITHOUT BONUSES:	4.0 21-9.100-8.a.1.A DOES NOT LIST BMX-4. BMX-3 LISTS A BASE FAR OF 2.5, MAXIMUM FAR WITH PD-T PERMIT OF 7.0. DOWNTOWN TOD PLAN FIGURE 2-6 ALLOWS FAR UP TO 7.5.	TABLE 21-3.4 DOWNTOWN TOD PLAN FIGURE 2-6
	LOT AREA: ALLOWABLE FLOOR AREA:	26,925 SQ FT (.618 ACRE) 107,700 SQ FT	TOC 21-9.100-8 (a) (1) (A)
	PROPOSED FLOOR AREA: PROPOSED FAR:	157,946 SQ FT (EXCLUDING PARKING AREAS) 5.9	21-3120-1 21-3120-2(c)
	MAXIMUM BUILDING HEIGHT: PROPOSED BUILDING HEIGHT:	350 FEET 165 FEET (WITHOUT PENTHOUSE)	21-3120-2(c)(4) FIGURE 21-3.9
	BMX-4 DISTRICT HEIGHT SETBACK: **201H EXEMPTION**	50% OF STREET FRONTAGE MUST SET BACK AT AN ANGLE OF 65 DEGREES FROM THE CENTERLINE OF THE STREET (SEE DIAGRAM THIS SHEET)	TABLE 21-3.4
	MAXIMUM BUILDING AREA (% OF ZONING LOT):	NOT REGULATED	TABLE 21-3.4
LAND USE	ALLOWABLE USE:	DWELLINGS, MULTI-FAMILY CONVENIENCE STORES EATING ESTABLISHMENTS RETAIL ESTABLISHMENTS MEETING FACILITIES PUBLIC USES AND STRUCTURES	TABLE 21-3
OFF-STREET PARKING	LUO CALCULATION: DWELLINGS, MULTI-FAMILY: OFFICE: RETAIL:	1 STALL PER UNIT 1 PER 600 SQ FT OVER 4,000 SQ FT 1 PER 600 SQ FT OVER 4,000 SQ FT	TABLE 21-6.2 21-5610A(a)(3)
	MULTI-FAMILY UNITS: OFFICE AREA: RETAIL:	156 UNITS = LESS THAN 4,030 SQ FT= LESS THAN 4,030 SQ FT=	156 SPACES 0 SPACES 0 SPACES
	REQUIRED SPACES:		156 SPACES
	TOTAL PROVIDED SPACES: **201H EXEMPTION**		51 SPACES
	TOD DESIGN STANDARDS CALCULATION: DWELLINGS, MULTI-FAMILY:	0 STALL PER UNIT 300 SF OR LESS 0.5 STALL PER UNIT 301-600 SF 0.75 STALL PER UNIT 601-800 SF 1 STALL PER UNIT 801 SF OR MORE	TOC 21-9.100-8 (c)(1)(B)
	MULTI-FAMILY UNITS:	130 UNITS @ 301-600 SF = 26 UNITS @ 801 SF OR MORE =	65 SPACES 26 SPACES
	REQUIRED SPACES:		91 SPACES
	TOTAL PROVIDED SPACES: **201H EXEMPTION**		51 SPACES
		NO MINIMUM PARKING REQUIREMENT LISTED FOR NON-RESIDENTIAL USES	TOC 21-9.100-8 (c)(1)(A)
	GROUND FLOOR PARKING: REQUIRED:	AT-GRADE PARKING CANNOT BE LOCATED WITHIN 40 FEET OF ANY FRONT PROPERTY LINE.	TOC 21-9.100-8 (c)(2)
	PROVIDED:	COMPLIES	
OFF-STREET LOADING	MULTIFAMILY: RETAIL: OFFICE:	2 PER 151- 300 UNITS 1 PER 2,000 - 16,000 SQ FT 1 PER 20,000 - 50,000 SQ FT	21-6.100
	MULTIFAMILY: RETAIL: OFFICE:	156 UNITS = LESS THAN 2,030 SQ FT = LESS THAN 20,300 SQ FT =	2 SPACES 0 SPACES 0 SPACES
	TOTAL REQUIRED SPACES:	2 SPACES, EACH SIZE	
	TOTAL PROVIDED SPACES:	1 LARGE SPACE	
	LOADING SPACE DIMENSIONS: **201H EXEMPTION**	12x35x14' LARGE SPACE 8 1/2x19x10 SMALL SPACE	21-6.120
	REQUIRED:	SERVICE AREAS AND LOADING SPACES MUST BE LOCATED AT THE SIDE OR REAR OF THE SITE.	
	PROVIDED: **201H EXEMPTION**	SERVICE AREAS AND LOADING SPACES ARE LOCATED WITHIN THE BUILDING.	TOC 21-9.100-8 (c)(3)
BIKE PARKING	RESIDENTIAL: SHORT TERM: LONG TERM	1 PER 10 UNITS 1 PER 2 UNITS	21-6.150
	REQUIRED: SHORT TERM: LONG TERM	156 UNITS / 10 = 156 UNITS / 2 =	16 SPACES 78 SPACES
	PROVIDED: SHORT TERM: LONG TERM **201H EXEMPTION**		6 SPACES 76 SPACES
	NON-RESIDENTIAL: SHORT TERM: LONG TERM	1 PER 2,000 SF 1 PER 12,000 SF	
	REQUIRED: SHORT TERM: LONG TERM	4,630 / 2,000 = 4,630 / 12,000 =	3 SPACES 1 SPACES
	PROVIDED: SHORT TERM: LONG TERM		3 SPACES 1 SPACES
	LOCATION: REQUIRED:	MUST BE AS CLOSE AS FEASIBLE TO AN ENTRANCE TO BE VISIBLE FROM THE STREET, OR PROVIDE SIGNAGE TO BICYCLE PARKING.	TOC 21-9.100-8 (c)(5)(B)
	PROVIDED:	PROJECT WILL PROVIDE SIGNAGE TO BICYCLE PARKING	
LANDSCAPING	STREET TREES:	INSTALL STREET TREES PER STREET TREE PLAN. NO STREET TREE PLAN IN PLACE FOR RIVER STREET.	21-3120-2(c)(6) TOC 21-9.100-8 (e)(3)(H)
	LANDSCAPING: **201H EXEMPTION**	EXCEPT FOR NECESSARY DRIVES AND WALKWAYS, ALL YARDS MUST BE LANDSCAPED	21-3120-2(c)(1)

DEVELOPMENT STANDARDS SUMMARY	BUILDING ADDRESS:	1333 RIVER STREET	
	TMK:	1-7-006:012	
	DEVELOPMENT PLAN AREA:	PRIMARY URBAN CENTER	
	TOD LAND USE:	DOWNTOWN MIXED USE	
	STATE LAND USE:	URBAN DISTRICT	
	FLOOD ZONE:	X - BEYOND 500 YEAR FLOOD PLAIN	
	TSUNAMI EVACUATION ZONE:	NO	
	NEIGHBORHOOD BOARD:	13 - DOWNTOWN	
	SPECIAL MANAGEMENT AREA (SMA):	NO	
ZONING	DISTRICT:	BMX-4 - CENTRAL BUSINESS MIXED USE	
TOD SPECIAL DISTRICT	KEY STREETS:	KEY STREETS IN DOWNTOWN DISTRICT NOT IDENTIFIED IN ORDINANCE.	TOD 21-9.100 (c)
	TOD STATION AREA:	DEFINED AS LAND WITHIN ONE-HALF MILE OF TRANSIT STATION, WHICH IS ROUGHLY 5-10 MINUTE WALK AND AS IDENTIFIED ON EXHIBITS. NO EXHIBIT FOUND IN ORDINANCE.	TOD 21-9.100 (c)
	NEIGHBORHOOD TOD PLAN	DESCRIPTION OF DOWNTOWN TOD NEIGHBORHOOD PLAN NOT FOUND IN ORDINANCE.	TOD 21-9.100-2 (g)
	TOD SPECIAL DISTRICT OBJECTIVES	PROJECT MEETS INTENT OF LISTED OBJECTIVES	TOD 21-9.100-5
	ACTIVE GROUND FLOOR ACTIVITIES	DEFINITION FOR ACTIVE GROUND FLOOR ACTIVITIES DOES NOT MENTION COURTYARDS, PLAZAS OR COMMUNITY ROOMS. PROJECT PROPOSES THAT THESE USES MEET THE INTENT OF THE TOD OBJECTIVE. NOTE THAT FIG. 2-5 IN THE DOWNTOWN TOD PLAN DOES NOT DESIGNATE PROJECT SITE AS REQUIRED TO BE ACTIVE, ONLY THAT IT IS ENCOURAGED. PEDESTRIAN-ORIENTED DESIGN REQUIRED.	TOD 21-9.100-7 (a)
BUILDING PLACEMENT	FRONT YARD SETBACK: REQUIRED:	KEY STREETS HAVE NOT BEEN IDENTIFIED IN DOWNTOWN PLAN. EXCEPTION ALLOWS THE BUILDING TO MATCH THE SETBACK OF EITHER BUILDINGS SHARING THE SAME FRONTAGE. THE ADJACENT TEMPLE IS LOCATED ON THE PROPERTY LINE WITH NO SETBACK.	TOD 21-9.100-8 (a) (3) (C) EXCEPTION (ii)
	PROVIDED:	PROJECT IS CONSISTENT WITH THIS ADJACENT ALIGNMENT.	
	REQUIRED:	5 FEET MINIMUM SETBACK FOR STRUCTURES UP TO 12 FEET IN HEIGHT	TABLE 21-3.9
	PROVIDED: **201H EXEMPTION**	0 FEET SETBACK AT MPR SPACE	
	SETBACK IMPROVEMENTS: REQUIRED:	ON LOTS WITH A STREET FRONTAGE GREATER THAN 100 FEET PER FRONTAGE, 65% OF THE GROUND FLOOR FACADE MUST BE WITHIN THE 10 FOOT FRONT SETBACK PER FIG. 21-9.7 FOR BMX-3 (BMX-4 NOT LISTED)	TOD 21-9.100-8 (a)(3)(D)(iii)
	PROVIDED: **201H EXEMPTION**	MPR SPACE IS LOCATED AT ZERO FOOT SETBACK AND MAKES UP 40% OF FRONTAGE.	
	SIDE + REAR SETBACK:	0 FEET	TABLE 21-3.9

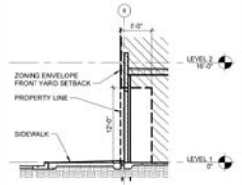
BUILDING FORM



Y = TOTAL STREET FRONTAGE = 217 FT
X1+X2 = SEGMENTS SET BACK AT 65° = 116 FT
PERCENT FRONTAGE SET BACK = 54% **COMPLIANT**

BUILDING PLACEMENT

FRONT YARD SETBACK AT MPR



LOT AREA:	MINIMUM LOT AREA: ACTUAL LOT AREA:	5,000 SQ FT 26,925 SQ FT	TABLE 21-3.9 TABLE 21-3.9
	MINIMUM LOT WIDTH AND DEPTH: ACTUAL LOT WIDTH AND DEPTH:	50 FEET 217 FEET WIDTH AND 160 TO 186 FEET DEPTH	
BUILDING FACADE STANDARDS:	SETBACK IMPROVEMENTS: REQUIRED:	COVERED PORCHES, STOOPS AND LANAI CAN ENCROACH INTO FRONT YARD. OTHER PORTIONS MUST BE LANDSCAPED, EXCEPT FOR NECESSARY DRIVES AND WALKWAYS.	TOD 21-9.100-8 (a)(3)(E)(iii)
	PROVIDED: **201H EXEMPTION**	NECESSARY DRIVES AND WALKWAYS AND PAVED COURTYARD	
	FACADE ORIENTATION: REQUIRED:	BUILDING FAÇADE MUST PREDOMINANTLY ORIENT TO, AND BE PARALLEL WITH, THE STREET, PROPERTY LINE OR ADJACENT SPACES. A PRIMARY BUILDING ENTRANCE MUST BE PLACED ON THE STREET FRONTAGE.	TOD 21-9.100-8 (a)(4)(A)
	PROVIDED:	COMPLIES	
	SEPARATE BUSINESS ENTRANCES: REQUIRED:	WHERE MULTIPLE BUSINESSES ARE LOCATED ALONG THE FRONT FACADE OF THE GROUND FLOOR, EACH MUST HAVE A SEPARATE ENTRANCE.	TOD 21-9.100-8 (a)(4)(B)
	PROVIDED:	COMPLIES	
	BUILDING ENTRANCE SPACING: REQUIRED:	AT LEAST ONE ENTRANCE MUST BE PLACED EVERY 50 FEET OF A BUILDING FACADE FACING A STREET OR PLAZA.	TOD 21-9.100-8 (a)(4)(C)
	PROVIDED: **201 H EXEMPTION**	BUILDING ENTRANCES OCCUR FACING COURTYARD WITHOUT ENTRANCES ALONG MPR FACING STREET	
	BUILDING FACADE TRANSPARENCY: REQUIRED:	BUILDING FAÇADES WITHIN 20 FEET OF A FRONT OR STREET FACING PROPERTY MUST CONTAIN WINDOWS, DOORS OR OTHER OPENINGS FOR AT LEAST 60% OF THE FAÇADE LOCATED BETWEEN 2.5 AND 7 FEET ABOVE SIDEWALK. BLANK WALLS CANNOT EXTEND FOR MORE THAN 25 FEET IN A CONTINUOUS HORIZONTAL PLANE.	TOD 21-9.100-8 (a)(5)(A)
	PROVIDED:	FACE OF MPR FRONTING STREET IS THE ONLY PORTION OF THE FACADE WITHIN 20 FEET. 60% OF THAT FACADE WITHIN THE DESIGNATED HORIZONTAL BAND ARE WINDOWS. COMPLIES.	

All drawings and written material appearing herein constitute original and unpublished work of the Architect/Engineer and may not be duplicated, used or disclosed without consent of Architect/Engineer.

If this drawing is not 30"x42", then the drawing has been revised from its original size. Noted scales must be adjusted. This line should be equal to one inch.

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808 359 5880 TEL
415 358 9100 FAX
WWW.WRNSSTUDIO.COM

LICENSED PROFESSIONAL ARCHITECT
No. 16327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2026

SIGNATURE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (AS DEFINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 16, CHAPTER 115).

ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2020
SCALE: As indicated

SHEET TITLE:

ZONING SUMMARY

SHEET NO:

G-101

3/20/2020 7:52:20 AM

CODE SUMMARY

INTERNATIONAL BUILDING CODE 2006 (IBC 2006) & BC AS ADOPTED
AND AMENDED BY HAWAII STATE BUILDING CODE (HAR-3-180)

PROTECTION OF OPENINGS IN WIND-BORNE DEBRIS REGIONS — 1609.1.2, EXCEPTION 3, EXCEPTION 4

GLAZING IN OCCUPANCY CATEGORY II, III, OR IV BUILDINGS LOCATED OVER 60 FEET ABOVE THE GROUND AND OVER 30 FEET ABOVE AGGREGATE SURFACE ROOFS LOCATED WITHIN 1,500 FEET OF THE BUILDING SHALL BE PERMITTED TO BE UNPROTECTED.

GLAZING IN OCCUPANCY CATEGORY II AND III BUILDINGS THAT CAN RECEIVE POSITIVE EXTERNAL PRESSURE IN THE LOWER 60 FEET SHALL BE ASSUMED TO BE OPENINGS UNLESS SUCH GLAZING IS IMPACT-RESISTANT OR PROTECTED WITH AN IMPACT-RESISTANT SYSTEM.

GARAGE VENTILATION CALCULATION 406.3.1.1

AT LEAST 20% OF TOTAL PERIMETER WALL PER TIER TO BE OPEN

REQUIRED	PROVIDED
2ND FLOOR TIER II WALL AREA EWA 1,590 SF MAUKA 571 SF DIA. HD. 1,591 SF MAKAI 779 SF TOTAL 4,531 SF TOTAL REQUIRED OPENINGS PER TIER: 4,531 SF x 20% = 906 SF	2ND FLOOR TIER WALL AREA EWA 979 SI MAUKA 0 SI DIA. HD. 124 SI MAKAI 124 SI TOTAL 1,227 SI COMPLIANT
3RD FLOOR TIER II WALL AREA EWA 1,453 SF MAUKA 511 SF DIA. HD. 1,429 SF MAKAI 515 SF TOTAL 3,888 SF TOTAL REQUIRED OPENINGS PER TIER: 3,888 SF x 20% = 778 SF	3RD FLOOR TIER WALL AREA EWA 824 SF MAUKA 0 SF DIA. HD. 559 SF MAKAI 124 SF TOTAL 349 SF COMPLIANT

AT LEAST 40% OF AGGREGATE LENGTH OF WALL PER TIER TO BE OPEN

REQUIRED	PROVIDED
2ND FLOOR TIER II WALL AREA EWA 171 LF MAUKA 61 LF DIA. HD. 170 LF MAKAI 86 LF TOTAL 488 LF TOTAL REQUIRED OPENINGS PER TIER: 488 SF x 40% = 196 LF	2ND FLOOR TIER WALL AREA EWA 169 LF MAUKA 0 LF DIA. HD. 56 LF MAKAI 124 LF TOTAL 279 LF COMPLIANT
3RD FLOOR TIER II WALL AREA EWA 171 LF MAUKA 61 LF DIA. HD. 170 LF MAKAI 63 LF TOTAL 464 LF TOTAL REQUIRED OPENINGS PER TIER: 464 LF x 40% = 186 SF	3RD FLOOR TIER WALL AREA EWA 169 LF MAUKA 0 LF DIA. HD. 77 LF MAKAI 37 LF TOTAL 283 LF COMPLIANT

SOUND TRANSMISSION — 1207.2, 1207.3

WALLS, PARTITIONS AND FLOOR / CEILING ASSEMBLIES SEPARATING DWELLING UNITS FROM EACH OTHER OR PUBLIC / SERVICE AREAS ARE DESIGNED TO MEET STC 50 FOR AIR-BORNE NOISE PER ASTM E 90.

FLOOR / CEILING ASSEMBLIES BETWEEN DWELLING UNITS OR BETWEEN A DWELLING UNIT AND PUBLIC / SERVICE AREA ARE DESIGNED TO MEET IIC 50 PER ASTM E 492.

HOUSING CODE ROH CHAPTER 27 — SEC 27-4.3(a), SEC 27-4.3(b), SEC 27-4.4(a)

ROOM DIMENSIONS
CEILING HEIGHTS:
(1) HABITABLE SPACES ARE PROVIDED WITH A CEILING/HEIGHT OF NOT LESS THAN 7'-6". KITCHENS AND BATHROOMS ARE PROVIDED WITH A CEILING HEIGHT OF NOT LESS THAN 7'-0".
(3) WHERE FURRED CEILINGS ARE PROVIDED THE CEILING HEIGHT IS NOT LESS THAN 7'-0".

FLOOR AREA
RESIDENTIAL UNITS COMPLY WITH AREA REQUIREMENTS FOR EACH SPACE.
(2) UNITS ARE PROVIDED WITH SEPARATE CLOSETS.
(3) UNITS ARE PROVIDED WITH KITCHENS CONTAINING A SINK, COOKING APPLIANCE AND REFRIGERATOR, CLEAR WORK SPACE IS PROVIDED. LIGHT AND VENTILATION CONFORMING TO THIS CODE IS PROVIDED.
(4) UNITS ARE PROVIDED WITH A BATHROOM CONTAINING A WATER CLOSET, LAVATORY, AND BATHTUB.

LIGHT AND VENTILATION
NATURAL LIGHT AND VENTILATION
(1) ALL HABITABLE ROOMS ARE PROVIDED WITH NATUIAL LIGHT BY MEANS OF WINDOWS WITH AN AREA OF NOT LESS THAN ONE-TENTH OF THE FLOOR AREA OF SUCH ROOMS WITH A MINIMUM OF 10 SQUARE FEET, NOT LESS THAN ONE-HALF OF THE REQUIRED WINDOW OR SKYLIGHT AREA SHALL BE OPENABLE TO PROVIDE NATURAL VENTILATION.

MECHANICAL VENTILATION
(1) IN LIEU OF REQUIRED OPENABLE WINDOWS FOR NATURAL VENTILATION, A MECHANICAL VENTILATION
SYSTEM MAY BE PROVIDED FOR ALL SPACES EXCEPT BEDROOMS.

ACCESSIBLE UNITS: — ADAAG 233.3

UNITS WITH ACCESSIBLE MOBILITY FEATURES:
TOTAL # OF UNITS: 156
5% x 156 = 7.8 = 8 UNITS
1-BEDROOM ⚠
602
706
910
1104
1306
1401
1507
2-BEDROOM
805

UNITS WITH ACCESSIBLE COMMUNICATION FEATURES (HEARING / VISUALLY IMPAIRED):
2% x 156 = 3.12 = 4 UNITS
1-BEDROOM ⚠
602
706
910
2-BEDROOM
805

UNIT AREAS:

UNIT TYPE	UNIT AREA
1A	486 SF
1B	476 SF
1C	477 SF
1D	471 SF
1E	472 SF
2A	630 SF
2B	632 SF

MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE — TABLE 704.8

MAXIMUM AREA OF EXTERIOR WALL OPENINGS (AS PERCENTAGE OF WALL AREA)

	0' - 3'	>3'-5'	>5'-10'	>10'-15'	>15'-20'	>20'-25'	>25'-30'	>30'
UNPROTECTED, SPRINKLERED (UP,S)	NP	NP	10%	15%	25%	45%	75%	NL
PROTECTED (P)	NP	15%	25%	45%	75%	NL	NL	NL

(NP=NOT PERMITTED NL=NO LIMIT)
*3% BUILDINGS EQUIPPED WITH AUTOMATIC SPRINKLER SYSTEM PER BC 903.3.1.1, MAXIMUM ALLOWABLE AREA OF UNPROTECTED OPENINGS SHALL BE THE SAME AS TABULATED LIMITATIONS FOR PROTECTED OPENINGS. — 704.1.1

OCCUPANT LOAD — TABLE 1004.1.1

OCCUPANCY CLASSIFICATION	FUNCTION OF SPACE	OCCUPANT LOAD (SF PER OCCUPANT)
ASSEMBLY GROUP A-3	ASSEMBLY, UNCONCENTRATED (MULTI-PURPOSE ROOM, REC DECK)	15 NET
BUSINESS GROUP B	BUSINESS AREAS	100 GROSS
	ASSEMBLY, UNCONCENTRATED (CONFERENCE ROOMS, ACTIVITY ROOMS)	15 NET
	STORAGE/MECH/ELEC ROOMS	300 GROSS
FACTORY GROUP F-1	STORAGE/MECH/ELEC ROOMS	300 GROSS
	INDUSTRIAL	100 GROSS
MERCANTILE GROUP M	RETAIL	30 GROSS
RESIDENTIAL GROUP R-2	DWELLING UNITS	200 GROSS
	STORAGE/MECH/ELEC ROOMS	300 GROSS
	EXERCISE ROOMS	50 GROSS
STORAGE GROUP S-1	STORAGE	300 GROSS
STORAGE GROUP S-2	PARKING GARAGE	200 GROSS

FIRE DOOR, FIRE SHUTTER AND FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS — TABLE 715.4, TABLE 715.5

NP = NOT PERMITTED

TYPE OF ASSEMBLY	REQUIRED ASSEMBLY RATING (HRS)	MIN FIRE DOOF AND FIRE SHUTTR ASSEMBLY RATING (HRS)	MIN FIRE WINDOW ASSEMBLY RATING (HRS)
FIRE WALL / FIRE BARRIER > 1HR	4 3 2 1 1/2	3 3 1 1/2 1 1/2	NP
1HR FIRE BARRIER SHAFT, EXIT ENCLOSURE AND EXIT PASSAGEWAY WALLS	1	1	-
OTHER FIRE BARRIERS	1	3/4	-
FIRE PARTITIONS CORRIDOR WALLS	1 0.5	1/3 1/3	3/4 1/3
OTHER FIRE PARTITIONS	1 0.5	3/4 1/3	3/4 1/3
EXTERIOR WALLS	3 2 1	1 1/2 1 1/2 3/4	1 1/2 1 1/2 3/4
SMOKE BARRIER	1	1/3	3/4

ACCESSIBLE MEANS OF EGRESS: — 1002.1, 1003.4

ACCESSIBLE ELEVATOR AS A MEANS OF EGRESS

REQUIRED WHERE AN ACCESSIBLE FLOOR IS FOUR OR MORE STORIES ABOVE/BELOW A LEVEL OF EXIT DISCHARGE.

EXIT STAIRWAYS — 1003.3, EXCEPTION 3

ALL STAIRWAYS QUALIFY AS AN ACCESSIBLE MEANS OF EGRESS PER 1007.3. 44" MINIMUM WIDTH

EXCEPTION 3: 48" WIDTH NOT REQUIRED IN BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM PER 903.3.1.1 OR 903.3.1.2

AREA OF REFUGE — IBC 1012 1007.3 EXCEPTION 2, IBC 1012 1007.4 EXCEPTION 2

NOT REQUIRED FOR EXIT STAIRWAYS IN BUILDINGS EQUIPPED THROUGHOUT WITH AUTOMATIC SPRINKLER SYSTEMS INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1.

ELEVATORS ARE NOT REQUIRED TO BE ACCESSED FROM AN AREA OF REFUGE IN BUILDINGS EQUIPPED THROUGHOUGHOUT WITH AUTOMATIC SPRINKLER SYSTEMS INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1.

PROJECT SEEKS ALLOWANCE FROM AHJ TO CITE 2012 IBC FOR THIS PROVISION BASED UPON IMMINENT ADOPTION OF 2012 IBC BY AHJ.

MEANS OF EGRESS — 1003.3, EXCEPTION 3, 1005.1

EXIT WIDTH FOR STAIRWAYS

MINIMUM EGRESS WIDTH = 44". BUT NOT LESS THAN 0.2 INCH PER OCCUPANT (SPRINKLER SYSTEM PROVIDED)

EXIT WIDTH FOR MEANS OF EGRESS COMPONENTS OTHER THAN STAIRWAYS — 1005.1, TABLE 1005.1

MINIMUM EGRESS WIDTH = 0.15 INCH PER OCCUPANT (SPRINKLER SYSTEM PROVIDED)

RAMPS — 1010.1, 1010.1.1

RUNNING SLOPE NOT STEEPER THAN 1:12, CROSS SLOPE NOT STEEPER THAN 1:48
MINIMUM EGRESS WIDTH = 44"

NUMBER OF EXITS — TABLE 1015.1, 1015.1, TABLE 1019.1, 1014.2

LEVEL	# OF EXITS REQ'D	# OF EXITS PROVIDED
LEVEL 1:	3	4
LEVEL 2:	2	2
LEVEL 3:	2	2
LEVEL 4:	2	2
LEVELS 5-17:	2	2

MEANS OF EGRESS SIZING (STAIRWAYS) — 1005.1, TABLE 1005.1

LEVEL 1:	102 OCCUPANTS * 0.2 = 20.4" REQ'D. / 88" PROVIDED	
LEVEL 2:	57 OCCUPANTS * 0.2 = 11.4" REQ'D. / 88" PROVIDED	
LEVEL 3:	285 OCCUPANTS * 0.2 = 57" REQ'D. / 88" PROVIDED	
LEVEL 4	41 OCCUPANTS * 0.2 = 8.2" REQ'D. / 88" PROVIDED	
LEVELS 5-17:	41 OCCUPANTS * 0.2 = 8.2" REQ'D. / 88" PROVIDED	

MINIMUM CORRIDOR WIDTH — 1017.2, TABLE 1005.1

R-2, A-3, B, F-1, M, S-1, S-2 OCCUPANCIES: 44". BUT NOT LESS THAN 0.15 INCH PER OCCUPANT

24" WIDE CORRIDORS ARE PERMITTED FOR ACCESS TO ELECTRICAL, MECHANICAL OR PLUMBING EQUIPMENT OR SYSTEMS. — 1017.2 EXCEPTION 1

36" WIDE CORRIDORS ARE PERMITTED IF THE OCCUPANT LOAD SERVED IS < 50. — 1017.2 EXCEPTION 2

SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY (PERMITTED FOR EITHER CONDITION) — TABLE 1015.1, 1014.3 EXCEPTION 1, EXCEPTION 4

	MAX OCC LOAD	MAX COMMON PATH OF TRAVEL
R-2 OCCUPANCY:	10	125'-0"
A OCCUPANCY:	49	75'-0"
B OCCUPANCY:	49	100'-0"
F OCCUPANCY:	49	100'-0"
M OCCUPANCY:	49	75'-0"
S OCCUPANCY:	29	100'-0"

EXIT ACCESS TRAVEL DISTANCE (WITH FIRE SPRINKLERS) — TABLE 1016.1

A, F-1, M, R, S-1 OCCUPANCIES	250'-0"
B OCCUPANCY:	300'-0"
S-2 OCCUPANCY:	400'-0"

CORRIDOR DEAD ENDS — 1013.3, 1013.3, EXCEPTION 2

A-3 OCCUPANCY:	20'-0"
B OCCUPANCY:	50'-0"
F OCCUPANCY:	50'-0"
M OCCUPANCY:	20'-0"
R OCCUPANCY:	20'-0"
S OCCUPANCY:	20'-0"

*FOR CORRIDORS SERVING BOTH A, B, M & R OCCUPANCIES, THE SHORTEST DEAD END DISTANCE GOVERNS.

AUTOMATIC SPRINKLER SYSTEM — 903.1.1.1, 905

AUTOMATIC SPRINKLER SYSTEM (NFPA 13) PROVIDED THROUGHOUT IN ACCORDANCE WITH BC 903.3.1.1 AND A SECONDARY WATER SUPPLY WHERE REQUIRED BY SECTION 903.3.5.2.

STANDPIPE SYSTEMS SHALL COMPLY WITH SECTION 905.

FIRE ALARM SYSTEM — 907.1

FIRE ALARM SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 907.2.

TYPE OF CONSTRUCTION RISK CLASSIFICATION — 602.2, TABLE 1604.5

TYPE IA, FULLY SPRINKLERED
II

OCCUPANCY CLASSIFICATION — 310.1

PRIMARY: R-2 - RESIDENTIAL APARTMENTS

ADDITIONAL (NON-SEPARATED OCCUPANCIES):
A-3 - ASSEMBLY — 303.1
B - BUSINESS — 304.1
F-1 - EQUIPMENT/MAINTENANCE — 306.2
M - MERCANTILE — 309.1
S-1 - STORAGE — 311.2
S-2 - PARKING GARAGE — 311.3

REQUIRED FIRE RESISTIVE RATINGS — 403.3.1.1, CHAPTER 6 TABLE 601

STEEL NOT REQ'D TO BE RATED:
-MECH EQUIP SUPPORT
-CANOPY FRAMING
-STAIRS
-ELEVATOR RAIL SUPPORTS & DIVIDER BEAMS

PRIMARY STRUCTURAL FRAME	2 HOUR* *COLUMNS SUPPORTING FLOORS SHALL NOT BE ALLOWED TO BE REDUCED PER 403.3.1.
BEARING WALLS - EXTERIOR	2 HOUR
BEARING WALLS - INTERIOR	2 HOUR
NON-BEARING WALLS - EXTERIOR	SEE "FIRE SEPARATION DISTANCE" BELOW
NON-BEARING WALLS - INTERIOR	NO RATING REQUIRED
FLOOR CONSTRUCTION	2 HOUR — TABLE 1505.1
ROOF CONSTRUCTION	1 HOUR, CLASS B CONSTRUCTION — TABLE 1505.1
ROOF SUPPORTS	1 HOUR — 1026.1
STAIRWAY ENCLOSURES	2 HOUR — 707.4
SHAFT ENCLOSURES	2 HOUR
EXIT PASSAGEWAY	2 HOUR - NOT LESS THAN THAT REQUIRED FOR ANY CONNECTNG EXIT ENCLOSURE — 1026.1, 1021.3
DWELLING UNIT SEPARATION WALLS	1 HOUR — 419.2, 708.3
FLOOR/CEILING ASSEMBLIES	1 HOUR — 419.3, 711.3

PARAPET — 705.11

SAME FIRE RATING AS SUPPORTING WALL. NON-COMBUSTIBLE FACES FOR UPPERMOST 18 INCHES. 30 INCH HEIGHT MINIMUM. NO PARAPET IS FEQUIRED IF ROOF AND SUPPORTING CONSTRUCTION IS NON-COMBUSTIBLE.

HIGH-RISE BUILDINGS

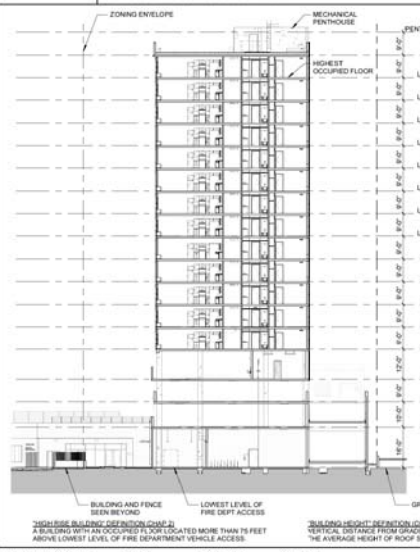
AUTOMATIC SPRINKLER SYSTEM PROVIDED THROUGHOUT IN ACCORDANCE WITH BC 903.3.1.1 AND A SECONDARY WATER SUPPLY WHERE REQUIRED BY BC 903.3.5.2.	403.2
EMERGENCY ESCAPE AND RESCUE OPENINGS PER BC 1026 ARE NOT REQUIRED.	403.4
AUTOMATIC FIRE/SMOKE DETECTION PROVIDED IN ACCORDANCE WITH BC 907.2.12.1.	403.5
EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS PROVIDED IN ACCORDANCE WITH BC 907.2.12.2.	403.6
TWO-WAY FIRE DEPARTMENT COMMUNICATION SYSTEM PROVIDED IN ACCORDANCE WITH BC 907.2.12.3.	403.7
FIRE COMMAND COMPLYING WITH BC 911 AND THE FIRE CODE PROVIDED. FIRE COMMAND STATIONS SHALL BE APPROVED BY THE FIRE CHIEF.	403.8 HAR 3-180-22 HAR 3-180-26
ELEVATORS PROVIDED IN ACCORDANCE WITH CHAPTER 30.	403.9
STANDBY POWER SYSTEM IN ACCORDANCE WITH BC 2702 AND BC 403.10.2 PROVIDED	403.10
EMERGENCY POWER SYSTEMS COMPLYING WITH BC 2702 AND BC 403.11.1 PROVIDED	403.11
SMOKEPROOF EXIT ENCLOSURES COMPLYING WITH BC 909.20 AND BC 1020.1.7 PROVIDED. EXIT STAIRWAY ENCLOSURES ARE PRESSURIZED PER BC 909.20.5	403.12

ALLOWABLE BUILDING HEIGHT & AREA (ALL OCCUPANCIES)

ALLOWABLE HEIGHT	UNLIMITED	TABLE 503
ALLOWABLE NO. OF STORIES	UNLIMITED	TABLE 503
ALLOWABLE AREA	UNLIMITED	TABLE 503

ACTUAL BUILDING HEIGHT & AREA
(SEE BUILDING HEIGHT DIAGRAM THIS SHEET)

ACTUAL HEIGHT	184'-0" TO AVERAGE HEIGHT OF MAIN ROOF SURFACE, WITHOUT PENTHOUSE	
ACTUAL NO. OF STORIES	17 STORIES	
ACTUAL AREA (PER FLOOR)	LEVEL 1:	19,659 FT²
	LEVEL 2:	15,905 FT²
	LEVEL 3:	14,889 FT²
	LEVEL 4:	9,312 FT²
	LEVELS 5 - 17:	9,209 FT²
ACTUAL AREA (GROSS BUILDING AREA)	TOTAL BLDG:	180,588 FT²



*HIGH RISE BUILDING" DEFINITION (CHAP 2)
A BUILDING WITH AN OCCUPIED FLOOR LOCATED MORE THAN 75 FEET ABOVE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS.

*BUILDING HEIGHT" DEFINITION (CHAP 2)
VERTICAL DISTANCE FROM GRADE PLANE TO THE AVERAGE HEIGHT OF ROOF SURFACE

FIRE SEPARATION RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE AND TYPE OF CONSTRUCTION (IA) — CHP. 6 TABLE 602

DISTANCE	OCCUPANCY F-1, M, S-1	OCCUPANCY A, B, R, S-2
0 FT < X < 5 FT =	2 HR	1 HR
5 FT ≤ X < 10 FT =	2 HR	1 HR
10 FT ≤ X < 30 FT =	1 HR	1 HR*
30 FT ≤ X =	NR	NR

*OPEN PARKING GARAGES COMPLYING WITH BC 406 SHALL NOT REQUIRE A FIRE RESISTANCE RATING.

EXTERIOR WALLS OF MORE THAN 5 FEET FIRE SEPARATION DISTANCE SHALL BE RATED FOR EXPOSURE FROM THE INSIDE. EXTERIOR WALLS OF 5 FEET OR LESS FIRE SEPARATION DISTANCE SHALL BE RATED FOR EXPOSURE FROM BOTH SIDES. — 704.5

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WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.358.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM



EXPIRATION DATE: 04/30/2024

SIGNATURE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (AS DEFINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 16, CHAPTER 115).

ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

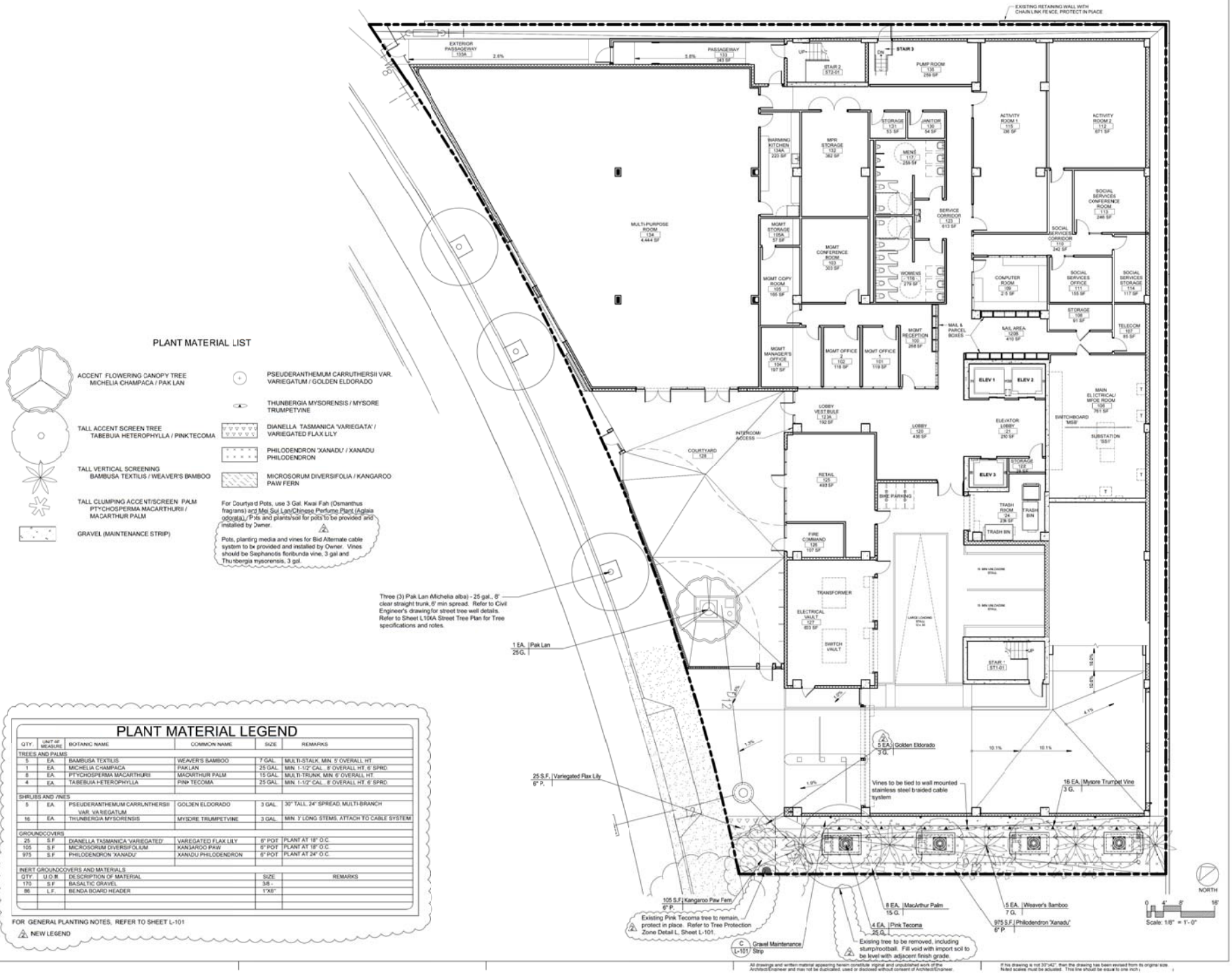
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:
CODE SUMMARY

SHEET NO:
G-102

3/20/2020 7:52:32 AM



PLANT MATERIAL LIST

- ACCENT FLOWERING CANOPY TREE — MICHELIA CHAMPACA / PAK LAN
- TALL ACCENT SCREEN TREE — TABEBUIA HETEROPHYLLA / PINKTECOMA
- TALL VERTICAL SCREENING — BAMBUSA TEXTILIS / WEAVER'S BAMBOO
- TALL CLUMPING ACCENT/SCREEN PALM — PTYCHOSPERMA MACARTHURII / MACARTHUR PALM
- GRAVEL (MAINTENANCE STRIP)
- PSEUDERANTHEMUM CARRUTHERSII VAR. VARIEGATUM / GOLDEN ELDORADO
- THUNBERGIA MYSORENSIS / MYSORE TRUMPETVINE
- DIANELLA TASMANICA 'VARIEGATA' / VARIEGATED FLAX LILY
- PHILODENDRON 'XANADU' / XANADU PHILODENDRON
- MICROSORUM DIVERSIFOLIA / KANGAROO PAW FERN

For Courtyard Pots, use 3 Gal. Kwai Fah (Osmanthus fragrans) and Mei Sui Lan/Chinese Perfume Plant (Aglaia odorata). Pots and plants/soil for pots to be provided and installed by Owner.

Pots, planting media and vines for Bid Alternate cable system to be provided and installed by Owner. Vines should be Siephanotis floribunda vine, 3 gal and Thunbergia mysorensis, 3 gal.

PLANT MATERIAL LEGEND

QTY	UNIT OF MEASURE	BOTANIC NAME	COMMON NAME	SIZE	REMARKS
TREES AND PALMS					
5	EA.	BAMBUSA TEXTILIS	WEAVER'S BAMBOO	7 GAL.	MULTI-STALK, MIN. 5' OVERALL HT.
1	EA.	MICHELIA CHAMPACA	PAK LAN	25 GAL.	MIN. 1-1/2" CAL., 8' OVERALL HT, 6' SPRD.
8	EA.	PTYCHOSPERMA MACARTHURII	MACARTHUR PALM	15 GAL.	MULTI-TRUNK, MIN. 6' OVERALL HT.
4	EA.	TABEBUIA HETEROPHYLLA	PINK TECOMA	25 GAL.	MIN. 1-1/2" CAL., 8' OVERALL HT, 6' SPRD.
SHRUBS AND VINES					
5	S.F.	PSEUDERANTHEMUM CARRUTHERSII VAR. VARIEGATUM	GOLDEN ELDORADO	3 GAL.	30" TALL, 24" SPREAD, MULTI-BRANCH
16	EA.	THUNBERGIA MYSORENSIS	MYSORE TRUMPETVINE	3 GAL.	MIN. 3' LONG STEMS, ATTACH TO CABLE SYSTEM
GROUNDCOVERS					
25	S.F.	DIANELLA TASMANICA 'VARIEGATED'	VARIEGATED FLAX LILY	6" POT	PLANT AT 18" O.C.
105	S.F.	MICROSORUM DIVERSIFOLIUM	KANGAROO PAW	6" POT	PLANT AT 18" O.C.
975	S.F.	PHILODENDRON 'XANADU'	XANADU PHILODENDRON	6" POT	PLANT AT 24" O.C.
INERT GROUNDCOVERS AND MATERIALS					
QTY	U.O.M	DESCRIPTION OF MATERIAL		SIZE	REMARKS
170	S.F.	BASALTIC GRAVEL		3/8 -	
86	L.F.	BENDA BOARD HEADER		1"X6"	

FOR GENERAL PLANTING NOTES, REFER TO SHEET L-101

NEW LEGEND

7/23/2019 11:42:09 AM

WRNSSTUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
HONOLULU
HAWAII 96813
808.356.5860 TEL
415.358.9100 FAX
www.wrnsstudio.com

UMEMOTO DESIGN CORPORATION
CASSANDRO
P.O BOX 1105 KAILUA HAWAII 96734
808.254.8702

JASON S. UMEMOTO
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 8919
HAWAII, U.S.A.
EXPIRES APRIL 30, 2020

ISSUES	DATE
PERMIT SET	07/31/2019

REVISION LIST	DATE
2 REVISION 2 - PERMIT RESPONSE	03/17/2020

HALEWAI'OLU SENIOR RESIDENCES
133 RIVER STREET, HONOLULU, HI 96817

KEYPLAN

PROJECT NO.: 19005.60
DATE: 31 JULY 2019
SCALE:

SHEET TITLE:
LANDSCAPE SITE PLAN

SHEET NO:
L-100

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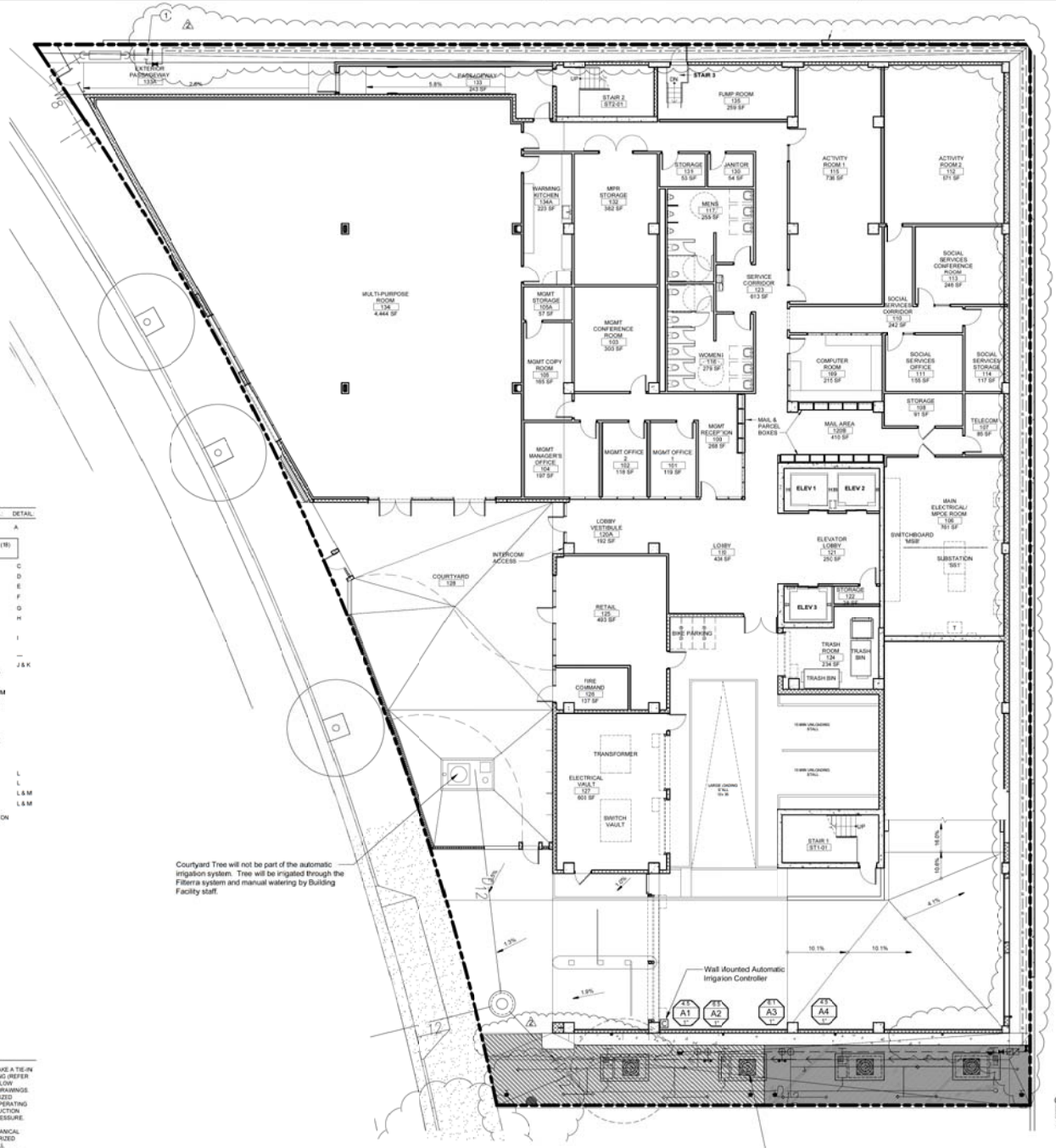

IRRIGATION LEGEND:

SYMBOL:	MANUFACTURER:	MODEL NUMBER:	DESCRIPTION:	RAD.:	P.S.I.:	G.P.M.:	DETAIL:
⌖	NETAFIM	TLCV9-12XX	TECHLINE CV DRIPPERLINE FOR PALMS REFER TO THE DETAIL SHEET FOR INSTALLATION.				A
	NOTE: INSTALL ALL IRRIGATION EMITTERS NEXT TO BUILDINGS AND WALLS A MINIMUM OF EIGHTEEN (18) INCHES AWAY FROM THE STRUCTURE.						
	RAIN BIRD	PESB-PRS SERIES	ELECTRIC CONTROL VALVE				C
	IRRITROL	700 SERIES	ULTRA F.LOW DRIP VALVE ASSEMBLY				D
	RAINBIRD	33DLRC	QUICK COUPLING VALVE				E
	SPEARS	PVC BALL VALVE	FLUSH VALVE ASSEMBLY				F
	NIBCO	T-599-Y	ISOLATION BALL VALVE				G
	FEBCO	765-1"	PRESSURE VACUUM BREAKER				H
A	RAIN BIRD	ESP-LX-12	WALL MOUNT CONTROLLER				I
	APPROVED	—	POLY-ADAPTER				—
	NETAFIM	TLDL9-18025 TECHLINE DRIPPERLINE TUBING. HATCH PATTERNS DENOTES NETAFIM TECHLINE DRIPPERLINE TUBING. TUBING SHALL HAVE EMITTERS SPACED AT 18" ON CENTER INSIDE THE TUBE. EACH EMITTER SHALL HAVE A DISCHARGE RATE OF 0.9 GALLONS PER HOUR (GPH). TUBING SHALL BE INSTALLED ON TOP OF FINISH GRADE SPACED AT 18" MAXIMUM APART AND STAKED EVERY FOUR (4) FEET ALONG THE TUBING RUN. INSTALL A FLUSH VALVE ASSEMBLY AT THE END OF EACH TUBING RUN. TUBING SHALL BE COVERED WITH A MINIMUM 3" OF BARK MULCH. REFER TO THE LANDSCAPE PLANTING PLANS FOR THE BARK MULCH SPECIFICATIONS. REFER TO DETAIL SHEET FOR NETAFIM TUBING INSTALLATION. NOTE: PRIOR TO CONSTRUCTION CONTACT 'NETAFIM' AT 888-638-2346 TO HAVE THE LOCAL REPRESENTATIVE ASSIST IN THE INSTALLATION O' THE SYSTEM. INTERPRET PLANS, AND ANSWER ANY QUESTIONS.					J & K
	APPROVED	PVC SCH 40	IRRIGATION WIRE CONDUIT (SEE NOTES FOR SIZE)				L
	APPROVED	PVC SCH 40	IRRIGATION SLEEVE (SEE NOTES FOR SIZE)				L
	APPROVED	PVC SCH 40	LATERAL LINE PIPE (SIZE AS NOTED)				L & M
	APPROVED	PVC SCH 40	POTABLE SOURCE PRESSURE SUPPLY LINE FOR 1 1/2" DIAMETER AND SMALLER NOTE: ALL MAIN LINE PIPE IS 1" PVC SCHEDULE 40 UNLESS OTHERWISE NOTED ON THE DRAWINGS.				L & M

CONTROLLER VALVE CALL-OUT



IRRIGATION CONSTRUCTION NOTES:

(1D) POINT OF CONNECTION. THE CONTRACTOR SHALL LOCATE 'THE NEW BUILDING SERVICE LINE PIPE AND MAKE A TIE-IN DOWNSTREAM FROM THE EXISTING DOMESTIC WATER METER AND BEFORE THE PIPE ENTERS THE BUILDING (REFER TO DETAIL 'N'). THE CONTRACTOR SHALL RUN A 1 1/4" PVC SCHEDULE 40 MAIN LINE PIPETO THE 1" BACKFLOW PREVENTION DEVICE. THEN RUN A 1" PVC SCHEDULE 40 SUPPLY LINE TO THE SYSTEM AS NOTED ON THE DRAWINGS. FINAL LOCATION OF THE BACKFLOW PREVENTION DEVICE SHALL BE APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE. THE SYSTEM HAS BEEN DESIGNED FOR A MAXIMUM FLOW OF 8.5 GPM AT A MINIMUM OPERATING PRESSURE OF 48.0 PSI. VERIFY THAT THE STATIC PRESSURE IS AT LEAST 60.0 PSI PRIOR TO ANY CONSTRUCTION. IMMEDIATELY NOTIFY THE LANDSCAPE ARCHITECT SHOULD THE PRESSURE BE LESS THAN OPERATING PRESSURE.

(2) PROVIDE AND INSTALL A RAIN BIRD MODEL NUMBER ESP-LX-36 WALL MOUNT CONTROLLERS 'A'. THE MECHANICAL EQUIPMENT AREA. F INAL LOCATION OF THE CONTROLLER SHALL BE APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE. 120VAC POWER SHALL BE SUPPLIED BY OTHERS. THE LANDSCAPE CONTRACTOR SHALL COORDINATE THE 120VAC POWER FROM THE SOURCE TO THE CONTROLLER AND MAKE THE FINAL HOOK-UP. ALL 120VAC POWER WIRING SHALL BE COMPLETED BY A LICENSED ELECTRICAL CONTRACTOR. THE LANDSCAPE CONTRACTOR SHALL CONNECT THE LOW VOLTAGE CONTROL WIRES TO THE CONTROLLER TERMINAL STRIP IN THE SEQUENCE NOTED ON THE DRAWINGS. ANY DEVIATIONS SHALL BE NOTED ON THE AS-BUILT RECORD DRAWINGS.

(3) THE CONTRACTOR SHALL COORDINATE FOR THE INSTALLATION OF A 2" DIAMETER CONDUIT FROM THE IRRIGATION CONTROLLER TO THE NEAREST PLANTER AREA. PROVIDE SWEEP ELLS AND 2' BOXES AT ALL CHANGES OF DIRECTION. ANY EXPOSED CONDUIT SHALL BE PAINTED TO MATCH THE BUILDING COLOR.

WRNSSTUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
HONOLULU
HAWAII 96813
808.356.5860 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

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ISSUES	DATE
PERMIT SET	07/31/2019

REVISION LIST	DATE
2 REVISION 2 - PERMIT RESPONSE	03/17/2020

HALEWAI'OLU SENIOR RESIDENCES

133 RIVER STREET, HONOLULU, HI 96817

KEYPLAN

PROJECT NO.: 19005.60
DATE: 31 JULY 2019
SCALE:

SHEET TITLE:

IRRIGATION PLAN

SHEET NO:

L-200

7/23/2019 11:42:09 AM

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CONSTRUCTION DRAWINGS FOR

HALEWAI'OLU SENIOR RESIDENCES

(201H AFFORDABLE HOUSING PROJECT)

(DPP FILE NO. 2019/CP-143)

TAX MAP KEY : 1 - 7 - 006: 012

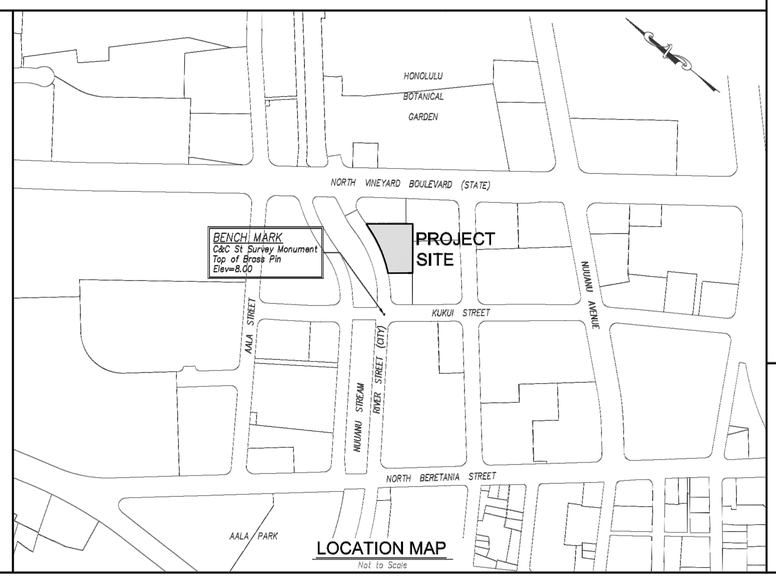
HONOLULU, OAHU, HAWAII

OWNER: CITY AND COUNTY OF HONOLULU
DEVELOPER: THE MICHAELS ORGANIZATION

GRAY, HONG, NOJIMA & ASSOCIATES, INC.
CONSULTING ENGINEERS



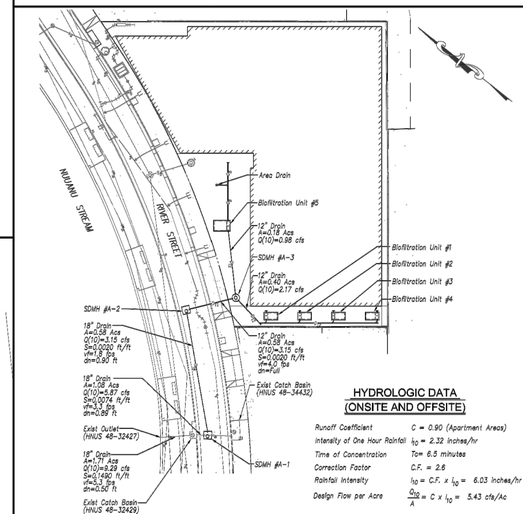
ISLAND OF OAHU
Not to Scale



LOCATION MAP
Not to Scale

INDEX TO DRAWINGS

SHT NO	DWG NO	DESCRIPTION
		CIVIL
1	C001	CIVIL COVER SHEET
2	C002	GENERAL NOTES – 1
3	C003	GENERAL NOTES – 2
4	C004	DEMOLITION & GRADING PLANS
5	C005	ESCP & POST CONSTRUCTION BMP PLANS
6	C006	ESCP NOTES & DETAILS
7	C007	SITE & UTILITIES PLANS
8	C008	FM METER PLAN & MISCELLANEOUS PROFILES
9	C009	MISCELLANEOUS DETAILS – 1
10	C010	MISCELLANEOUS DETAILS – 2
11	C011	TRAFFIC CONTROL PLAN AND NOTES
		ELECTRICAL
12	ES-101	ELECTRICAL SYMBOL LIST
13	ES-102	HECO NOTES
14	ES-103	HTCO AND CATV NOTES
15	ES-104	DUCT SECTION DETAILS
16	ES-201	OVERALL ELECTRICAL SITE PLAN
17	ES-202	DEMOLITION ELECTRICAL SITE PLAN 1
18	ES-203	DEMOLITION ELECTRICAL SITE PLAN 2
19	ES-204	DEMOLITION ELECTRICAL SITE PLAN 3
20	ES-205	NEW ELECTRICAL SITE PLAN 1
21	ES-206	NEW ELECTRICAL SITE PLAN 2
22	ES-207	NEW ELECTRICAL SITE PLAN 3
23	ES-208	HECO PLAN AND PROFILE
24	ES-301	DEMOLITION ONE-LINE DIAGRAM
25	ES-302	NEW ONE-LINE DIAGRAM
26	ES-401	MISCELLANEOUS DETAILS



HYDROLOGIC DATA (ONSITE AND OFFSITE)

Runoff Coefficient	C = 0.90 (Apartment Areas)
Intensity of One Hour Rainfall	I_{10} = 2.32 Inches/hr
Time of Concentration	Tc= 6.5 minutes
Correction Factor	C.F. = 2.6
Rainfall Intensity	I_{10} = C.F. x I_{10} = 6.03 Inches/hr
Design Flow per Acre	$\frac{Q_{10}}{A}$ = C x I_{10} = 5.43 cfs/Ac

GENERAL PLAN
40 20 0 40 80
Scale in Feet

APPROVED:

DIRECTOR, DEPARTMENT OF PLANNING AND PERMITTING (FOR SITE GRADING & CONSTRUCTION IN CITY R.O.W. ONLY) — DATE

CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION DEPARTMENT OF HEALTH, STATE OF HAWAII — DATE

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
CONSULTING ENGINEERS

Exp: 4/30/20
SHERYL ENDO NOJIMA
LICENSED PROFESSIONAL ENGINEER
No. 5677-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSERVATION OF THIS PROJECT WILL BE UNDER MY OBSERVATION, CONSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII ADMINISTRATIVE RULES, TITLE 16, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/09/96).

ISSUES	DATE
PERMIT SET	08/30/2019

REVISION LIST	DATE

ENGINEER: GF	CHECKED BY: SN
DRAWN BY: JG	PROJECT #: 3124-00

HALEWAI'OLU SENIOR RESIDENCES

(DPP CONSTRUCTION PLANS FILE NO 2019/CP-143)
TMK: 1-7-006: 012
HONOLULU, OAHU, HAWAII

CIVIL COVER SHEET

APPROVED BY:

C001

SHEET 1 OF 26 SHEETS

FILE	POCKET	FOLDER	NO.

PROJECT NO.: 19005.00
DATE: 30 AUGUST 2019
SCALE:
SHEET TITLE: CIVIL COVER SHEET
SHEET NO: C001

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
HONOLULU
HAWAII 96813
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
CONSULTING ENGINEERS

HALEWAI'OLU SENIOR RESIDENCES
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

3124-00 HALEWAI'OLU SENIOR RESIDENCES (2019/CP-143)

PROJECT NAME: HALEWAIOLU SENIOR RESIDENCES
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SOILS REPORT RECOMMENDATION NOTES

1. Placement of new fills will likely induce some consolidation of the soft and/or loose lagoonal deposits underlying the site. Therefore, it is important to place the new fills as soon as practical to allow the ground settlements to occur first prior to construction of improvements, such as the slab-on-grade construction, to reduce the potential for adverse effects resulting from ground settlements.

2. A Geolabs representative shall monitor the grading operations to observe whether undesirable materials are encountered during the excavation and scarification process, and to confirm whether the exposed soil conditions are similar to those encountered in their field exploration.

3. At the on-set of earthwork, the site shall be cleared and grubbed thoroughly. Vegetation, debris, deleterious materials, existing structures to be demolished, and other unsuitable materials, shall be removed and disposed of properly off-site to reduce the potential for contaminating the excavated materials.

4. Soft and yielding areas encountered during clearing and grubbing below areas designated to receive fill and/or future improvements shall be over-excavated to expose firm natural material, and the resulting excavation shall be backfilled with well-compacted fill. The excavated soft soils shall not be re-used as fill materials and shall be properly disposed of off-site.

5. In general, the over-excavated subgrades and areas designated to receive fills shall be scarified to a depth of about 8 inches, moisture-conditioned to above the optimum moisture content, and recompacted to a minimum of 90 percent relative compaction. The compaction requirement of the finished subgrades for areas subjected to vehicular traffic shall be increased to a minimum of 95 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density as determined by ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density.

6. In general, the near-surface clayey silt soils encountered during our field exploration may be suitable for use as general fill materials, provided that the maximum particle size is less than 3 inches in largest dimension. The on-site materials generated from the excavations may be used as a source of general fill or backfill materials provided that they are free of vegetation and deleterious materials and screened of the over-sized materials and/or processed to meet the above gradation requirements (less than 3 inches in largest dimension).

7. Imported materials to be used as select granular fill shall be non-expansive granular material, such as crushed coral or basalt. The select granular fill shall be well graded from coarse to fine with particles no larger than 3 inches in largest dimension. The material shall have a California Bearing Ratio (CBR) value of 20 or higher, and a swell potential of 1 percent or less when tested in accordance with ASTM D1883. The material also shall contain between 10 and 30 percent particles passing the No. 200 sieve. Imported fill materials shall be tested for conformance with these recommendations prior to delivery to the project site for the intended use.

8. Where groundwater is encountered (within the excavations), backfill materials shall consist of free-draining granular materials, such as No. 3B Fine gravel (ASTM C33, No. 67 gradation), wrapped on all sides with non-woven filter fabric. The free-draining granular materials shall be used up to a level of about 12 inches above the groundwater level to facilitate compaction of the fill materials.

9. Aggregate base and subbase courses required for the project shall consist of crushed basaltic aggregates and shall meet the requirements of Sections 30 and 31 of the City and County Standard Specifications (September 1986). Imported fill materials shall be tested for conformance with these recommendations prior to delivery to the project site for the intended use.

10. In general, fills and backfills shall be moisture-conditioned to above the optimum moisture content, placed in level lifts not exceeding 8 inches in loose thickness and compacted to at least 90 percent relative compaction. The compaction requirement for the last lift of fill (finished subgrade) below areas subjected to vehicular traffic shall be increased to at least 95 percent relative compaction.

11. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density as determined by ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density. Compaction shall be accomplished by sheepsfoot rollers, vibratory rollers, or other types of acceptable compaction equipment. Water tamping, jetting, or ponding shall not be allowed to compact the fills.

12. Exterior concrete slabs, such as walkways and patios, also may be required for the project. In general, we recommend providing a minimum 6-inch thick cushion fill layer consisting of select borrow subbase below exterior concrete slabs that will not be subjected to vehicular traffic. The select borrow subbase shall be moisture-conditioned to above the optimum moisture, and compacted to at least 90 percent relative compaction. The select borrow subbase shall be increased to a minimum of 12 inches if expansive clayey soils are encountered at the slab subgrade level. To reduce the potential for significant slab cracking due to concrete shrinkage, crack control joints shall be provided at intervals equal to the width of the walkways with expansion joints at right-angle intersections.

13. We anticipate excavations on the order of up to about 13 feet below the ground surface may be required for construction of the building foundations and elevator pits. Based on the subsurface conditions encountered and the limited working space, we envision temporary shoring of some of the deeper excavations may be required.

14. The field exploration encountered a surface fill layer underlain by soft and/or loose lagoonal deposits near the existing ground surface. Therefore, we envision that conventional excavation techniques using a backhoe excavator may be used for the planned excavations. In general, we believe interlocking steel sheet piling may be used for temporary shoring purposes, especially where dewatering of the excavations will be necessary. However, it should be noted that use of a vibratory hammer to install the interlocking steel sheet piles shall be avoided to reduce the potential for inducing a liquefaction condition in the underlying very soft and/or loose lagoonal deposits, which would cause some settlements of the ground adjacent to the sheet pile shoring.

15. We also recommend the contractor develop and implement a monitoring program to detect ground movement and/or subsidence adjacent to the excavations, which may result in damage to nearby structures and pavements. It should be noted that minor settlements of the adjacent ground may occur during and after installation of the interlocking steel sheet piles. Therefore, we recommend the contractor retain a qualified geotechnical engineer to design and evaluate the shoring system planned.

16. In general, the contractor shall determine the method and equipment to be used for excavations, subject to practical limits and safety considerations. Based on the field exploration, the surface fill materials and underlying soft and/or loose lagoonal deposits encountered in the borings may be excavated with conventional earthmoving equipment. However, some localized areas of hard materials and/or obstructions may be encountered at the site. Therefore, the contractor may encounter difficult excavation conditions at localized areas, which should be expected considering the urban nature of the project site.

17. Dewatering of excavations will be necessary where the existing groundwater level is above the bottom of the proposed excavation. We encountered groundwater in our drilled borings at depths of about 7.2 to 8.0 feet below the ground surface at the time of our field exploration. The groundwater levels encountered generally correspond to about Elevations +1.1 to +2.5 feet MSL.

18. Based on the groundwater levels anticipated and the generally permeable nature of some of the silty sand soils below the surface fills to be encountered within the excavations, dewatering will be required at the planned excavations of the project construction. Because the excavation may involve discharge of groundwater, a National Pollutant Discharge Elimination System (NPDES) permit may be required for this discharge. The contractor shall consult their independent consultant for the latest regulations and information pertaining to the permit application.

19. Because of the granular nature of some of the subsurface soils, we anticipate the granular soils encountered below the surface fills are relatively permeable. Therefore, dewatering of the excavation may involve moderate volumes of water. Because of the presence of loose and/or soft soils, we do not recommend dewatering by means of a well point system along the outside of the excavations. The resultant areal depression of the natural groundwater table could induce consolidation of the compressible subsurface soils resulting in potential ground settlements, which could affect the adjacent existing structures. The potential impact of the dewatering system selected on depressing the natural groundwater table must be carefully evaluated by the contractor prior to dewatering.

SOILS REPORT RECOMMENDATION NOTES (CONTINUED)

20. It is our opinion that a cut-off wall system, such as interlocking steel sheet piles, shall be considered to aid in dewatering the excavation. However, sumps will be needed to collect water that percolates up into the base of the excavation or infiltrates through the sheet piles. The sheet piles shall be driven to a sufficient depth to reduce the potential for areal ground subsidence and to reduce the amount of dewatering needed within the excavations in areas underlain by granular subsurface soils with moderate permeability. Use of an interlocking sheet pile shoring support system with jet-grouted soils (or tremie concrete plug) is relatively watertight, which should allow the groundwater levels outside the excavations to be maintained close to the original pre-construction levels.

21. Installation of the sheet pile shoring to the desired depths at the site may require predrilling of the sheet pile locations. The presence of these predrilled holes directly adjacent to the sheet pile shoring may serve as conduits for groundwater to infiltrate the sheet pile shored excavation. This condition could result in large volumes of seepage water to infiltrate the shored excavation requiring additional dewatering efforts and disposal of the dewatered effluent. Therefore, the contractor shall take precautionary measures to avoid these conditions, which could contribute significantly to the dewatering requirements for the project.

22. The contractor is responsible for dewatering for construction and disposal of the dewatered effluent. The selection of equipment and methods of dewatering shall be left up to the contractor, and he/she shall be aware that modifications to the dewatering system may be required during construction depending on the conditions encountered. The dewatering method selected shall have minimal impact on the groundwater level surrounding the proposed excavation. The dewatering operations shall be coordinated with the shoring support such that the stability of the excavations is not jeopardized. The operations shall be carried-out without softening the bottom of the excavations.

23. Based on our borings, the near-surface clayey silt fill soils were underlain by lagoonal deposits consisting of relatively thin layer of loose silty sands overlying a thick deposit of soft organic silts. The permeability of the subsoils at the site may be considered moderately permeable based on the materials encountered. Therefore, the contractor shall pay attention to the site-specific dewatering plan for the proposed excavations.

24. We suggest considering the following three basic criteria in selection of a suitable method of dewatering:
    a. The dewatering method shall result in the least disturbance or damage to existing buildings, roads, and environment.
    b. The dewatering method shall maintain stability of, and also provide safe and dry working conditions in, the excavation.
    c. The dewatering method shall be sufficiently flexible to allow modifications to accommodate various ground conditions.

25. The contractor must carefully evaluate the potential impact of the dewatering system selected on depressing the natural groundwater table prior to dewatering. The contractor shall retain a qualified geotechnical engineer to design and evaluate the dewatering system used.

26. The contractor shall be solely responsible for the impact and safety of the dewatering operations. His/her qualified representative, who shall be continuously present on-site during dewatering activities, will have the best opportunity to promptly observe the effects of dewatering during construction and to implement, as soon as possible, necessary precautionary or remedial measures including, but not limited to, slowing down or stopping the dewatering operations.

27. Where encountered at the bottom of excavations, permeable granular soils may be susceptible to piping and "quick" conditions. The dewatering operations shall be carried-out without creating a "quick" condition or softening at the excavation bottoms. Therefore, the project dewatering operations shall be performed without pumping out soil fines (pumping clear water only) and shall be coordinated with the shoring installation such that the excavation stability is not adversely affected. Excessive pumping, which removes soil fines, may result in "blowing" or heaving of the excavation bottom or sides.

28. Groundwater drawdown outside the excavation will cause additional settlement resulting from consolidation of the soft and/or loose compressible soils. Therefore, the use of a deep well system outside the excavations to draw down the groundwater level shall not be allowed.

29. Special caution also shall be taken to avoid dewatering utility trenches connected to the excavations. If this occurs, the granular bedding and/or backfill in the utility trenches could act as subdrains and cause significant areal groundwater drawdown. Significant areal groundwater drawdown would result in appreciable ground settlements and potential damage to utility lines and/or other adjacent existing structures.

30. The subgrade soils under the pavement areas shall be scarified to a minimum depth of 8 inches, moisture-conditioned to above the optimum moisture, and compacted to at least 95 percent relative compaction. If the pavement subgrade soils are pumping during the compaction operation, a layer of woven geotextile fabric, such as Mirafi 500X or equivalent, shall be provided between the aggregate subbase and the underlying subgrade soils. CBR tests and/or field observations shall be performed on the actual subgrade soils during construction to confirm that the above design sections are adequate. The aggregate base and subbase courses shall consist of crushed basaltic aggregates compacted to a minimum of 95 percent relative compaction.

31. In addition, paved areas shall be sloped, and drainage gradients shall be maintained to carry the surface water off the site. Surface water ponding shall not be allowed on-site during or after construction.

32. In general, for utility trenches, we recommend using granular bedding consisting of 6 inches of free-draining granular materials (ASTM C33, No. 67 gradation) below the pipes for uniform support. Free-draining granular materials, such as No. 3B Fine gravel (ASTM C33, No. 67 gradation), also shall be used for the initial trench backfill up to about 12 inches above the pipes.

33. Where groundwater is encountered, the bedding shall be wrapped on all sides by non-woven filter fabric (Mirafi 180N or equivalent).

34. We envision soft and/or loose lagoonal deposits will be encountered at or near the invert elevations along the utility lines and underground structure. Therefore, we recommend providing a subgrade stabilization layer consisting of 24 inches of No. 2 Rock (ASTM C33, No. 4 gradation) wrapped in a non-woven filter fabric (Mirafi 180N or equivalent) below the bedding layer for uniform support. The stabilization layer shall extend beyond the sides of the pipe a minimum width of one-fourth the outside diameter of the pipe or 12 inches, whichever is greater.

35. The upper portion of the trench backfill from a level of 12 inches above the pipes to the top of the subgrade or finished grade shall consist of the excavated granular materials with a maximum particle size of 6 inches or select granular fill materials. The backfill material shall be moisture-conditioned to above the optimum moisture content, placed in maximum 8-inch level loose lifts, and mechanically compacted to at least 90 percent relative compaction. In areas where trenches will be in paved areas, the upper 3 feet of the trench backfill below the pavement finished grade shall be compacted to no less than 95 percent relative compaction.

36. Where competent ground conditions are exposed at about the utility line invert elevations, the 24-inch thick stabilization layer may be omitted.

37. The requirement for the 24-inch stabilization layer shall be determined in the field based on the exposed ground conditions at the pipe invert elevations. Therefore, a Geolabs representative shall observe the exposed trench subgrade conditions before placement of the pipe bedding to evaluate if the 24-inch thick stabilization layer below the on-site underground utility lines is necessary.

38. A Geolabs representative shall monitor the other aspects of the earthwork construction. This is to observe compliance with the intent of the design concepts, specifications, or recommendations and to expedite suggestions for design changes that may be required in the event that subsurface conditions differ from those anticipated at the time this report was prepared.

39. If the actual subsurface conditions encountered during construction are different from those assumed or considered in this report, then appropriate modifications to the design shall be made.

GRADING NOTES

1. All grading work shall be done in accordance with Chapter 14, Articles 13, 14, 15 & 16 as related to Grading, Soil Erosion and Sediment Control, of the Revised Ordinances of Honolulu, 1990, as amended, and Soils Report by Geolabs, Inc. entitled "Geotechnical Engineering Exploration, Halewai'olu Senior Residences" dated June 14, 2019.

2. No Contractor shall perform any grading operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow onto adjoining properties, streets or natural watercourses. Should such violations occur, the contractor may be cited and the contractor shall immediately make all remedial actions necessary.

3. The Contractor, at his own expense, shall keep the project area and surrounding area free from dust nuisance. The work shall be in conformance with the air pollution control standards contained in the Hawaii Administrative Rules, Title II, Chapter 60.1, "Air Pollution Control".

4. The underground pipes, cables or ductlines known to exist by the engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

5. Adequate provisions shall be made to prevent surface waters from damaging the cut face of an excavation or the sloped surfaces of a fill. Furthermore, adequate provisions shall be made to prevent sediment-laden runoff from leaving the site.

6. All slopes and exposed areas shall be grassed, paved, or approved equal as soon as final grades have been established. Grassing shall not be delayed until all grading work has been completed. Grading to final grade shall be continuous, and any area within which work has been interrupted or delayed shall be grassed.

7. Fills in slopes steeper than 5:1 shall be keyed.

8. The City shall be informed of the location of the borrow/disposal site for the project when the application for a grading permit is made. The borrow/disposal site must also fulfill the requirements of the grading ordinance.

9. No grading work shall be done on Saturdays, Sundays and holidays at any time without prior notice to the Director D.P.P., provided such grading work is also in conformance with Hawaii Administrative Rules, Title II, Chapter 46, "Community Noise Control".

10. The limits of the area to be graded shall be flagged before the commencement of the grading work.

11. The general contractor/developer/owner of the project shall be responsible for all grading operations to be performed in conformance with applicable provisions of the Hawaii Administrative Rules, Title 11, Chapter 54, "Water Quality Standards", and Title 11, Chapter 55, "Water Pollution Control", as well as Chapter 14 of the Revised Ordinances of Honolulu, as amended. Best Management Practices shall be employed at all times during construction.

    The general contractor/developer/owner of the project shall obtain National Pollutant Discharge Elimination System (NPDES) Permit coverage(s) for the following:

    1. Storm water discharges associated with construction activities that disturb one (1) acre or more, and
    2. Discharges of hydrotesting effluent, dewatering effluent, and well drilling effluent to State waters.

    In accordance with State law, all discharges related to project construction or operations are required to comply with State Water Quality Standards (Hawaii Administrative Rules, Chapter 11-54). Best Management Practices shall be used to minimize or prevent the discharge of sediment, debris, and other pollutants to State waters. Permit coverage is available from the Department of Health, Clean Water Branch at http://health.hawaii.gov/cwb. The owner/developer/contractor is responsible for obtaining other Federal, State, or local authorizations as required by law.

12. Where applicable and feasible the measures to control erosion and other pollutants shall be in place before any earth moving phase of the grading is initiated.

13. Temporary erosion controls shall not be removed before permanent erosion controls are in-place and established.

14. Temporary Erosion Control Procedures shall be submitted for approval prior to application for grading permit.

15. If the grading work involves contaminated soil, then all grading work shall be done in conformance with applicable State and Federal requirements.

16. For non-City projects, the Contractor shall notify the Civil Engineering Branch, Department of Planning and Permitting at 768-8084 to arrange for inspectional services and submit two (2) sets of approved Construction Plans seven (7) days prior to commencement of construction work. For City projects, the Contractor shall coordinate inspectional services with the responsible agency.

17. Pursuant to Chapter 6E, HRS, in the event any artifacts or human remains are uncovered during construction operations, the Contractor shall immediately suspend work and notify the Honolulu Police Department, the State Department of Land and Natural Resources-Historic Preservation Division (692-8015). In addition, for non-City projects, the Contractor shall inform the Civil Engineering Branch, D.P.P. (768-8084); and for City projects, notify the responsible City Agency.

18. For all projects, which will disturb one (1) acre or more of land, the contractor shall not start construction until a Notice of General Permit Coverage (NGPC) is received from the Department of Health, State of Hawaii, and has satisfied any other applicable requirements of the NPDES permit program. Also, for non-City and other non-governmental agency projects, the Contractor shall provide a written copy of the NGPC to the Permitting and Inspection Section, Civil Engineering Branch, D.P.P., at least seven (7) calendar days before the start of the construction. For City or other governmental projects, the Contractor should provide a written copy of the NGCP to the appropriate City department or governmental agency per their requirements.

19. All grading and construction work shall implement measures to ensure that the discharge of pollutants from the construction site will be reduced to the maximum extent practicable and will not cause or contribute to an exceedance of water quality standards.

20. Non-compliance to any of the above requirements shall mean immediate suspension of all work, and remedial work shall commence immediately. All costs incurred shall be billed to the violator. Furthermore, violators shall be subjected to administrative, civil and/or criminal penalties.

21. For Bench Mark, see sheet 1.

GAS FACILITIES CONSTRUCTION NOTES:

1. The Hawaii Gas pipelines in the project area are plastic coated and cathodically protected. The Contractor shall be extremely careful when working near these gas pipelines.

2. Written clearances must be obtained from the Hawaii Gas, Maps and Records Department, 515 Kamakee Street, at least five (5) working days prior to starting excavation near these gas pipelines.

3. Since gas line locations on field maps are approximate, the Contractor, after obtaining written clearance, shall call Hawaii One Call Center a minimum of five (5) working days before starting excavation to arrange for field location of the existing gas pipelines. The telephone number is 1-866-423-7287.

4. The Contractor shall excavate and backfill around gas pipelines in the presence of a representative of Hawaii Gas. All backfill within six inches of any gas pipeline shall be select cushion material approved by Hawaii Gas.

5. For relocation of any gas pipeline, the Contractor shall notify Hawaii Gas five (5) working days before starting work. The telephone number is 594-5574. The Contractor shall provide the necessary excavation and backfill, obtain traffic permits, and restore pavement, sidewalks, and other facilities. Any relocation of gas facilities shall be done by Hawaii Gas and paid for by the Contractor.

6. The Contractor shall notify Hawaii Gas immediately after any damage has been caused to existing gas pipelines, coatings, or its cathodic protection devices. The telephone number is 535-5933, 24 hours a day. The Contractor shall be liable for any damage to Hawaii Gas facilities. Repair work on such damage shall be done by Hawaii Gas with payment for this work to be borne by the Contractor.

7. Minimum vertical and horizontal clearance between the gas pipelines and other pipelines, conduits, ductlines, or other facilities shall be 12 inches. Adequate support and protection of gas pipelines exposed in the trench shall be provided by the Contractor and approved by Hawaii Gas.

8. The Contractor shall work in an expeditious manner in order to keep the uncovered gas pipelines exposed for as short a period of time as possible.

CONSTRUCTION NOTES

1. All applicable construction work shall be done in accordance with the Standard Specifications for Public Works Construction, September 1986 and Standard Details for Public Works Construction, September 1984, as amended, of the Department of Public Works, City and County of Honolulu and the Counties of Kauai, Maui and Hawaii. Also, all construction work relating to High Density Polyethylene Drain Pipes shall be done in accordance with the Standard Specifications for Public Works Construction, High Density Polyethylene Smooth Interior Corrugated Drain Pipes, March 2013, of the Department of Planning and Permitting, City and County of Honolulu.

2. The underground pipes, cables or ductlines known to exist by the engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

3. No Contractor shall perform any construction operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow into existing City drainage systems, or adjoining properties, streets or natural watercourses. Should such violations occur, the Contractor may be cited and the Contractor shall immediately make all remedial actions necessary.

4. The general contractor/developer/owner of the project shall be responsible for conformance with applicable provisions of the Hawaii Administrative Rules, Title 11, Chapter 54, "Water Quality Standards" and Title 11, Chapter 55, "Water Pollution Control", as well as Chapter 14 of the Revised Ordinances of Honolulu, as amended. Best Management Practices shall be employed at all times during construction.

    The general contractor/developer/owner of the project shall obtain National Pollutant Discharge Elimination System (NPDES) Permit coverage(s) for the following:

    a. Storm water discharges associated with construction activities that disturb one (1) acre or more, and
    b. Discharges of hydrotesting effluent, dewatering effluent, and well drilling effluent to State waters.

    In accordance with State law, all discharges related to project construction or operations are required to comply with State Water Quality Standards (Hawaii Administrative Rules, Chapter 11-54). Best Management Practices shall be used to minimize or prevent the discharge of sediment, debris, and other pollutants to State waters. Permit coverage is available from the Department of Health, Clean Water Branch at http://health.hawaii.gov/cwb. The owner/developer/contractor is responsible for obtaining other Federal, State, or local authorizations as required by law.

5. For non-City projects, the Contractor shall notify the Civil Engineering Branch, DPP at 768-8084 to arrange for inspectional services and submit two (2) sets of approved Construction Plans seven (7) days prior to commencement of construction work. For City projects, the Contractor shall coordinate inspectional services with the responsible City agency.

6. For non-City Projects, the Contractor may submit a substitution request to precast any City owned and/or maintained drainage structure (ex., catch basins, drain manholes, drain inlets, culverts, etc). However, prior to construction and installation of any precast structures, the Cotractor shall a)submit six (6) sets of shop drawings to the Civil Engineering Branch, DPP and obtain written approval and b) notify the Civil Engineering Branch, DPP at 768-8084 to arrange for inspectional services. Non-compliance with any of these requirements shall mean immediate suspension of all precast construction work and rejection of all precast structures already constructed.

7. Confined Space:
   For entry by City Personnel, including inspectors, into a permit required confined space as defined in 29 CFR Part 1910.146(b), the Contractor shall be responsible for providing:

   A. All safety equipment required by the confined space regulations applicable to all parties other than the construction industry, to include, but not limited to, the following:
      1.) Full body harnesses for up to two personnel.
      2.) Lifeline and associated clips.
      3.) Ingress/egress and fall protection equipment.
      4.) Two-way radios (walkie-talkies) if out of line-of-sight.
      5.) Emergency (escape) respirator (10 minute duration).
      6.) Cellular telephone to call for emergency assistance.
      7.) Continuous gas detector (calibrated) to measure oxygen, hydrogen sulfide, carbon monoxide and flammables (capable of monitoring at a distance at least 20 feet away).
      8.) Personal multi-gas detector to be carried by inspector.

   B. Continuous forced air ventilation adequate to provide safe entry conditions.

   C. One attendant/rescue personnel topside (two, if conditions warrant it).

8. Pursuant to Chapter 6E, HRS, in the event any artifacts or human remains are uncovered during construction operations, the Contractor shall immediately suspend work and notify the Honolulu Police Department, the State Department of Land and Natural Resources-Historic Preservation Division (692-8015). In addition, for non-City projects, the Contractor shall inform the Civil Engineering Branch, Department of Planning and Permitting (768-8084); and for City projects, notify the responsible City agency.

9. For Bench Mark, see sheet 1.

SIGNS AND MARKINGS NOTES:

1. All traffic sign and pavement marking installations shall be done in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," 2009 edition, as amended, the latest specifications from the Traffic Review Branch, Department of Planning and Permitting, and as shown on the plans.

2. Contractor shall notify and coordinate work with the Civil Engineering Branch, Department of Planning and Permitting, one (1) week in advance of commencing work at 768-8084.

3. Contractor shall submit material brochures for all signs and paint materials to the Civil Engineering Branch, Department of Planning and Permitting.

4. The signing and/or striping contractor shall keep one (1) set of approved plans at the project site at all times during construction work.

5. Contractor shall paint temporary guidelines and outline of arrows, legends, and crosswalks with a two inch (2") wide brushed line on the day the roadway is opened to traffic. These markings must be approved by the inspector from the Civil Engineering Branch, Department of Planning and Permitting.

6. Contractor shall notify the Civil Engineering Branch, Department of Planning and Permitting at 768-8084, three (3) days in advance of final inspection.

7. Contractor shall meet with the inspector from the Civil Engineering Branch, Department of Planning and Permitting during the final inspection.

8. Within ten (10) days following notification of award of contract, the contractor shall submit to the Department of Planning and Permitting (phone: 768-8084) for approval, a list of any signing and pavement marking material which he proposes to install. The list shall be complete as to the name of manufacturer, catalog number, and shall be supplemented with material brochures.

9. Upon final inspection of the project, the contractor shall submit a letter of certification for all traffic signing and pavement marking materials installed.

10. Signs shall be attached to brackets with 5/16" zinc plated steel bolts, nuts and washers. Signs 48" wide or larger than 10 sq ft in area shall be mounted on two 2" galv. pipe post. The sign shall be installed with at least (1) one foot clearance from the sign edge to the curb face.

11. All traffic signs shall be reflectorized.

12. Raised pavement markers shall be installed in accordance with the Department of Planning and Permitting standards.

13. Location of "STOP" sign:
    A. Install "STOP" sign at curb tangent point.
    B. Install "STOP" sign on metal street light standard if a standard is located within 10 feet of curb return.
    C. Install "STOP" sign in front of utility pole if a pole is located within 10 feet of curb return.

14. Pavement word and symbol markings shall be in accordance with the Department of Planning and Permitting Standards.

15. The contractor shall use thermoplastic material, approved by the Civil Engineering Branch, Department of Planning and Permitting, for all crosswalks, stop bars, pavement arrows, center lines, lane lines, arc lines, channelized traffic islands, and legends.

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CAD DWG NO.: 3124-00_Notes.dwg
DATE: JAN 15, 2020

Drawing name: P:\3124-00 Halewaiolu Sr Residences\3124-00 DWGS_4 Construction Plans\3124-00_Notes.dwg Jan 15, 2020 - 10:01am

Gray•Hong•Nojima & Associates, Inc.
CONSULTING ENGINEERS
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018

Exp: 4/30/20
SHERYL ENDO NOJIMA
LICENSED PROFESSIONAL ENGINEER
No. 5677-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/84).

REVISION	DATE	DESCRIPTION	BY	APPROVED

ENGINEER: WT	CHECKED BY: SN
DRAWN BY: JG	PROJECT #: 3124-00

HALEWAI'OLU SENIOR RESIDENCES

(DPP CONSTRUCTION PLANS FILE NO 2019/CP-143)
TMK: 1-7-006: 012
HONOLULU, OAHU, HAWAII

GENERAL NOTES - 1

APPROVED BY:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. — DATE

CHIEF, TRAFFIC REVIEW BRANCH, D.P.P. — DATE

C002

SHEET 2 OF 26 SHEETS

FILE	POCKET	FOLDER	NO.

WRNS STUDIO
Rev 2 Set
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
HONOLULU
HAWAII 96813
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

Gray•Hong•Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
CONSULTING ENGINEERS

ISSUES	DATE
PERMIT SET	08/30/2019

# REVISION LIST	DATE

HALEWAI'OLU SENIOR RESIDENCES
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 30 AUGUST 2019
SCALE:

SHEET TITLE:
GENERAL NOTES-1

SHEET NO:
C002

All drawings and written material appearing herein constitute original and unpublished work of the Architect/Engineer and may not be duplicated, used or disclosed without consent of Architect/Engineer.

If this drawing is not 30"x42", then the drawing has been revised from its original size. Noted scales must be adjusted. This line should be equal to one inch

WRNS STUDIO
Rev 2 Dist
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
H O N O L U L U
H A W A I I 9 6 8 1 3
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
CONSULTING ENGINEERS

WATER NOTES

1. Unless otherwise specified, all materials and construction of water system facilities and appurtenances shall be in accordance with the City and County of Honolulu Board of Water Supply's "WATER SYSTEM STANDARDS", DATED 2002, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 1991, and all subsequent amendments and additions.
2. The contractor shall chlorinate the entire inside surface of each pipe and fitting with disinfection solution of 5 ounces of sodium hypochlorite mixed with 10 gallons of water. (For connection only)
3. The project shall pay the applicable water system facilities and/or one-time service charge and for the meter which will be furnished by BWS and installed by the Contractor when the lateral is installed.
4. The Contractor shall notify BWS Capital Projects Division, Construction Section in writing and submit six (6) sets of approved construction plans one week prior to commencing construction activities.
5. Contractor shall cut and plug all existing unused laterals at the main whether or not shown on the plans. Meter and valve boxes to be or already abandoned shall be demolished or removed and properly disposed of. The damaged area shall be repaired to an equal or better condition than the immediate area. All work shall be done at the expense of the Contractor.
6. All plans approved by the Board of Water Supply are based solely on the adequacy of the water supply.
7. For meters 3 inches and larger (Compound, F.M. and Detector Check), contractor shall notify Customer Care Division – Service Engineering Section in writing after the plan is approved, no later than 120 days, prior to withdrawing meter from BWS storeyard. Such notice shall indicate number, size, and type of meter (Compound, F.M. or Detector Check) and approximate month and year meter is anticipated to be drawn out. If the approved plan is allowed to lapse, the 120-day notice will be voided.
8. Board of Water Supply approval of these plans does not constitute a water commitment. Availability of water will be determined when building permit is presented to the Department. Water commitment will depend upon the status of the water system at that time. Should water service be made available, the water commitment will be effective when the project receives an approved building permit from the Building Department. All water commitments will be canceled in the event the building permit is canceled.
9. The project shall be subject to the Board of Water Supply's Cross-Connection Control requirements prior to issuance of the Building Permit.
10. The installation, chlorination and testing of the water main and facilities after the meter shall not be the responsibility of the Board of Water Supply.
11. The existence and location of underground utilities and structures as shown on the plans are from the latest available data but is not guaranteed as to the accuracy or the encountering of other obstacles during the course of the work. The Contractor shall be responsible and pay for all damages to existing utilities. The Contractor shall not assume that where no utilities are shown, that none exist.
12. Prior to installation, the Contractor shall submit for approval by Board of Water Supply, the manufacturer's certification that all cast iron (gray or ductile) fittings for the project conform in all respects to the Water System Standards, dated 2002.
13. Polygon shape for mechanical joint glands as described in AWWA Standard C111 shall be "straight-sided" or an approved equal on a lot-to-lot basis.
14. Re-approval shall be required if this project is not under construction within a period of two (2) years.
15. The backflow preventer device must be installed before meter is issued.
16. The Contractor/Developer shall obtain a NPDES permit prior to chlorination and/or dewatering. A copy of the permit shall be submitted to the Board of Water Supply, Capital Projects Division, Construction Section.
17. Pipe cushion shall be of high resistivity material. The contractor shall submit a soil certification that high resistant cushion material has a resistivity greater than 5,000 OHM-CM. Remainder of the backfill material shall be as specified in the Water System Standards. Pipe cushion and backfill material shall contain no hazardous substances above regulatory action levels including but not limited to lead, asbestos, mercury, chromium, cadmium, zinc, strontium, and polychlorinated biphenyls (PCB).
18. Install 4 mil thick, non-metallic, blue colored, 6 inches wide warning tape over centerline of the pipe and below the base course along the entire length of trench. Tape should be marked with "CAUTION WATER LINE BURIED BELOW".
19. The contractor shall install electronic markers to ALL mains and test the electronic markers prior to installations to verify proper operation. BWS personnel shall verify the number and locations of placed electronic markers before final paving of the project.
20. After installation of tapping sleeve and valve prior to actual tapping operations, the assembly shall be tested at 150 psi on both sides of the valve.
21. At the electrical/cable/signal ductline water crossings, adjust all electrical/cable/signal ductline elevations to maintain 12" vertical clear separation from all waterlines at no cost to the Board of Water Supply.
22. Maintain 3'-0" minimum horizontal clear separation between all waterline and nearest electrical/cable/signal ductlines paralleling the water system at no cost to the Board of Water Supply.
23. Maintain 3'-0" minimum horizontal clear separation between electrical/cable/signal appurtenances, (including any modular units), and the nearest waterline or water appurtenance. Contractor shall field verify for any conflicts at each electrical/cable/signal appurtenance location. Where conflicts occur, the Contractor shall coordinate with the project engineer to revise the electrical/cable/signal appurtenance to provide the required clearances at no cost to the BWS.
24. Cleaning shall be by the use of "pigs" introduced into the pipeline and run completely through all installed pipelines and all branch lines for fire hydrants. "Pigging" of service laterals is not required. Bore foam "pigs" shall be used to swab piping clean at each length of the pipeline is installed. Each "pig" shall consist of a cylindrical piece of polyurethane foam with a density of 3-7 pounds per cubic foot and a vinyl-coated nose. Outside diameter of the "pig" shall be equal to 1-1/4 to 1-1/2 times the inside diameter of the pipe being installed. The length of the "pig" shall be 1-1/2 to 2 times its diameter. Prior to use, the "pig shall be submerged in a chlorine solution of 1 oz. of 5% chlorine bleach in 5 gallons of water. "Pigging" of the pipeline shall be considered incidental to the installation of the new pipeline.
25. The contractor shall be responsible for the protection of all waterlines during construction. The contractor shall be especially careful when excavating behind waterlines, tees, and bends wherever there is a possibility of waterline movement due to the removal of the supporting earth beyond the existing reaction blocks. The Contractor shall take whatever measures necessary to protect the waterlines, such as constructing special reaction blocks (with BWS approval) and/or modifying his construction method.
26. Prior to any excavating, the Contractor shall verify in the field, the location of existing waterlines and appurtenances.
27. Any adjustments to the existing water system required during construction, to meet the requirements of the BWS Standards, whether shown on the plans or not, shall be done by the Contractor at no cost to the Board.
28. Nuts and bolts for flange connections within meter boxes shall be bronze or stainless steel except coupling adapters where "COR-TEN" (U.S. Steel) or "MAYARI" (Bethlehem Steel) may be used. Flange connections outside of meter box may use "COR-TEN" or "MAYARI" type nuts and bolts.
29. Test pressure shall be one of the following: (a) prevailing line pressure, joints left exposed for 24 hours to check for leaks prior to backfill or (b) 150 psi. During the 30-minute pressure test, the pressure shall not drop more than 10 psi.
30. All ductile iron pipe, fittings and valves shall be wrapped with two layers of 8 mil. polyethylene wrap. The inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be infused with a blend of an antimicrobial to mitigate microbiologically influenced corrosion and a volatile corrosion inhibitor to control galvanic corrosion.
31. All waterline construction requiring shutdown connection shall be scheduled for after working hours at six (6) hours maximum downtime.
32. All ductile iron pipe and fittings, including sections requiring reinforced concrete jacketing shall be ductile iron class 53, and coated as per the BWS Water System Standards.

PRIVATE DRAIN NOTE

1. Private drainlines 36" and smaller shall be ADS N-12 Polyethylene Pipe (Type S), or PVC (SDR 35) as indicated on the plans. When installing HDPE for storm drain pipe material, the Contractor shall comply with DPP Engineering and Policy Memorandum No. CEB-2-13 (dated March 6, 2013), "City and County of Honolulu Department of Planning and Permitting Standard Specifications for Public Works Construction High Density Polyethylene Smooth Interior Corrugated Drain Pipes", dated March 1, 2013.

PVC WATER NOTES

1. Polyvinyl chloride (PVC) pipes shall be DR 14 (for 4"-16"). All ductile iron valves and metallic fittings shall be wrapped with two layers of 8 mil polyethylene wrap. No bending of polyvinyl chloride pipes shall be permitted. The installation of PVC pipe, according to the plans and specifications as bid on by the contractor, may require additional design work and additional fittings, and shall be considered incidental to the unit price bid in the proposal for PVC pipe. Any additional design work shall be the responsibility of the Contractor.
2. PVC fittings, including deflection couplings, are not approved.
3. The Contractor shall furnish and install polyethylene wrap, 3 feet minimum at all taps (for DI pipe and copper lateral combination only).
4. All sections of the water main requiring reinforced concrete jacketing shall be ductile iron pipe Class 53 with ductile iron fittings.
5. Bossed tees required for all lateral and ARV connections to PVC mains 12" and smaller (Ductile Iron Connector Piece larger than 12").
6. Ductile iron fittings shall be used for all types of fittings.

SEWER NOTES

1. All sewer construction shall be performed in accordance with the City's Standard Specifications, Sept. 1986, the Department of Environmental Services Wastewater System Design Standards, July 2017, and Wastewater System Standard Details, July 2017, current city practices and Revised Ordinances of Honolulu, 1990, as amended.
2. In the event that any change in alignment or grade for the proposed sewers are required due to unforeseen conflict with other utilities, the Contractor shall be responsible for the required changes which are to be presented to the engineer for approval.
3. Crushed rock cradle is permitted where soil is stable. In areas of unstable soil, the maker of the plans and the construction engineer will determine the pipe support required.
4. The underground pipes, cables or ductlines known to exist by the engineer from his search of records are indicated on the plans. The Contractor shall verify the location and depth of the facilities, including and affecting sewerlines in the presence of the Wastewater Inspector and exercise proper care in excavating the area. The Contractor shall be responsible and shall pay for all damaged utilities.
5. Sewer lateral shall be clear of and not conflicting with any other utility. Minimum horizontal and vertical clearances shall be strictly observed and followed.
6. Slope for sewer laterals shall be 2.00% and laterals shall be 6" diameter pipes unless otherwise noted.
7. Building plumbing facilities shall be controlled by sewer lateral inverts.
8. The Contractor shall be responsible for maintaining continuous sewer service to all affected areas during construction.
9. The Contractor shall submit to the engineer "as-built" drawings of the construction plans as actually constructed, showing all changes from the original plans.
10. The Contractor shall be responsible for any sewage spills caused during construction. The Contractor shall notify the State Department of Health and utilize appropriate sampling and analyzing procedures. The Contractor shall be responsible for all public notifications and press releases.
11. The Contractor shall Install "Rainstopper" manhole inserts in all sewer manholes with Type "SA" frame and cover.
12. The Contractor shall obtain approval for advance sewer riser agreement at Department of Planning & Permitting and obtain building permit for plumbing work before any advance riser is made.
13. For entry by City Personnel, including inspectors, into a permit required confined space as defined in 29 CFR Part 1910.146(b), the Contractor shall be responsible for providing:
    A. All safety equipment required by the confined space regulations applicable to all parties other than the construction industry, to include, but not limited to, the following:
       1.) Full body harnesses for up to two personnel.
       2.) Lifeline and associated clips.
       3.) Ingress/egress and fall protection equipment.
       4.) Two-way radios (walkie-talkies) lit out of line-of-sight.
       5.) Emergency (escape) respirator (10 minute duration).
       6.) Cellular telephone to call for emergency assistance.
       7.) Continuous gas detector (calibrated) to measure O , H S, CO and flammables (capable of monitoring at a distance at least 20 feet away).
       8.) Personal multi-gas detector to be carried by inspector.
    B. Continuous forced air ventilation adequate to provide safe entry conditions.
    C. One attendant/rescue personnel topside (two, if conditions warrant it).
14. The contractor shall notify the Construction Management Branch, Wastewater Engineering and Construction Division, ENV, at 768-8785, 768-8769, or 768-8753 to arrange for inspection services and submit four (4) sets of approved construction plans to Wastewater Branch, DPP seven (7) days prior to commencement of sewer work. The contractor shall pay for all inspection costs.
15. 54C pipe cradle seals shall be installed 10 feet from all sewer manholes to prevent soil migration.
16. Contractor to maintain minimum 3' horizontal clearance between sewerline, electrical boxes & manholes and minimum 3' horizontal clearance between sewerline & electrical ductlines.
17. When connecting to a live sewer line, the contractor shall abide by all conditions that the State Department of Health sets forth to mitigate any wastewater spill that may occur. The contractor shall inform the City Inspector five (5) working days prior to the actual connection. The contractor shall be responsible for any fines and penalties due to any spills resulting from the connection.
18. No rungs shall be installed inside new manholes.
19. For sewer manhole adjustments upward less than 3", see C&C Std Detail S-28. For SMH adjustments upward greater than 3" or for any adjustments downward, reconstruct SMH top from below the cone section.
20. If contractor encounters flow monitoring devices such as special sewer manhole cover embedded with solar panels; notify C & C Honolulu, ENV-CSM at 768-7272 to coordinate temporary removal.
21. Contractor shall maintain visibility and maintenance access to live sewer manhole locations at all times, including during non-work hours and paving operations.
22. Contractor shall use manhole debris catching device when performing manhole height adjustment work and remove any construction debris that has fallen into the manhole. Disposal of construction debris in the sewer system is strictly prohibited.
23. Maintain 3'-0" min. horizontal clear separation between all sewer systems and nearest electrical ductlines, pullboxes, and handholes paralleling the sewer system. Maintain 6' min. horizontal clear separation between all sewer system and electrical transformer pads. Maintain 5' min. horizontal clear separation between all sewer system and street light poles and traffic signal poles. Do not place electrical appurtenances in between sewer laterals.
24. At the electrical ductline sewer crossings, adjust all electrical ductline elevations to maintain 24" vertical clear separation above all sewer lines. If less than 24" clear above the sewer line, RC jacket the sewer line per City Standard Detail S-03.

SPECIAL PROVISIONS FOR PVC PLASTIC SEWER PIPE (FOR PIPES 6" TO 12" IN DIAMETER ONLY)

1. Polyvinyl chloride (PVC) plastic sewer pipe and appurtenances used on this project shall conform to the requirements of Section 21 of the Standard Specifications for Public Works Construction dated September 1986, except as modified herein.
   A. General. PVC gravity sewer pipe shall conform to the requirements of C-900/C-905 (DR 18 minimum wall thickness).
   B. Acceptance. The basis for acceptance shall be the inspection of pipe, fittings and couplings, the tests specified herein and in Section 21, and compliance with the specifications. At the time of manufacture, each lot of pipe and fittings shall be inspected for defects and tested for impact, stiffness and flattening in accordance with ASTM D3034. The Engineer may require certification by the manufacturer that the test results comply with specification requirements. When the pipe is delivered to the job site, the Engineer may require the Contractor to provide additional testing to insure the quality of the pipe at no expense to the City. Pipe which is not installed within 120 days of the latest factory test shall not be used without prior approval of the Engineer.
   C. Selection of Test Pipe. When testing is required by the Engineer, one test pipe shall be selected at random by the Engineer from each 1200 linear feet or fraction thereof of each size of pipe delivered to the job site but no less than one test pipe per lot. A lot shall be defined as pipe having the same identification marking. The length of specimen of each selected pipe shall be a minimum of 8 feet.
   D. Cell Classification. Pipe shall be made of PVC plastic having a cell classification of 12454-B, 13364-A, or 13364-B as defined in ASTM D1784. The fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13343-C. PVC compounds of other cell classifications shall be pre-qualified by the manufacturer.
   E. Joints. Pipe joints shall be bell and spigot type with an elastomeric gasket. The gasketed joints shall be manufactured with a socket configuration which will preclude improper installation of the gasket and will insure the gasket remains in place during the joining operation. All pipe shall have a home mark on the spigot end to indicate proper penetration when the joint is made.
   F. Identification Marks. All pipe fittings and couplings shall be clearly marked at an interval not to exceed 5 feet as follows:
      (1) Nominal pipe diameter.
      (2) PVC cell classification.
      (3) Company, plant, shift, ASTM, SDR, and date designations.
      (4) Service designation and legend.
   G. Dimensions and Tolerances:

Table – Pipe Dimension (inches)

Nominal Size	Average O.D.	Tolerance on Average	Minimum Wall Thickness	Wt./20' Length (lbs.) Approx.
6	6.90	±0.011	0.383	104
8	9.05	±0.012	0.503	178
10	11.10	±0.015	0.617	268
12	13.20	±0.018	0.733	382

   H. Chemical Resistance. The PVC compound for cell classifications not specifically identified in Item D above shall be prequalified by the pipe manufacturer by meeting the chemical resistance tests which follow. Compound samples and molded test specimens shall be prepared in accordance with ASTM D543.

Tensile and Izod impact exposure specimens shall be immersed in the solutions specified in Table 2 for a period of 112 days. Test specimens shall be conditioned to constant weight at 110°F (43.3°C) before and after submersion. The solutions shall be kept at a temperature of 77°F ±5°F (24°C ±3°C). At 28-day intervals, selected specimens shall be removed, washed, surface dried and tested.

TABLE 2 – Test Solutions

Chemical Solution	Concentration (%)
Sulfuric Acid	20*
Sodium hydroxide	5
Ammonium hydroxide	5*
Nitric acid	1*
Ferric chloride	1
Soap	
Detergent (Linear alkyl benzyl sulfonate or LAS)	0.1
Bacteriological	BOD not less than 700 ppm.

* Volumetric percentages of concentrated reagents of C.P. grade

Weight change specimens shall be 2 inches in diameter and may be molded discs or discs cut from the pipe wall. Specimens shall be conditioned for seven days at 43° ±2°C, cooled in a desiccator for the three hours at 23° ±2°C, weighed, and then immersed in the solutions. At 4 week intervals, selected specimens shall be removed, washed, surface dried and weighed. These same specimens shall then be reconditioned for seven days at 43° ±2°C, cooled in a desiccator for three hours at 23° ±2°C and again weighed.

Initial and post exposure specimens shall meet the following requirements when tested at 23° ±2°C:

Property	ASTM Test Method	Cell Class Minimum Values 12454	13343	13364
Tensile Strength (Yield), psi	D 638	7000	6000	6000
Impact Strength, ft-lbs/in.	D 256 Method A	0.65	1.5	1.5
Weight Change, %	D 543	1.5	1.5	1.5

If any specimen fails to meet the requirements at any time during the 112 day exposure period, the material will be subject to rejection.

SPECIAL PROVISIONS FOR PVC PLASTIC SEWER PIPE (CONT'D)

   I. Trench Excavation. Trenches for PVC sewer pipe shall be excavated and prepared in accordance with the requirements of Section 11 of the Standard Specifications for Public Works Construction except as modified herein.
      (1) Overexcavation. The maximum allowable trench width shall be equal to the outside diameter of the PIPE plus 18-inches for pipe up to 12" (I.D.). If the trench excavation exceeds the computed maximum allowable trench width whether by excavation, cave-in, or by ground movement, the Contractor shall provide at his own expense additional bedding, another type of bedding, and/or a higher strength of pipe designated by the Engineer. Where shoring is required, the allowable width of the trench shall be increased only by the thickness of the sheathing.
   J. Pipe Bedding. Where unsuitable material is encountered at the subgrade and additional excavation is required, the void created by the additional excavation shall be filled and compacted with bedding material specified on the plans or special provisions. Where concrete is specified to bed the pipe, the top of the concrete shall be considered as the top of the bedding.

      Bedding material shall consist of one of the following:

      (1) Beach sand.
      (2) No. 8 or No. 67 aggregate conforming to the gradation requirements of ASTM C33.
      (3) 3/8" filter aggregate.
      (4) Native free-draining granular material having a minimum sand equivalent of 30 or having a coefficient of permeability greater than 0.001 centimeter per second.
      (5) Other material approved by the Engineer.

      Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of 0.4 times the outside diameter of the barrel. If the pipe is to be laid in a rock excavation, the rock shall be removed such that no ribs, rocks, or solid projections shall be within 6 inches of the sewer pipe horizontally and there shall be at least 4 inches of bedding below the pipe.

      Compaction of the bedding from the bottom of the pipe to 12 inches above the pipe barrel by jetting will be permitted provided that the foundation material will not soften or be otherwise damaged by the applied water. Flooding or ponding methods of achieving the required relative density will not be permitted. The size and length of jet pipe, quantities and pressure of water, and jetting locations shall be sufficient to compact the bedding to 87% minimum relative density. Compaction of the backfill from 12 inches above the pipe barrel to the finish surface shall conform to the requirements of Section 11.4 of the Standard Specifications for Public Works Construction.
   K. Mandrel Test of PVC Pipe. A mandrel test shall be performed no sooner than 30 days after the trench backfill is completed. In roadway areas the 30-day period shall begin after installation and compaction of bedding, backfill and subbase to within 2 feet of the finished pavement grade. A rigid mandrel shall be pulled through the pipe by hand between adjacent manholes to measure for obstructions (deflections, joint offsets and lateral pipe intrusions). The mandrel shall have a cross section equivalent to a circle having a diameter at least 95 percent of the specified average inside diameter of the pipe. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. This test shall be performed by the Contractor in the presence of the Engineer. All material, equipment and labor required to perform the test shall be provided by the Contractor at no cost to the City. Any section of pipe that fails to permit passage of the mandrel will not be accepted until properly repaired or replaced and retested.
2. Bedding for PVC Pipe sewer shall be Class "B" as shown on S-47 of the Standard Details for Public Works Construction unless otherwise noted.
3. The maximum design deflection (flattening) for plastic pipe shall be 5 percent. The maximum SDR (Standard Dimension Ratio of pipe outside diameter to pipe wall thickness) shall be 35.
4. Special watertight manhole couplings per standard detail S-48 will be required for all manhole connections. Couplings may be cast directly into cast-in-place manholes or grouted into precast concrete manholes with non-shrink or expansion type grout.
5. For connections of PVC lateral sewers to mains of different materials, an approved saddle wye fitting constructed of the same material as the main line shall be installed. Connection to the saddle fitting shall be made by means of an approved flexible rubber coupling in accordance with the coupling manufacturer's installation recommendations or by other means acceptable to the Engineer.
6. PVC Pipe shall be limited to use in agricultural, residential and apartment zoned areas and in sizes from 6 inches to 12 inches in diameter.

HONOLULU FIRE DEPARTMENT NOTES

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 m) from fire department access roads as measured by an approved route around the exterior of the building or facility. (NFPA 1, 2012 Fire Code, Section 18.2.3.2.2).
2. A fire department access road shall extend to within 50 ft (15m) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building (NFPA 1, 2012 Fire Code, Section 18.2.3.2.1).
3. An approved water supply capable of supplying the required fire flow for fire protection shall be provided to all premises upon which facilities, buildings, or portions of buildings are hereafter constructed or moved into the jurisdiction. The approved water supply shall be in accordance with Section 18.4 – Fire Flow Requirements for Buildings (NFPA 1, 2012 Fire Code, Section 18.3.1).
4. Where underground water mains and hydrants are to be provided, they should be installed, completed, and in service prior to commencing construction work on any structure (NFPA 1, 2012 Fire Code, Section 16.4.3.1.3).
5. Fire department access roads provided in accordance with Section 18.2.3 shall be provided at the start of a project and shall be maintained throughout construction (NFPA 1, 2012 Fire Code, Section 16.1.4).
6. The authority having jurisdiction (AHJ) shall have the authority to require that construction documents for all fire protection systems be submitted for review and approval and a permit be issued prior to the installation, rehabilitation, or modification. Further, the AHJ shall have the authority to require that full acceptance tests of the fire protection system be performed in the AHJ's presence prior to final system certification (NFPA 1, 2012 Fire Code, Section 13.1.1).
7. When buildings are protected throughout with an approved automatic sprinkler system that is installed in accordance with NFPA 13, NFPA 13D, or NFPA 13R, an increase in distance in Section 18.2.3.2.2 shall be permitted as set forth by the AHJ.
8. A water supply approved by the county, capable of supplying the required fire flow for fire protection shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150ft from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ. For on-site fire hydrant requirements see section 18.5.1.
   Exceptions
   1. When facilities or buildings, or portions thereof, are completely protected with an approved automatic fire sprinkler system, the provisions of section 18.3.1 may be modified by the AHJ.
   2. When water supply requirements cannot be installed due to topography or other conditions, the AHJ may require additional fire protection as specified in section 18.3.1.1, as amended in this code.
   3. When there are not more than two dwellings, or two private garages, carports, sheds and agricultural Occupancies, the requirements of section 18.3.1 may be modified by the AHJ.
9. One set of approved plans, specifications, and computations shall be retained by the building official for a period of not less than 90 days from date of completion of the work covered therein, and one set of approved plans shall be returned to the applicant, and said set shall be kept on the site of the building or work at all times during which the work authorized thereby is in progress. (sec. 18-5.2 R.O. 1978 (1983 Ed.); Am. Ord. 93-59)

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
CONSULTING ENGINEERS

Exp: 4/30/20
SHERYL ENDO NOJIMA
LICENSED PROFESSIONAL ENGINEER
No. 5877-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSERVATION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-3 OF THE RULES OF THE DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS, 8/29/94).

ISSUES	DATE
PERMIT SET	08/30/2019

REVISION LIST	DATE

REVISION	DATE	DESCRIPTION	BY	APPROVED

ENGINEER: GF	CHECKED BY: SN
DRAWN BY: JG	PROJECT #: 3124-00

HALEWAI'OLU SENIOR RESIDENCES

(DPP CONSTRUCTION PLANS FILE NO 2019/CP-143)
TMK: 1-7-006: 012
HONOLULU, OAHU, HAWAII

GENERAL NOTES - 2

APPROVED BY:

PLAN REVIEWER, HONOLULU FIRE DEPARTMENT — DATE

MANAGER & CHIEF ENGINEER, BWS (for work affecting BWS facilities in City/State R.O.W. and BWS easements only) — DATE

CHIEF, WASTEWATER BRANCH, D.P.P. — DATE

C003

SHEET 3 OF 28 SHEETS

FILE	POCKET	FOLDER	NO.

PROJECT NAME: HALEWAI'OLU SENIOR RESIDENCES
CAD DWG NO.: 3124-00_Notes.dwg
DATE: JAN 15, 2020

Drawing name: P:\3124-00 Halewai'olu Or Residences\3124-00 DWGS_4 Construction Plans\3124-00_Notes.dwg, Jan 15, 2020 - 10:03am

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HALEWAI'OLU
SENIOR
RESIDENCES
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 30 AUGUST 2019
SCALE:

SHEET TITLE:
GENERAL NOTES-2

SHEET NO:
C003

WRNS STUDIO
Rev 2.5x5
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
H O N O L U L U
H A W A I I 9 6 8 1 3
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
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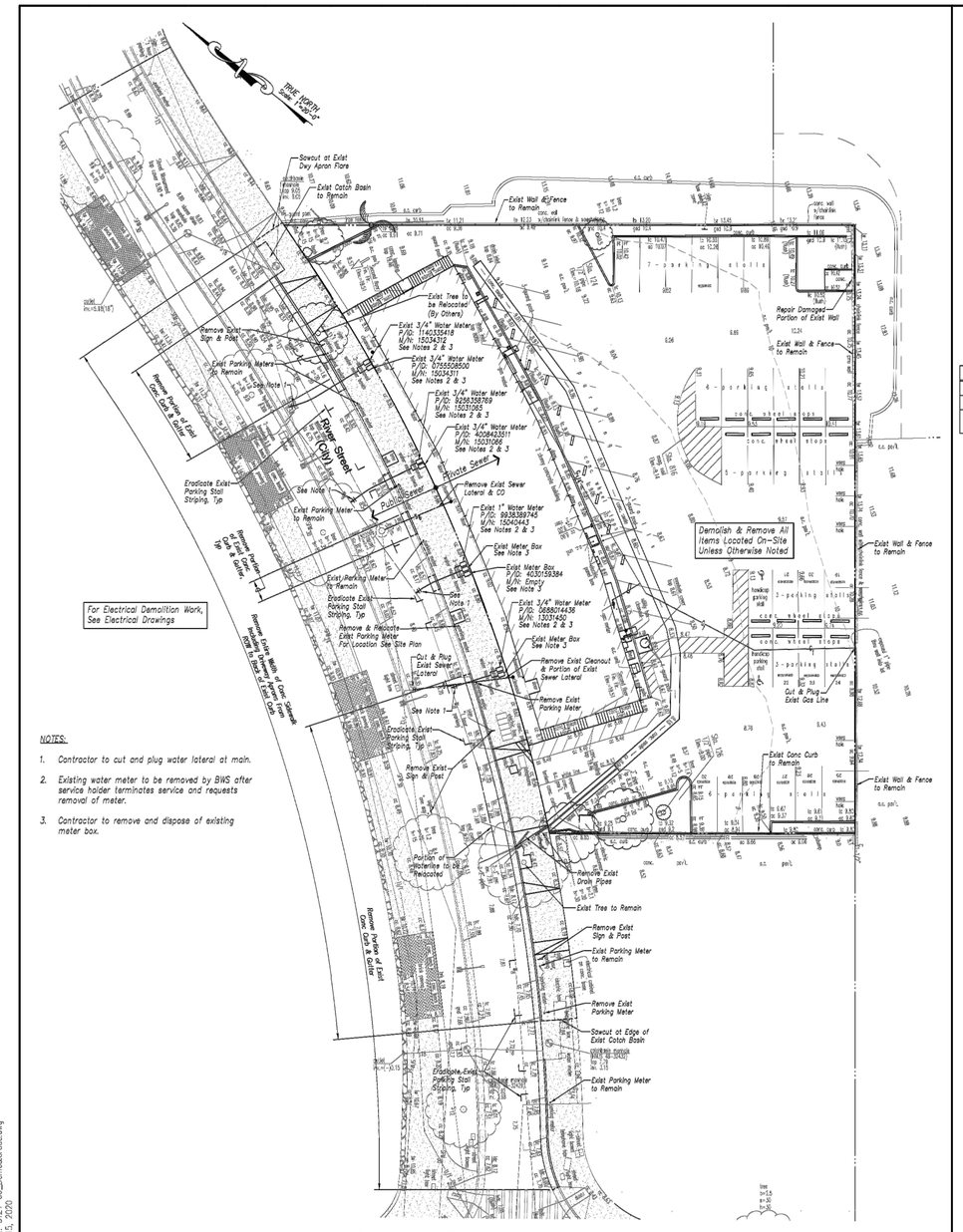
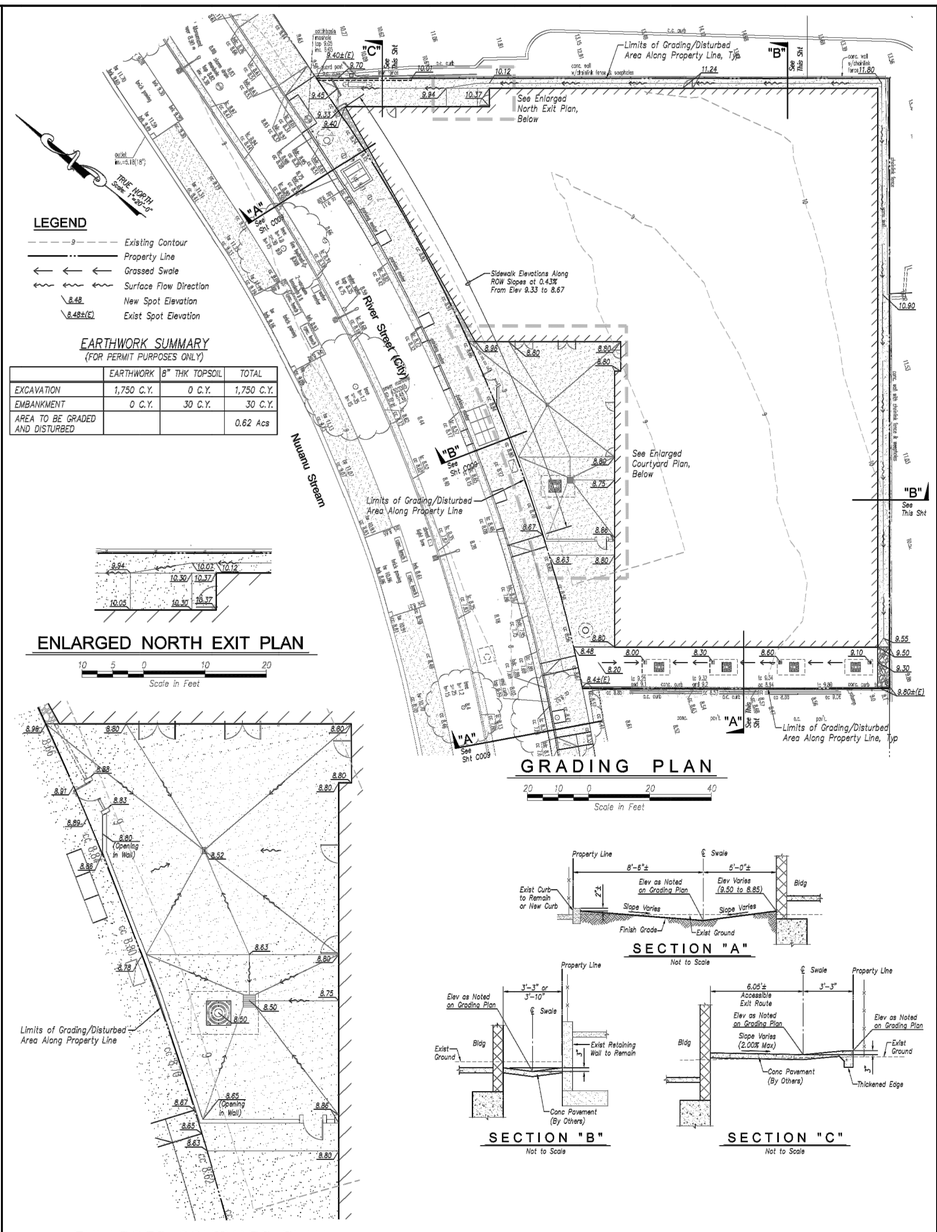


NOTES:

1. Contractor to cut and plug water lateral at main.
2. Existing water meter to be removed by BWS after service holder terminates service and requests removal of meter.
3. Contractor to remove and dispose of existing meter box.

DEMOLITION PLAN

20 10 0 20 40
Scale In Feet



ENLARGED NORTH EXIT PLAN

10 5 0 10 20
Scale In Feet

GRADING PLAN

20 10 0 20 40
Scale In Feet

ENLARGED COUTYARD PLAN

10 5 0 10 20
Scale In Feet

SECTION "A"
Not to Scale

SECTION "B"
Not to Scale

SECTION "C"
Not to Scale

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
CONSULTING ENGINEERS

Exp: 4/30/20
SHERYL ENDO NOJIMA
LICENSED PROFESSIONAL ENGINEER
No. 5677-C
HAWAII, U.S.A.

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ISSUES	DATE
PERMIT SET	08/30/2019

REVISION LIST	DATE

DESCRIPTION	DATE	BY	APPROVED

ENGINEER: GF | CHECKED BY: SN
DRAWN BY: JC | PROJECT #: 3124-00

HALEWAI'OLU SENIOR RESIDENCES

(DPP CONSTRUCTION PLANS FILE NO 2019/CP-143)
TMK: 1-7-006: 012
HONOLULU, OAHU, HAWAII

DEMOLITION & GRADING PLANS

APPROVED BY:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

MANAGER & CHIEF ENGINEER, B.W.S. (For work affecting BWS facilities in City/State R.O.W. and BWS easements only) DATE

CHIEF, WASTEWATER BRANCH, D.P.P. DATE

C004

SHEET 4 OF 28 SHEETS

FILE	POCKET	FOLDER	WA

PROJECT NAME: HALEWAIOLU SENIOR RESIDENCES
CAD DWG NO.: 3124-00_Demo&Grade.dwg
DATE: JAN 15, 2020

Drawing name: P:\3124-00 Halewai'olu Sr Residences\3124-00 DWGS_J Communitor Files\3124-00_Demo&Grade.dwg Jan 15, 2020 - 10:23am

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HALEWAI'OLU SENIOR RESIDENCES
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 30 AUGUST 2019
SCALE:

SHEET TITLE:
DEMOLITION & GRADING PLANS

SHEET NO:
C004

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
HONOLULU
HAWAII 96813
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

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201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
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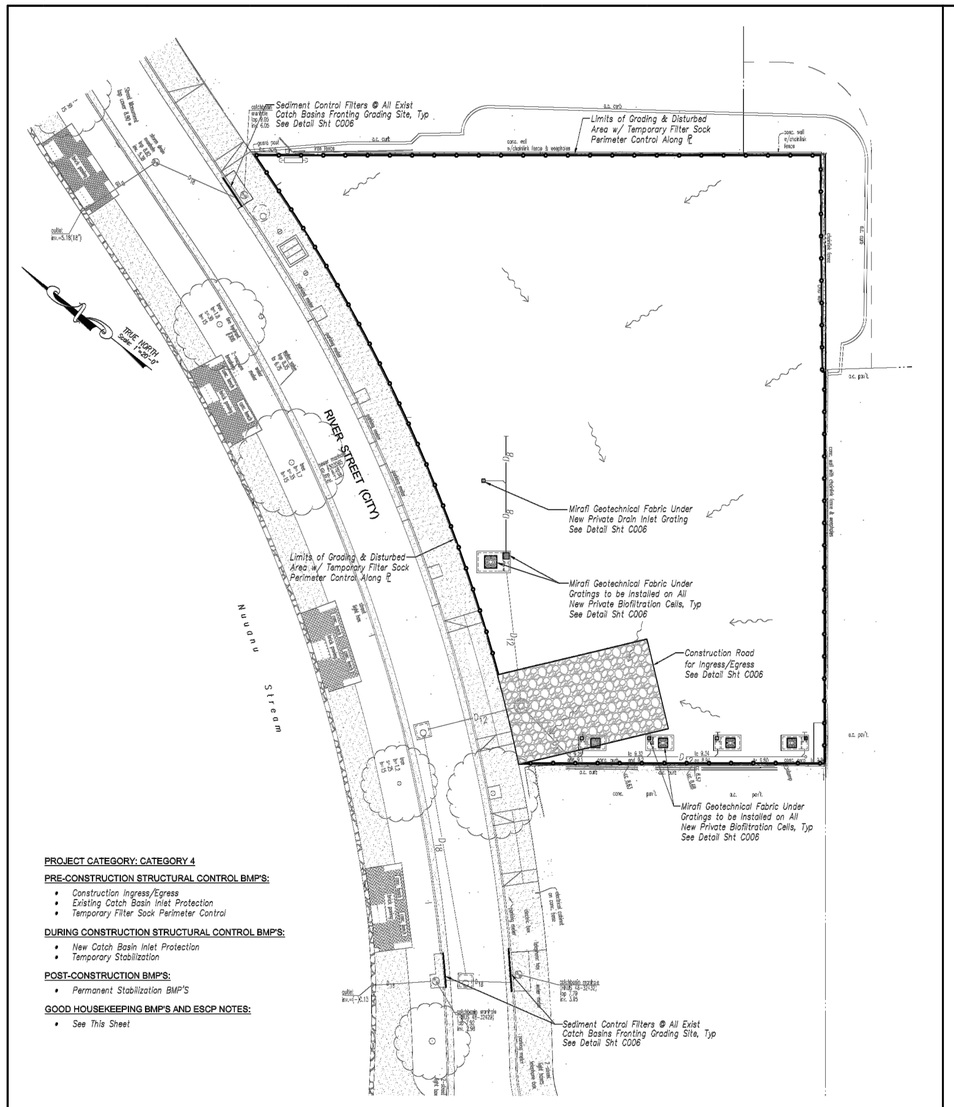


PROJECT CATEGORY: CATEGORY 4

PRE-CONSTRUCTION STRUCTURAL CONTROL BMP'S:

- *Construction Ingress/Egress*
- *Existing Catch Basin Inlet Protection*
- *Temporary Filter Sock Perimeter Control*

DURING CONSTRUCTION STRUCTURAL CONTROL BMP'S:

- *New Catch Basin Inlet Protection*
- *Temporary Stabilization*

POST-CONSTRUCTION BMP'S:

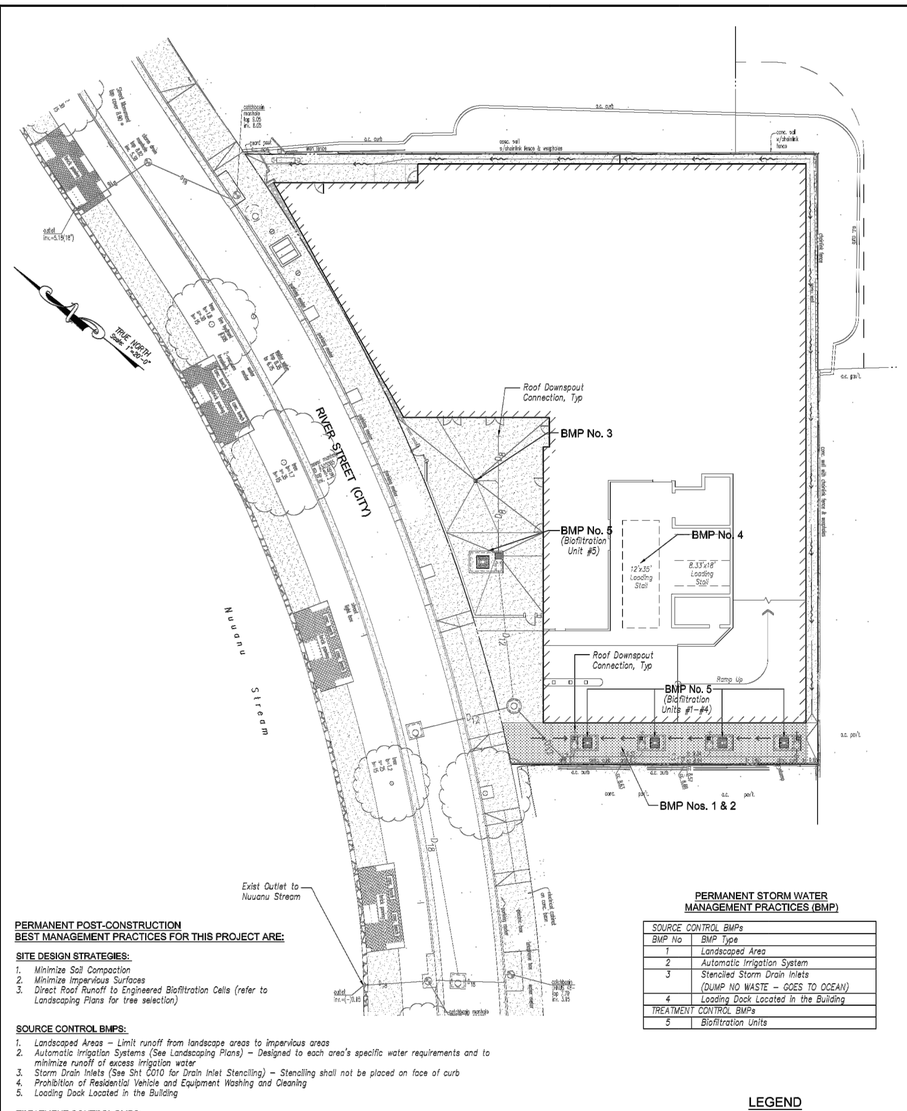
- *Permanent Stabilization BMP'S*

GOOD HOUSEKEEPING BMP'S AND ESCP NOTES:

- *See This Sheet*

LEGEND

- Crushed Rock Construction Road for Ingress/Egress
- Temporary Sediment Control Filter at Exist/New Catch Basin
- Temporary Filter Sock
- Property Line
- Existing Drainline
- New Drainline
- Existing Drainage Flow



PERMANENT POST-CONSTRUCTION BEST MANAGEMENT PRACTICES FOR THIS PROJECT ARE:

SITE DESIGN STRATEGIES:

1. *Minimize Soil Compaction*
2. *Minimize Impervious Surfaces*
3. *Direct Roof Runoff to Engineered Biofiltration Cells (refer to Landscaping Plans for tree selection)*

SOURCE CONTROL BMPS:

1. *Landscaped Areas – Limit runoff from landscape areas to impervious areas*
2. *Automatic Irrigation Systems (See Landscaping Plans) – Designed to each area's specific water requirements and to minimize runoff of excess irrigation water*
3. *Storm Drain Inlets (See Sht C010 for Drain Inlet Stenciling) – Stenciling shall not be placed on face of curb*
4. *Prohibition of Residential Vehicle and Equipment Washing and Cleaning*
5. *Loading Dock Located In the Building*

TREATMENT CONTROL BMPS:

1. *Biofiltration Unit Data (Per Unit)*

Biofiltration Unit #	Drainage Area (Acres)	Water Quality Flow Required	Water Quality Flow Treated*	10-Year Flow	Max Bypass Flow Available*
1-4	0.10	0.054 cfs	0.056 cfs	0.78 cfs	1.4 cfs
5	0.18	0.097 cfs	0.111 cfs	0.98 cfs	1.4 cfs

** Data Provide by Contech Engineered Solutions*

PERMANENT STORM WATER MANAGEMENT PRACTICES (BMP)

SOURCE CONTROL BMPs	
BMP No	BMP Type
1	Landscaped Area
2	Automatic Irrigation System
3	Stenciled Storm Drain Inlets (DUMP NO WASTE – GOES TO OCEAN)
4	Loading Dock Located In the Building
TREATMENT CONTROL BMPs	
5	Biofiltration Units

LEGEND

- Existing Drainline
- New Drainline
- Property Line
- Drainage Flow
- Drain Inlet w/ Stenciling (For Det See Sht C010)
- Biofiltration Units (For Det See Sht C010)
- Landscaped Area

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
CONSULTING ENGINEERS

Exp: 4/30/20
SHERYL ENDO NOJIMA LICENSED PROFESSIONAL ENGINEER No. 5877-C HAWAII, U.S.A.

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ISSUES	DATE
PERMIT SET	08/30/2019

REVISION LIST	DATE

ENGINEER: GF	CHECKED BY: SN
DRAWN BY: JG	PROJECT #: 3124-00

HALEWAI'OLU SENIOR RESIDENCES

(DPP CONSTRUCTION PLANS FILE NO 2019/CP-143)
TMK: 1-7-006: 012
HONOLULU, OAHU, HAWAII

ESCP & POST-CONSTRUCTION BMP PLANS

APPROVED BY:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

C005

SHEET 5 OF 28 SHEETS

FILE	POCKET	FOLDER	NO.

PROJECT NAME: HALEWAI'OLU SENIOR RESIDENCES
CAD DWG NO.: 3124-00_ESCP.dwg
DATE: JAN 15, 2020

Drawing name: P:\3124-00 Halewai'olu Snr Residences\3124-00 DWGS_4 Construction Plans\3124-00_ESCP.dwg Jan 15, 2020 - 10:05am

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1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 30 AUGUST 2019
SCALE:

SHEET TITLE:

ESCP & POST-CONSTRUCTION BMP PLANS

SHEET NO:

C005

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE. 307
H O N O L U L U
H A W A I I 9 6 8 1 3
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
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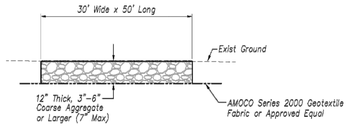
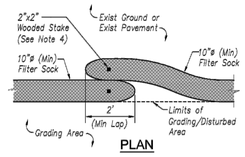
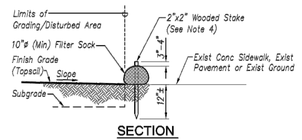


CONSTRUCTION ROAD INGRESS/EGRESS DETAIL

Not to Scale



PLAN

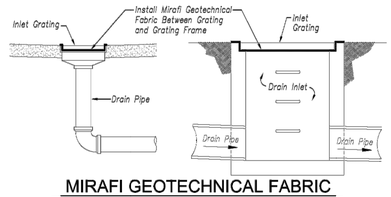


SECTION

NOTES:
1. When joining two sections of Filter Sock, a minimum of 2 feet should be made so that Filter Sock sit side by side.
2. Contractor shall remove any debris in path of Filter Sock to ensure good ground contact.
3. Compost shall not contain biosolids and should be consistent with EPA guidelines.
4. No staking of Filter Sock required when installed on existing sidewalks or on slopes less than 3H:1V. On slopes greated than 3H:1V, wooden stakes shall be installed at 10' on center minimum and at each end of Filter Sock.

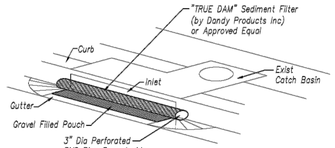
FILTER SOCK PLACEMENT DETAIL

Not to Scale



MIRAFI GEOTECHNICAL FABRIC PRIVATE DRAIN INLET DETAIL

Not to Scale



NOTE:
The contractor shall inspect all the catch basins and inlets in the vicinity of the trenching work and remove accumulated silt and debris. Flushing is prohibited.

SEDIMENT CONTROL FILTER AT CATCH BASIN

Not to Scale

EROSION PREVENTION/SEDIMENT CONTROL NOTES:

1. The Contractor shall follow the guidelines in the City and County of Honolulu's "Rules Relating to Water Quality".
2. Owner shall designate an ESCP Coordinator responsible for implementing the ESCP at the project site using form in Appendix A to the Rules Relating to Water Quality (downloaded from the DPP website) prior to issuance of any permits.
3. ESCP Coordinator shall provide to the DPP Director a project schedule of all planned actions and activities on this project at least two weeks prior to commencing of any work.
4. Measures to control erosion and other pollutants shall be in place before any earthwork is initiated.
5. Temporary Stabilization: Required on disturbed areas which are at final grade or when the disturbed area will not be worked for 14 consecutive days or more.
6. Permanent Stabilization: All disturbed areas shall be permanently stabilized using vegetative covering, pavement, or equivalent, prior to removing erosion and sediment measures. Trapped sediment and areas of disturbed soil which result from the removal of the temporary measures shall be immediately and permanently stabilized.
7. Minimize Soil Compaction: Areas where final stabilization or infiltration practices will be installed shall be protected from excessive compaction during construction. Vehicle and equipment use shall be restricted or techniques to condition the soils to support vegetation shall be implemented in the areas that have been compacted and are designated to remain vegetative or post-construction infiltration areas. Clearly mark the area to be avoided with flags or temporary fencing. Where temporary fencing is used, fencing must be adequately supported by posts and maintained in an upright position.
8. Perimeter Controls: Required downslope of all disturbed areas.
9. Inlet protection:
   A. All storm drain inlets onsite and those offsite which may receive runoff from the site shall use an inlet protection device unless they are directed to a sediment basin.
   B. Sediment levels may not exceed one third of the height of a sediment barrier or inlet protection device at any point along the length of the sediment barrier or the inlet protection device.
   C. Sediment barriers and inlet protection devices must be unclogged and cleaned when performance is compromised.
   D. Torn, weathered or sagging sediment barriers or inlet protection devices must be repaired or replaced immediately.
10. Tracking Control:
    A. Minimize sediment track-out onto off-site streets, other paved areas, and sidewalks from vehicles exiting the construction site by restricting vehicle traffic to properly designated areas and using additional controls to remove sediment from vehicle tires prior to exiting the site.
    B. Vehicular parking and movements on project sites must be confined to paved surfaces or predefined parking areas and vehicles paths, which shall be marked with flags or boundary fencing.
    C. All pollutants and materials that are dropped, washed, tracked, spilled, or otherwise discharged from a project site to off-site streets, other paved areas, sidewalks or the MS4 must be cleaned using dry methods such as sweeping or vacuuming.
    D. Washing pollutants and materials that are discharged from the project site to the MS4 into drain inlets or catch basins is prohibited unless the material is sediment and the inlets are directed to a sediment basin or sediment trap.
12. Best management practices (BMP's) shall not be removed until final stabilization is complete for that phase.
13. Refer to City and County of Honolulu Best Management Practices Manual – Construction, for more information on BMP's.
14. The following BMPs were determined to not be applicable based on the site specific conditions. A brief explanation of why each omitted BMP is unnecessary or impracticable has been provided under separate documentation to DPP. As construction progresses, revisions may be necessary and will be provided to DPP Inspectors.
    A. Velocity dissipation devices
    B. Diversion BMPs to divert runoff from upstream areas around disturbed areas of the site
    B. Sediment barriers
    C. Preservation of existing vegetation
    D. Vegetative buffers

EROSION AND SEDIMENT CONTROL PLAN SCHEDULE & RAIN RESPONSE PLAN:

Project Sequence:

Construction activities and implementation of BMP's shall be sequenced to minimize erosion and amount of sediment leaving the site. It is recommended that earth-disturbing activities be scheduled during the dry season. The following is the recommended sequence of operations in normal development and should be followed unless conditions make it impractical. If this is the case, a sequence that provides the most effective erosion control shall be developed.

1. Install stabilized construction entrances, perimeter controls (e.g. temporary filter sock, etc.), inlet protection and clearing and grubbing as necessary for the installation of these BMP's.
2. Clear and grub remainder of the site. When cleared and grubbed areas are not to be graded or disturbed for 14 days or more, seed, plant, or hydrosseed temporary vegetation or use other temporary stabilization methods, unless remaining vegetation provides adequate protection.
3. Relocate, reconstruct and maintain BMP's as needed to keep them effective at all times.
4. Install permanent drainage system with temporary inlet protection.
5. Grade the site as planned. Relocate, reconstruct and maintain BMP's as needed to keep them effective at all times. Initiate temporary stabilization immediately once grading is completed in each phase.
6. Plant or seed temporary vegetative cover or use other temporary stabilization methods as planned.
7. Install temporary or permanent irrigation system for areas in the item above. When a permanent irrigation system is planned, it should be installed prior to seeding.
8. Proceed with construction with least possible disturbance of vegetative areas and temporary structures.
9. Plant permanent ground cover according to the landscaping plans as soon as possible.
10. Remove or dismantle temporary erosion control structures after full establishment of permanent vegetative cover.
11. Practice good housekeeping measures throughout the duration of construction.
12. Inspections will be performed weekly.

Rain Response Plan:

1. The following will be performed when heavy rains, tropical storm or hurricane is imminent or is forecasted in the next 48 hours.
2. Temporary suspension of active grading and trenching.
3. Inspect perimeter controls, and inlet protection devices, and maintain as needed. Reinstall any perimeter controls that were removed due to active work in the area. If a severe storm is expected, remove inlet protection devices to prevent flooding on surrounding streets.
4. Cover or relocate material stockpiles and liquid material containers to avoid contact with rainwater.
5. Place spill pans or oil-only spill pads under construction vehicles to prevent runoff from contacting any spilled petroleum products. Properly dispose of any accumulated oily water after the rain event.
6. Re-inspect after the approaching heavy rains, tropical storm or hurricane and replace or maintain BMP's as needed.

GOOD HOUSEKEEPING BMP'S:

1. Maintenance: Regularly inspect and maintain required erosion and sediment controls to ensure continued performance of their intended function.
2. Dust Control: The contractor at his own expense shall keep the project area and surrounding area free from dust nuisance. The work shall be in conformance with the Hawaii Administrative rules: Title 11, Chapter 60, "Air Pollution Control". Measures may include but not be limited to the installation of dust screens, watering of the site and fill material being place.
3. Street Sweeping and Vacuuming: All pollutants discharged from construction site to off-site areas must be swept or vacuumed each day before leaving the job site.
4. Materials Delivery, Storage and Use Management: Prevent, reduce, or eliminate the discharge of pollutants from material delivery, storage, and use to the storm water system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, installing secondary containment. Construction materials, waste, toxic and hazardous substances, stockpiles and other sources of pollution shall not be stored in buffer areas, near areas of concentrated flow, or areas abutting the MS4, receiving waters, or drainage improvements that discharge off-site. Primary and secondary containment controls and covers shall be implemented to the maximum extent practicable.
5. Spill Prevention and Control: Create and implement spill prevention and response plans to eliminate and minimize the discharge of pollutants to the MS4 and receiving waters from leaks and spills by reducing the chance for spills, absorbing, containing, and cleaning up spills and properly disposing of spill materials. At a minimum, all projects shall cleanup all leaks and spills immediately.
6. Hazardous Materials: Prevent or reduce the discharge of pollutants to storm water from hazardous waste through proper material use and waste disposal. In the event that hazardous materials are discharged to the MS4, the property owner or ESCP coordinator shall immediately notify the City Department of Facilities Maintenance, Honolulu Fire Department, and Honolulu Police Department of the discharge by telephone. A written report describing the pollutants that were discharged, the reasons for the discharge, and the measures that have been taken or will be taken to prevent a reoccurrence of the discharge shall be submitted to the Director no less than 3 days after notification by phone.
7. Nonhazardous Materials: In the event that nonhazardous materials are discharged to the MS4, the property owner or ESCP coordinator shall notify the City Department of Facilities Maintenance by telephone no later than the next business day. A written report describing the pollutants that were discharged, the reasons for the discharge, and the measures that have been taken or will be taken to prevent a reoccurrence of the discharge shall be submitted to the Director no less than 3 days after notification by phone.
8. Vehicle and Equipment Cleaning: Eliminate and minimize the discharge of pollutants to storm water from vehicle and equipment cleaning operations by using offsite facilities when feasible, washing in designated, contained areas only, and eliminating discharges to the storm drain system by evaporating and/or treating wash water, as appropriate or infiltrating wash water for exterior cleaning activities that use water only.
9. Vehicle and Equipment Fueling: Prevent fuel spills and leaks by using off-site facilities, fueling only in designated areas, enclosing or covering stored fuel, and implementing spill controls such as secondary containment and active measures using spill response kits.
10. Vehicle and Equipment Maintenance: Eliminate and minimize the discharge of pollutants to storm water from vehicle and equipment maintenance operations by using off-site facilities when feasible, performing work in designated areas only, using spill pads under vehicles and equipment, checking for leaks and spills, and containing and cleaning up spills immediately.
11. Solid Waste Management: Prevent or reduce discharge of pollutants to the land, groundwater, and in storm water from solid waste or construction and demolition waste by providing designated waste collection areas, collect site trash daily, and ensuring that construction waste is collected, removed, and disposed of only at authorized disposal areas.
12. Sanitary/Septic Waste Management: Temporary and portable sanitary and septic waste systems shall be mounted or stoked in, well-maintained and scheduled for regular waste disposal and servicing. Sources of sanitary and/or septic waste shall not be stored near the MS4 or receiving waters.
13. Stockpile Management: Stockpile shall not be located in drainage ways, within 50 feet from areas of concentrated flows, and are not allowed in the City Right-Of-Way. Sediment barriers or silt fences shall be used around the base of all stockpiles to prevent storm water carrying contaminants into drainage systems and State waters. Stockpiles shall not exceed 15 feet in height. Stockpiles greater than 15 feet in height shall require a 8 foot wide benching in accordance with ROH Chapter 14, Article 15. Stockpiles must be covered with plastic sheeting or a comparable material if they will not be actively used within 7 days.
14. Liquid Waste Management: Liquid waste shall be contained in a controlled area such as a holding pit, sediment basin, roll-off bin, or portable tank of sufficient volume and to contain the liquid wastes generated. Containment areas or devices must be impermeable and leak free and should not be located where accidental release of the contained liquid can discharge to water bodies, channels, or storm drains.
15. Concrete Waste Management: Prevent or reduce discharge of pollutants to storm water from concrete waste by conducting washout offsite or performing onsite washout in a designated area constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations. Plastic lining material should be a minimum of 10 millimeter polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material. Containment areas or devices should not be located where accidental release of the contained liquid can discharge to water bodies, channels, or storm drains. Washout facilities must be cleaned, or new facilities must be constructed and ready for used once the washout is 75 percent full. Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of as solid wastes.
16. Contaminated Soil Management: At minimum contain contaminated soil material by surrounding with impermeable lined berms or cover exposed contaminated material with plastic sheeting. Contaminated soil should be disposed of properly in accordance with all applicable regulations.
17. Dewatering Operations: No dewatering of non-storm water can be discharged from the site without the Contractor obtaining prior notice to and approval from the DPP and the State Department of Health. Dewatering discharges shall be kept on-site using a sediment basin, sediment trap, weir tank, dewatering tank, filtration system or other manufactured system.

Gray · Hong · Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813
Telephone: (808) 521-0306
Fax: (808) 531-8018
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Exp: 4/30/20
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ISSUES	DATE
PERMIT SET	08/30/2019

⚠	REVISION LIST	DATE

NO.	DESCRIPTION	DATE	BY	APPROVED

ENGINEER: GF | CHECKED BY: SN
DRAWN BY: JG | PROJECT #: 3124-00

HALEWAI'OLU SENIOR RESIDENCES

(DPP CONSTRUCTION PLANS FILE NO 2019/CP-143)
TMK: 1-7-006: 012
HONOLULU, OAHU, HAWAII

EROSION & SEDIMENT CONTROL NOTES AND DETAILS

APPROVED BY:

CHIEF, CIVIL ENGINEERING BRANCH, D.P.P. DATE

C006

SHEET 6 OF 28 SHEETS

FILE	POCKET	FOLDER	NO.

PROJECT NAME: HALEWAI'OLU SENIOR RESIDENCES
CAD DWG NO.: 3124-00_ESCP.dwg
DATE: JAN 15, 2020

Drawing name: P:\3124-00 Halewai'olu Sr Residences\3124-00 DWGS_4 Construction Plans\3124-00_ESCP.dwg Jan 15, 2020 - 10:05am

HALEWAI'OLU SENIOR RESIDENCES
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 30 AUGUST 2019
SCALE:

SHEET TITLE:
EROSION & SEDIMENT CONTROL NOTES AND DETAILS

SHEET NO:
C006

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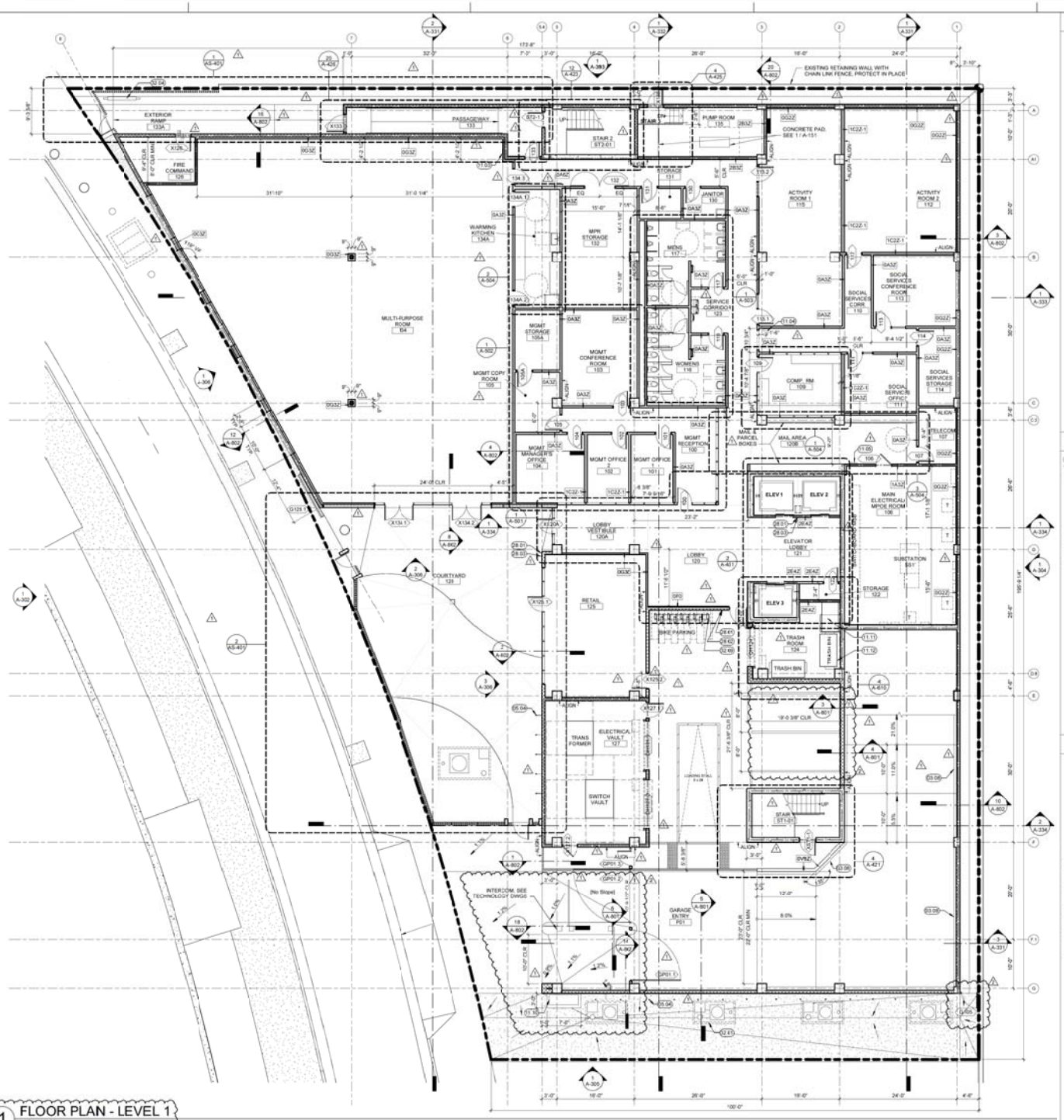

1 FLOOR PLAN - LEVEL 1
1/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. FOR ADA UNIT PLANS OPTIONS, SEE SHEETS A-405 & A-406.
3. FIRESTOPPING TO BE PROVIDED AT ALL THROUGH PENETRATIONS OF FIRE-RESISTANCE-RATED WALLS AND HORIZONTAL ASSEMBLIES. REFER TO SPECIFICATIONS FOR PENETRATION FIRESTOPPING SYSTEM REQUIREMENTS.

KEY NOTES

###	KEYNOTE
03.08	CONCRETE RAMP CURB
05.04	LANDSCAPE, VERTICAL VINE BRACKET CABLE
11.03	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, RECESSED
11.04	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, SURFACE-MOUNTED
11.05	LIFE SAFETY EQUIPMENT, AED CABINET, SEMI-RECESSED
11.10	FUEL PUMP AND ENCLOSURE ATOP CONCRETE SLAB, SPS
11.11	TRASH COMPACTOR
11.12	TRASH BIN BY OWNER, NIC
28.01	CARD READER, SEE TECHNOLOGY DWGS
28.02	INTERCOM, SEE TECHNOLOGY DWGS
28.03	CALL BOX, SEE TECHNOLOGY DWGS
32.01	FILTERRA WATER FILTRATION UNIT, SCD
32.04	BACKFLOW PREVENTER, SCD
32.09	BIKE RACK

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- NON-RATED PARTITION
- 0.5 HR FIRE RATED PARTITION
- 1 HR FIRE RATED PARTITION
- 1 HR FIRE RATED BARRIER
- 2 HR FIRE RATED PARTITION
- 2 HR FIRE RATED BARRIER
- 3 HR FIRE RATED BARRIER
- SMOKE PARTITION
- LINE ABOVE
- HIDDEN LINE
- A3A PARTITION TAG
- +1'-0" SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES. SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLNEK
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

SIGNATURE

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020
2	REVISION 2 - PERMIT RESPONSE	03/20/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:
FLOOR PLAN - LEVEL 1

SHEET NO:
A-111

3/20/2020 7:55:14 AM

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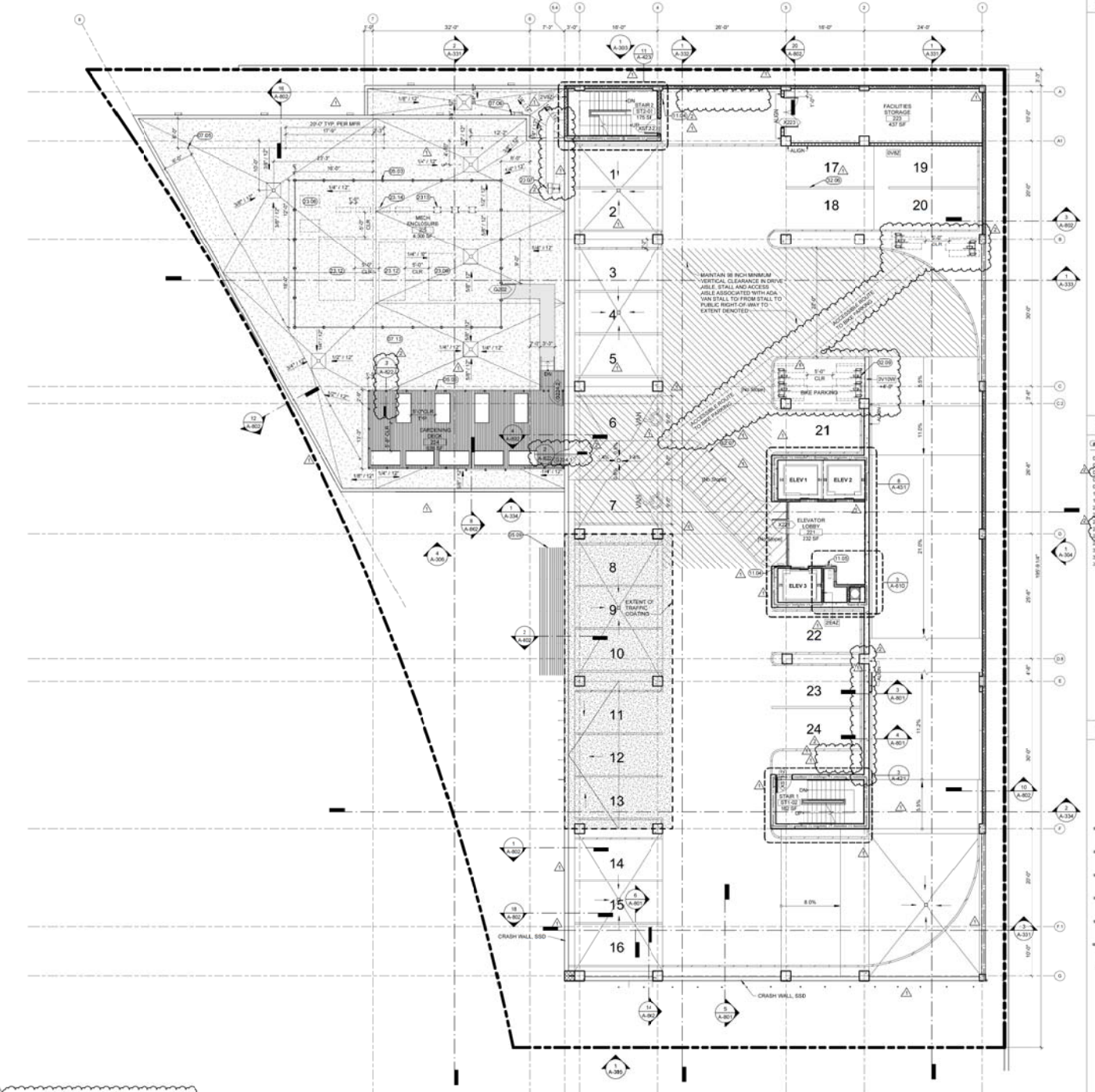

1 FLOOR PLAN - LEVEL 2
1/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. FOR ADA UNIT PLANS OPTIONS, SEE SHEETS A-405 & A-406.
3. FIRESTOPPING TO BE PROVIDED AT ALL THROUGH PENETRATIONS OF FIRE-RESISTANCE-RATED WALLS AND HORIZONTAL ASSEMBLIES. REFER TO SPECIFICATIONS FOR PENETRATION FIRESTOPPING SYSTEM REQUIREMENTS.

KEY NOTES

###	KEYNOTE
05.03	SCREEN OR GUARDRAIL, CHAINLINK WITH WOVEN PRIVACY SLATS
05.09	AWNING, 3/8" ANODIZED ALUMINUM PLATES
07.05	FALL ARREST ANCHOR WALL
07.06	FALL ARREST ANCHOR WALL
07.13	R1 - TPO ON METAL DECK
11.04	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, SURFACE-MOUNTED
11.05	LIFE SAFETY EQUIPMENT, AED CABINET, SEMI-RECESSED
23.06	DOAS, SMD
23.07	SPF FAN, SMD
23.08	ACCU, SMD
23.12	AHU, SMD
23.13	EXHAUST FAN, SMD
23.14	CONDITIONER UNIT, SMD
32.06	4" WIDE PARKING STRIPE
32.07	PARKING STRIPING AT ACCESSIBLE ROUTE
32.09	BIKE RACK

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SS3
- CMU WALL
- NON-RATED PARTITION
- 0.5 HR FIRE RATED PARTITION
- 1 HR FIRE RATED PARTITION
- 1 HR FIRE RATED BARRIER
- 2 HR FIRE RATED PARTITION
- 2 HR FIRE RATED BARRIER
- 3 HR FIRE RATED BARRIER
- SMOKE PARTITION
- LINE ABOVE
- HIDDEN LINE
- A3A PARTITION TAG
- +1'-0" SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED A3A CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLTAG
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

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ISSUES	DATE
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1	REVISION 1 - PERMIT RESPONSE	01/16/2020
2	REVISION 2 - PERMIT RESPONSE	03/20/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006.012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2020
SCALE: As indicated

SHEET TITLE:

FLOOR PLAN - LEVEL 2

SHEET NO:

A-112

3/20/2020 7:55:21 AM

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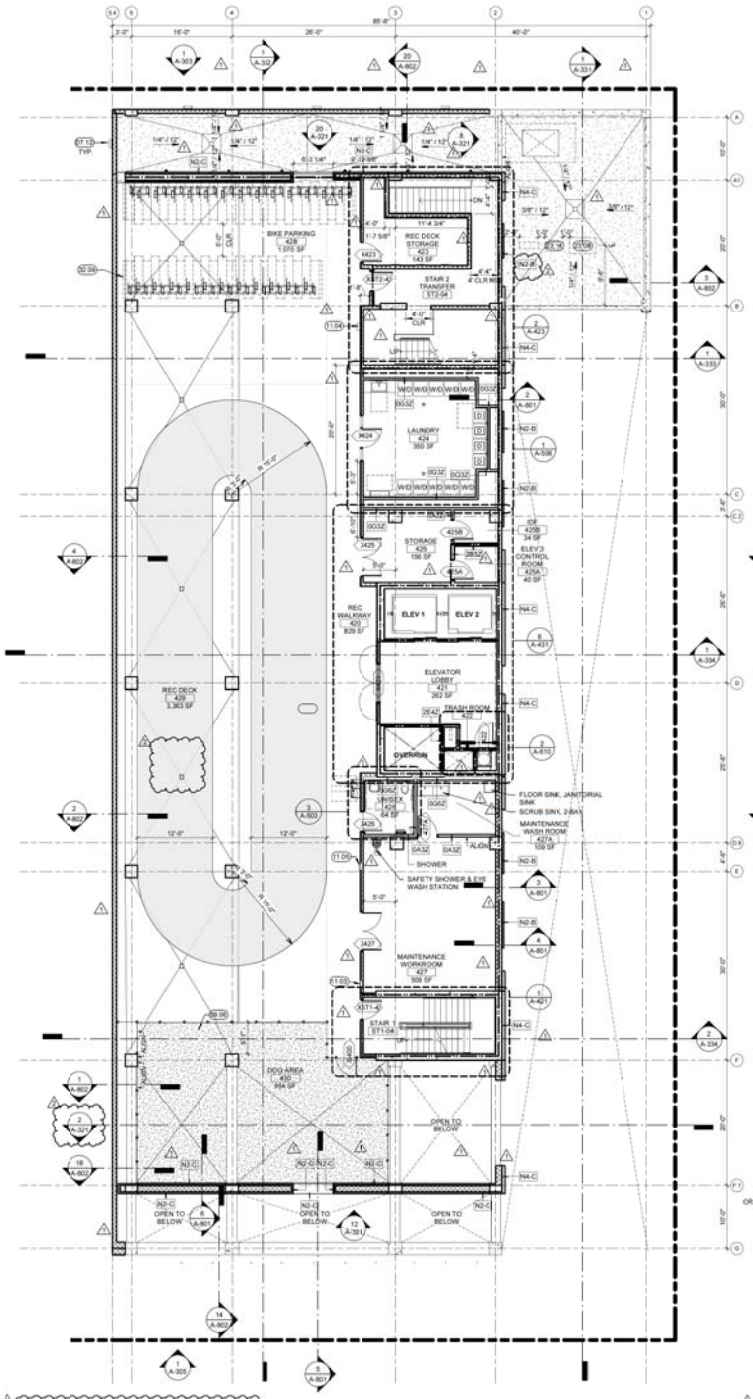
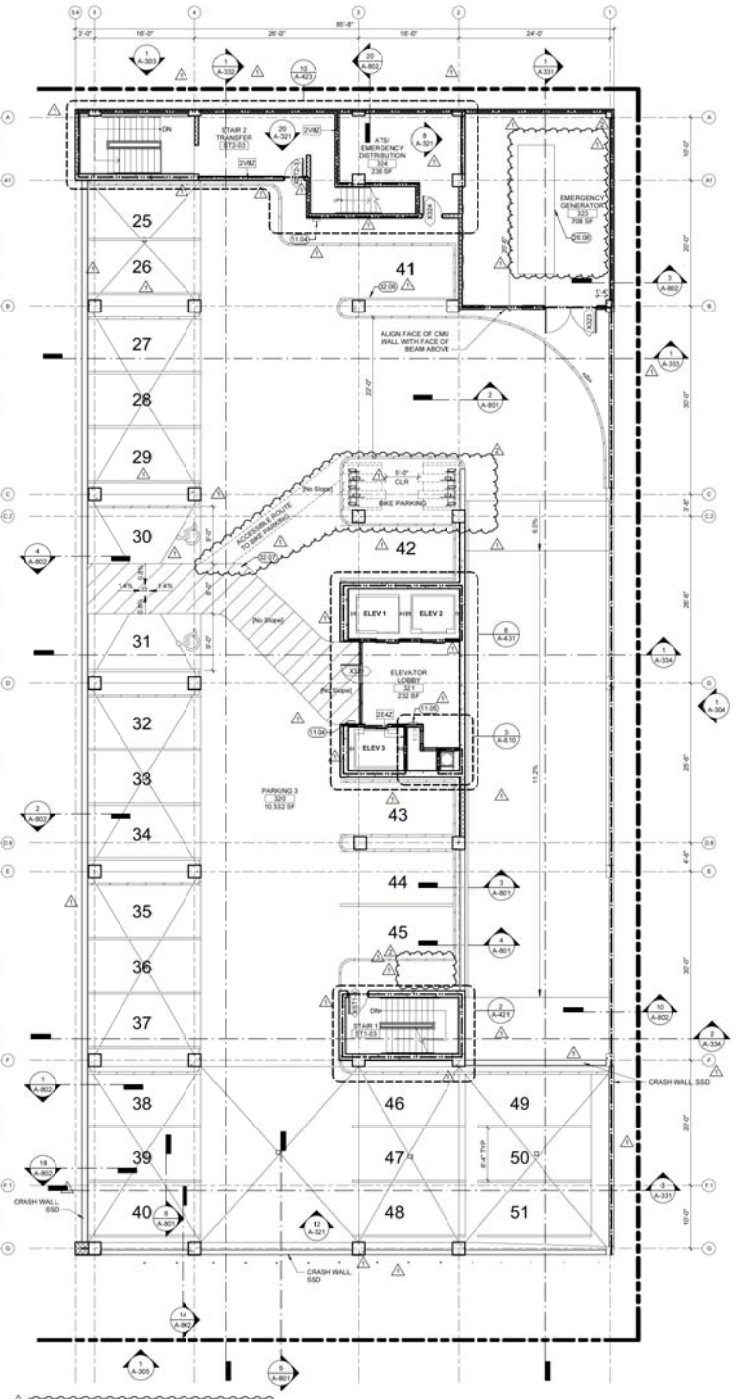


2 FLOOR PLAN - LEVEL 4
1/8" = 1'-0"



1 FLOOR PLAN - LEVEL 3
1/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. FOR ADA UNIT PLANS OPTIONS, SEE SHEETS A-405 & A-406.
3. FIRESTOPPING TO BE PROVIDED AT ALL THROUGH PENETRATIONS OF FIRE-RESISTANCE-RATED WALLS AND HORIZONTAL ASSEMBLIES. REFER TO SPECIFICATIONS FOR PENETRATION FIRESTOPPING SYSTEM REQUIREMENTS.

KEY NOTES

###	KEYNOTE
07.12	SCUPPER, THRU WALL
09.06	SYNTHETIC GRASS SURFACE
10.01	SAFETY SHOWER & EYE WASH STATION
10.02	SCRUB SINK, 2-BAY
10.03	FLOOR SINK, JANITORIAL SINK
11.03	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, RECESSED
11.04	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, SURFACE-MOUNTED
11.05	LIFE SAFETY EQUIPMENT, AED CABINET, SEMI-RECESSED
23.06	ACCU, SMD
23.14	CONDITIONER UNIT, SMD
26.08	EMERGENCY GENERATOR, SED
32.06	4" WIDE PARKING STRIPE
32.07	PARKING STRIPING AT ACCESSIBLE ROUTE
32.09	BIKE RACK

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSO
- CMU WALL
- NON-RATED PARTITION
- 0.5 HR FIRE RATED PARTITION
- 1 HR FIRE RATED PARTITION
- 1 HR FIRE RATED BARRIER
- 2 HR FIRE RATED PARTITION
- 2 HR FIRE RATED BARRIER
- 3 HR FIRE RATED BARRIER
- SMOKE PARTITION
- LINE ABOVE
- HIDDEN LINE
- A3A PARTITION TAG
- +1'-0" SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED A3A CLEARANCES, SEE SHEET A.701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

LICENSED PROFESSIONAL ARCHITECT
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HAWAII, U.S.A.

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PERMIT SET	09/30/2019

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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:
FLOOR PLAN - LEVELS 3 + 4

SHEET NO:
A-113

3/20/2020 7:55:33 AM

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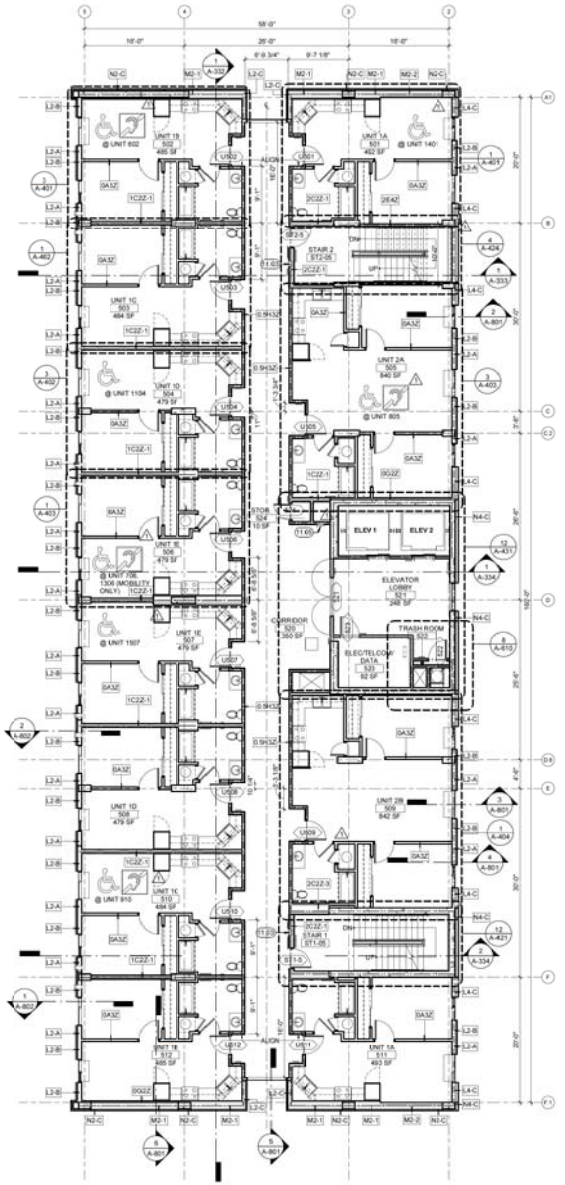

1 FLOOR PLAN - LEVEL 5 (TYPICAL)
1/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. FOR ADA UNIT PLANS OPTIONS, SEE SHEETS A-405 & A-406.
3. FIRESTOPPING TO BE PROVIDED AT ALL THROUGH PENETRATIONS OF FIRE-RESISTANCE-RATED WALLS AND HORIZONTAL ASSEMBLIES. REFER TO SPECIFICATIONS FOR PENETRATION FIRESTOPPING SYSTEM REQUIREMENTS.

KEY NOTES

###	KEYNOTE
11.03	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, RECESSED
11.05	LIFE SAFETY EQUIPMENT, AED CABINET, SEMI-RECESSED

LEGEND

- PROPERTY LINE
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- CMU WALL
- NON-RATED PARTITION
- 0.5 HR FIRE RATED PARTITION
- 1 HR FIRE RATED PARTITION
- 1 HR FIRE RATED BARRIER
- 2 HR FIRE RATED PARTITION
- 2 HR FIRE RATED BARRIER
- 3 HR FIRE RATED BARRIER
- SMOKE PARTITION
- LINE ABOVE
- HIDDEN LINE
- A3A PARTITION TAG
- +1'-0" SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES. SEE SHEET A701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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HAWAII 96813
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415 358 9100 FAX
www.wrnsstudio.com

ADAM G. WOLNEK
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No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2020

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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

FLOOR PLAN - LEVEL 5 (TYPICAL)

SHEET NO:

A-114

3/20/2020 7:55:40 AM

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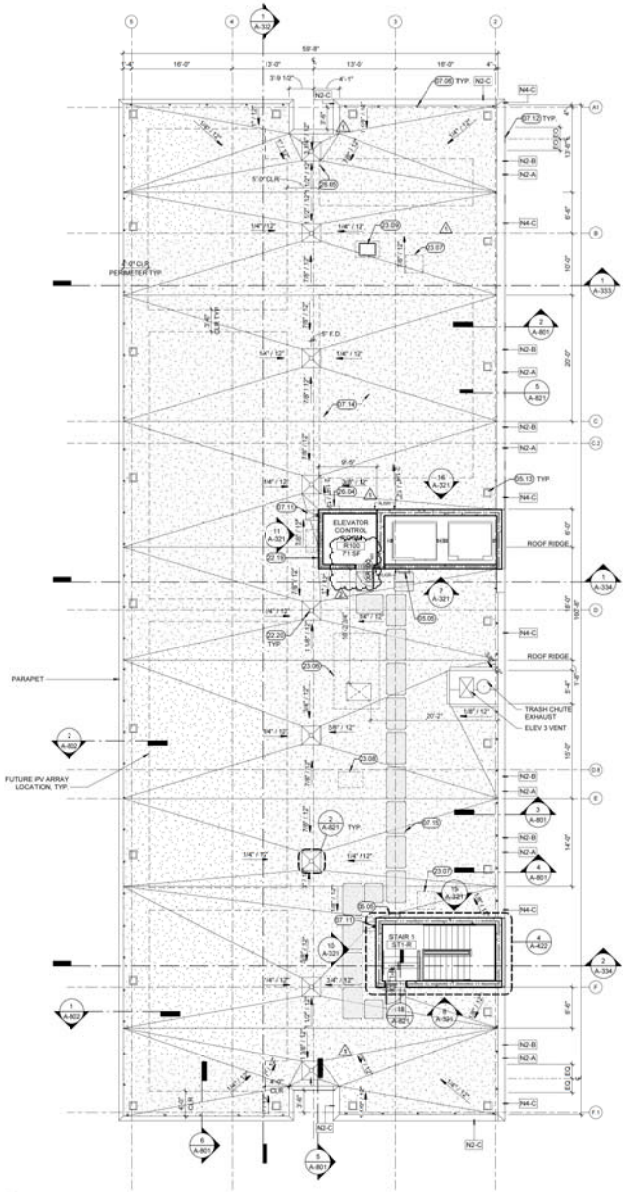
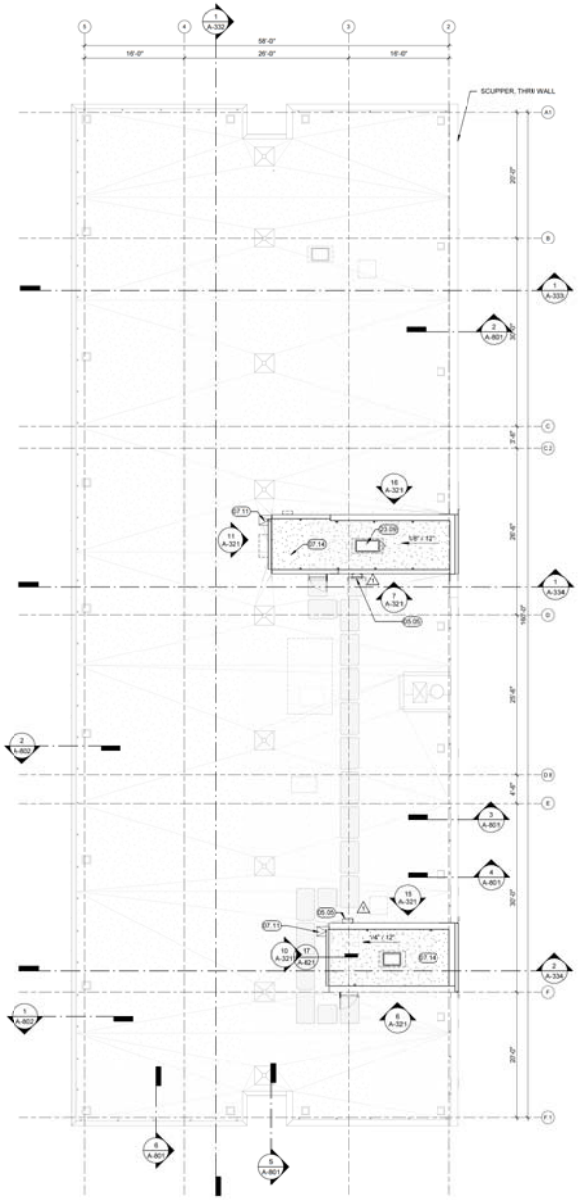


1 FLOOR PLAN - ROOF
1/8" = 1'-0"



2 FLOOR PLAN - PARAPET
1/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED
2. CENTER ROOF DRAINS WITHIN THEIR RESPECTIVE DRAINAGE AREA UNO.

KEY NOTES

###	KEYNOTE
05.05	LADDER, STEEL LADDER WITH WALK THRU
05.13	GALVANIZED STEEL, DAVIT PEDESTAL
07.06	FALL ARREST ANCHOR-WALL
07.11	DOWNSPOUT AND SPLASHBLOCK
07.12	SCUPPER, THRU WALL
07.14	R2 - TPO ON CONCRETE SLAB
07.15	ROOF WALKWAY PAD
22.19	HOSE BIB, SPD
22.20	ROOF DRAIN, SPD
23.06	DOAS, SMD
23.07	SPF FAN, SMD
23.08	ACCU, SMD
23.09	ROOF HOOD, SMD
26.04	ELECTRICAL PANEL, SED
26.05	JUNCTION BOX FOR OBSTRUCTION LIGHT, SED

LEGEND

- PROPERTY LINE
- CONCRETE SHEAR WALL
- CONCRETE CURB
- CONCRETE WALL BELOW
- +1'-0" SPOT ELEVATION

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3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
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EXPIRATION DATE: 04/30/2024

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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

FLOOR PLAN - LEVELS ROOF + PENTHOUSE

SHEET NO:

A-121

3/20/2020 7:55:46 AM

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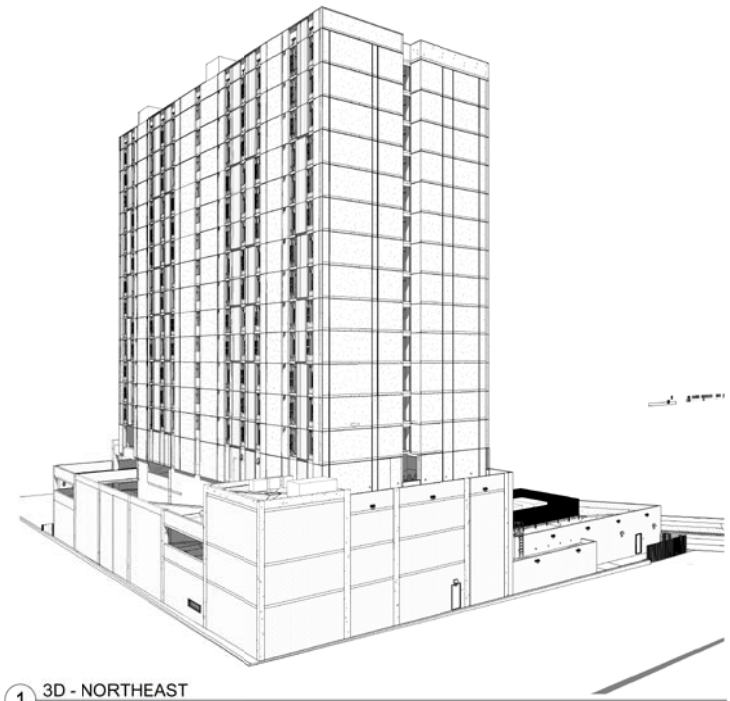
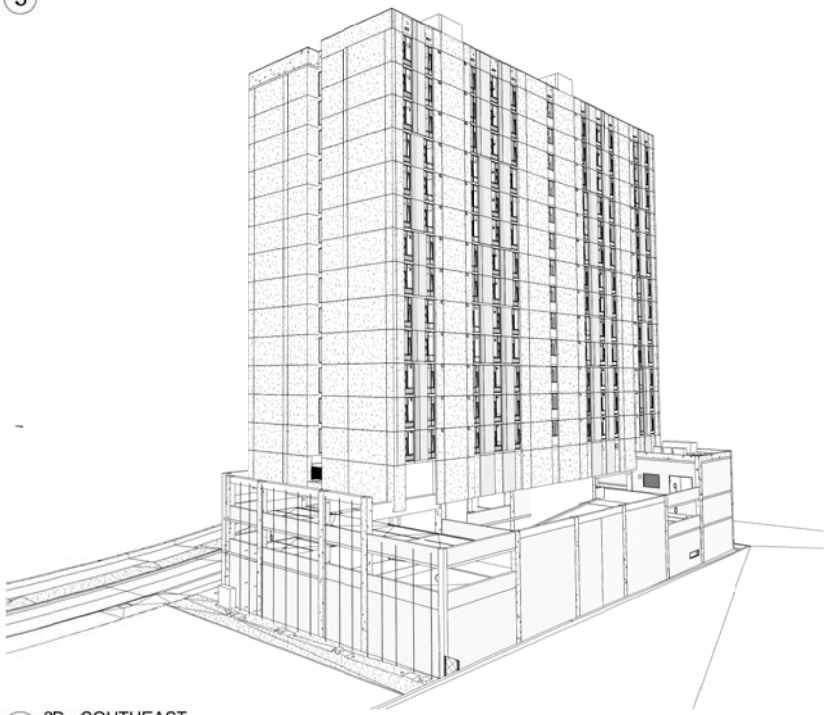
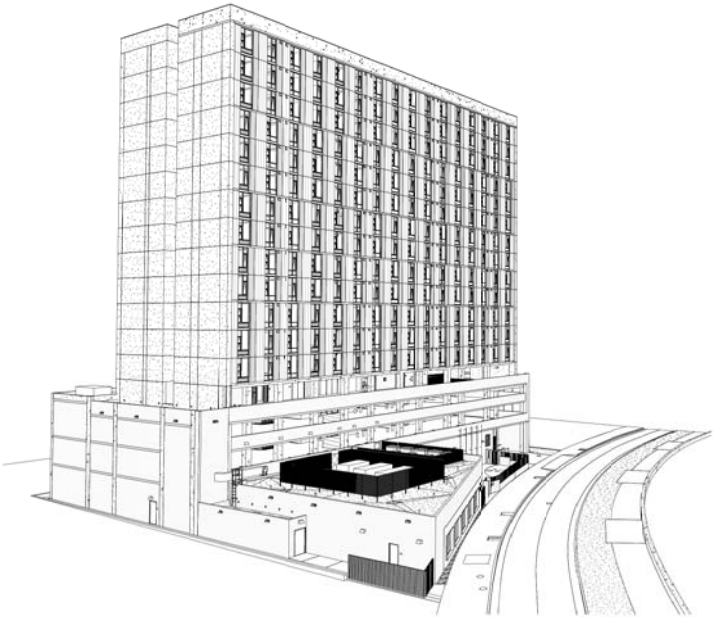
3 3D - SOUTHWEST



1 3D - NORTHEAST



4 3D - SOUTHEAST



2 3D - NORTHWEST

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE:

SHEET TITLE:

3D OVERALL VIEWS

SHEET NO:

A-301

3/20/2020 7:57:37 AM

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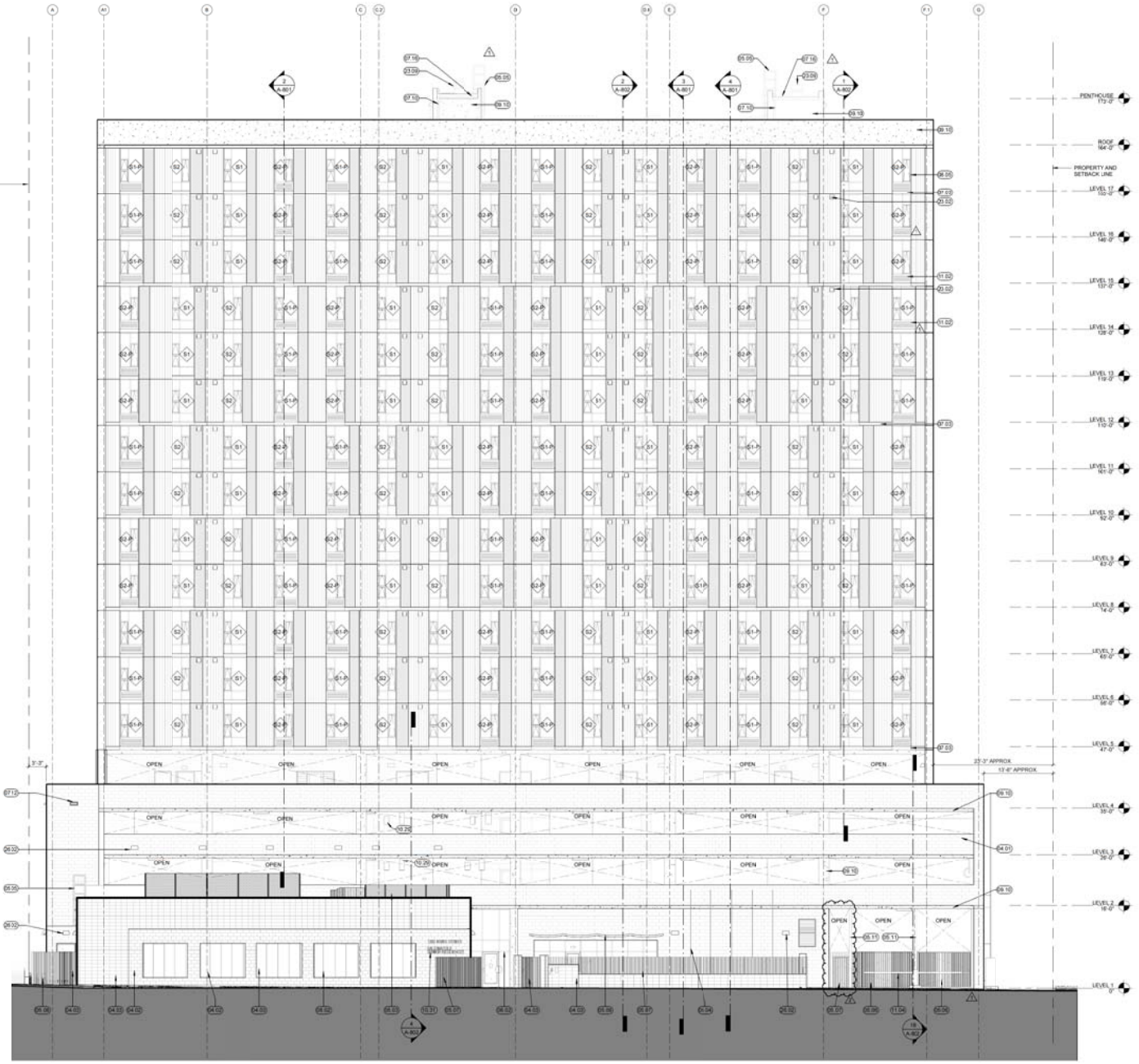

1 WEST ELEVATION
1/8" = 1'-0"

SHEET NOTES

1. ALL DIMENSIONS AND NOTES ARE TYPICAL UNLESS OTHERWISE NOTED.
2. SEE WALL SECTIONS FOR VERTICAL DIMENSIONS NOT SHOWN.
3. SEE FLOOR PLANS FOR DOOR TAGS, SIE DOOR SCHEDULES FOR DOOR AND FRAME FINISHES

KEY NOTES

###	KEYNOTE
04.01	UNIT MASONRY, STANDARD CONCRETE UNITS INTEGRAL COLOR
04.02	UNIT MASONRY, RUNNING BOND INTEGRAL COLOR, STANDARD FACE
04.03	UNIT MASONRY, STACK BOND INTEGRAL COLOR, STANDARD FACE
05.03	SCREEN OR GUARDRAIL, CHAINLINK WITH WOVEN PRIVACY SLATS
05.04	LANDSCAPE, VERTICAL VINE BRACKET CABLE
05.05	LADDER, STEEL LADDER W/TH WALK THRU
05.06	AUTO-GATE, HOT-DIPPED GALVANIZED DECORATIVE METAL GATE WITH KYNAR FINISH, SWING
05.07	GATE, HOT-DIPPED GALVANIZED DECORATIVE METAL GATE WITH KYNAR FINISH, SWING AND SLIDING
05.08	DECORATIVE METAL FENCE, VERTICAL ALUMINUM PICKETS
05.09	AWNING, 3/4" ANODIZED ALUMINUM PLATES
05.11	STEEL TUBE POST PAINTED
07.03	FLASHING-ALUMINUM
07.10	DOWNSPOUT
07.12	SCUPPER, THRU WALL
07.16	GUTTER
08.02	ALUMINUM STORE'RONT
08.05	ALUMINUM WINDOW
09.10	PAINTED CONCRE'TE
10.29	SIGNAGE, CEILING MOUNTED, SEE SIGNAGE SHEETS
10.31	SIGNAGE, METAL FIN LETTE RING, SEE SIGNAGE SHEETS
11.02	PTAC WINDOW UNIT, SEE EQUIPMENT SCHEDULE
11.04	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, SURFACE MOUNTED
23.02	VENT-THROUGH WALL, SMD
23.09	ROOF HOOD, SMD
26.02	WALL MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE

LEGEND

- GL-1: VISION GLASS
- GL-2: TEMPERED GLASS
- EIFS - TEXTURE TYPE F-A
- EIFS - TEXTURE TYPE F-B
- EIFS - TEXTURE TYPE F-C
- CONCRETE - CMU - RUNNING BOND
- CONCRETE - CMU - STACKED BOND
- CONCRETE - CAST IN PLACE

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3RD FLOOR, STE 307
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HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLNEY
LICENSED PROFESSIONAL ARCHITECT
No. 16327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

SIGNATURE

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020
2	REVISION 2 - PERMIT RESPONSE	03/20/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

BUILDING ELEVATIONS - WEST

SHEET NO:

A-302

3/20/2020 7:57:54 AM

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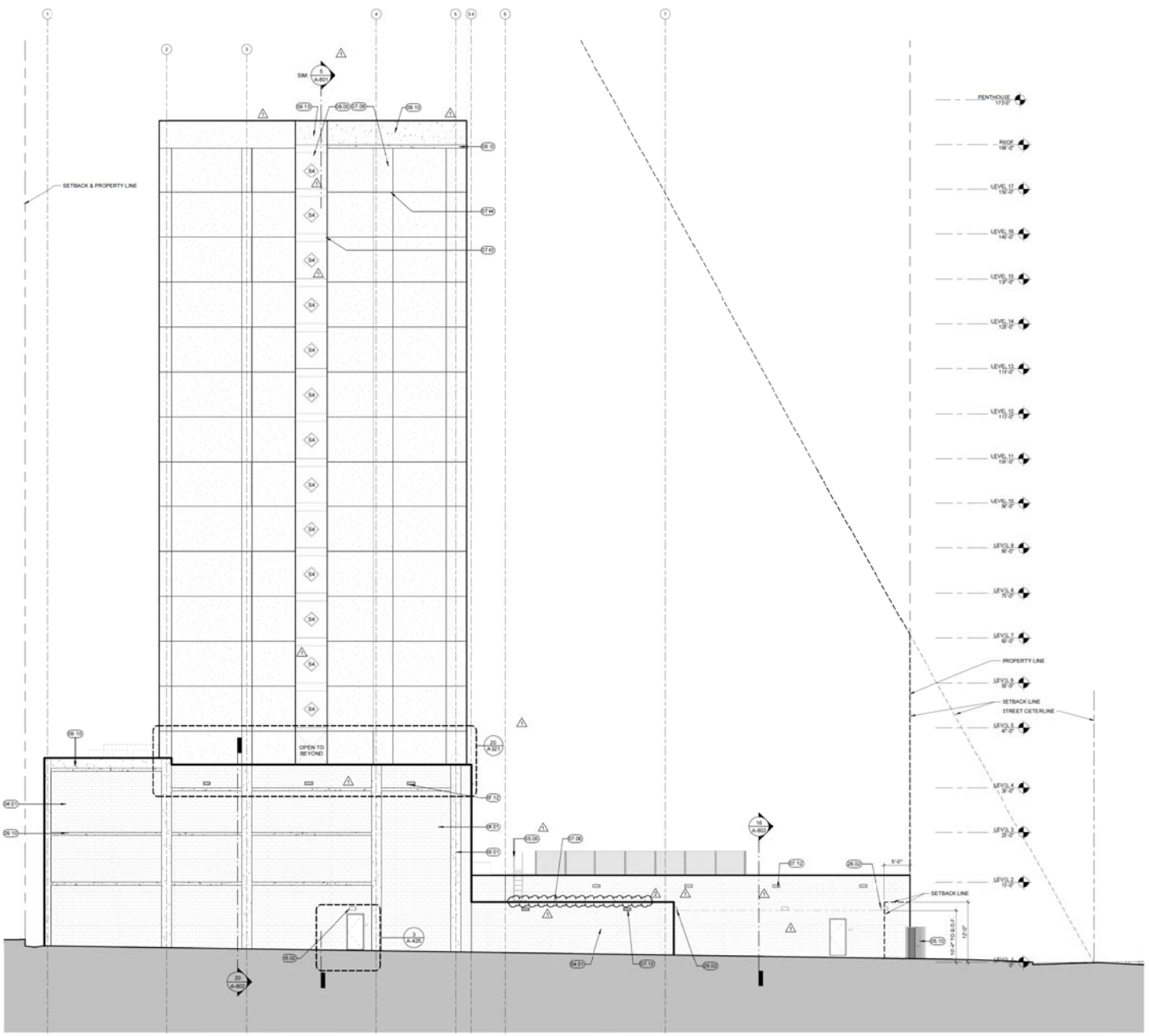

1 NORTH ELEVATION
1/8" = 1'-0"

SHEET NOTES

1. ALL DIMENSIONS AND NOTES ARE TYPICAL UNLESS OTHERWISE NOTED.
2. SEE WALL SECTIONS FOR VERTICAL DIMENSIONS NOT SHOWN.
3. SEE FLOOR PLANS FOR DOOR TAGS, SEE DOOR SCHEDULES FOR DOOR AND FRAME FINISHES

KEY NOTES

###	KEYNOTE
03.01	CAST IN PLACE CONCRETE STRUCTURE, FRAMEWORK
04.01	UNIT MASONRY, STANDARD CONCRETE UNITS INTEGRAL COLOR
05.05	LADDER, STEEL LADDER W/T/ WALK THRU
05.10	FENCE, HOT-DIPPED GALVANIZED DECORATIVE METAL WITH KYNAR FINISH
07.03	FLASHING-ALUMINUM
07.04	JOINT-DRAINAGE JOINT AT FLOOR LINE
07.06	FALL ARREST ANCHOR WALL
07.08	EXTERIOR INSULATION & FINISH SYSTEM, FACILITATE DRAINAGE
07.12	SCUPPER, THRU WALL
08.05	ALUMINUM WINDOW
09.10	PAINTED CONCRETE
26.02	WALL MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
32.04	BACKFLOW PREVENTER, SCD

LEGEND

- GL-1: VISION GLASS
- GL-2: TEMPERED GLASS
- EIFS - TEXTURE TYPE F-A
- EIFS - TEXTURE TYPE F-B
- EIFS - TEXTURE TYPE F-C
- CONCRETE - CMU - RUNNING BOND
- CONCRETE - CMU - STACKED BOND
- CONCRETE - CAST IN PLACE

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3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLNEK
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No. 18327
HAWAII, U.S.A.

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ISSUES	DATE
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PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

BUILDING ELEVATIONS - NORTH

SHEET NO: ⚠ A-303

3/20/2020 7:58:03 AM

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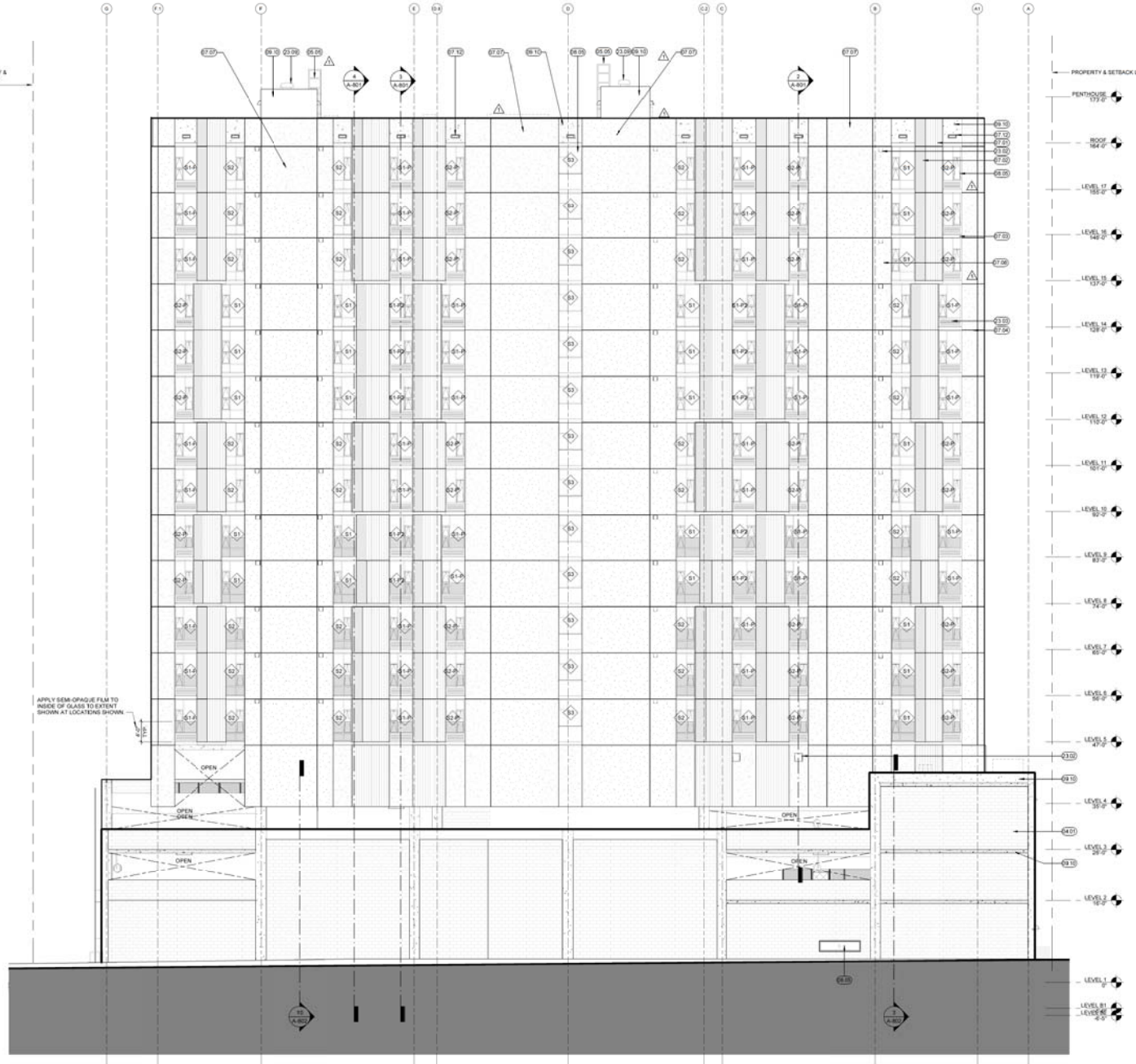

1 EAST ELEVATION
1/8" = 1'-0"

SHEET NOTES

1. ALL DIMENSIONS AND NOTES ARE TYPICAL UNLESS OTHERWISE NOTED.
2. SEE WALL SECTIONS FOR VERTICAL DIMENSIONS NOT SHOWN.
3. SEE FLOOR PLANS FOR DOOR TAGS, SIE DOOR SCHEDULES FOR DOOR AND FRAME FINISHES

KEY NOTES

###	KEYNOTE
04.01	UNIT MASONRY, STANDARD CONCRETE UNITS-INTEGRAL COLOR
05.05	LADDER, STEEL LADDER WITH WALK THRU
07.01	EIFS-PATTERN TYPE F-A, TYP
07.02	EIFS-PATTERN TYPE F-B, TYP
07.03	FLASHING-ALUMINUM
07.04	JOINT-DRAINAGE JOINT AT FLOOR LINE
07.07	EXTERIOR INSULATION & FINISH SYSTEM OVER CONCRETE WALL
07.08	EXTERIOR INSULATION & FINISH SYSTEM, FACILITATE DRAINAGE
07.12	SCUPPER, THRU WALL
08.05	ALUMINUM WINDOW
09.10	PAINTED CONCRETE
23.02	VENT-THROUGH WALL, SMD
23.03	LOUVER-STORM RESISTANT, SMD
23.09	ROOF HOOD, SMD

LEGEND

- GL-1: VISION GLASS
- GL-2: TEMPERED GLASS
- EIFS - TEXTURE TYPE F-A
- EIFS - TEXTURE TYPE F-B
- EIFS - TEXTURE TYPE F-C
- CONCRETE - CMU - RUNNING BOND
- CONCRETE - CMU - STACKED BOND
- CONCRETE - CAST IN PLACE

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLNEK
LICENSED PROFESSIONAL ARCHITECT
No. 16327
HAWAII, U.S.A.

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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

BUILDING ELEVATIONS - EAST

SHEET NO:

⚠ A-304

3/20/2020 7:58:25 AM

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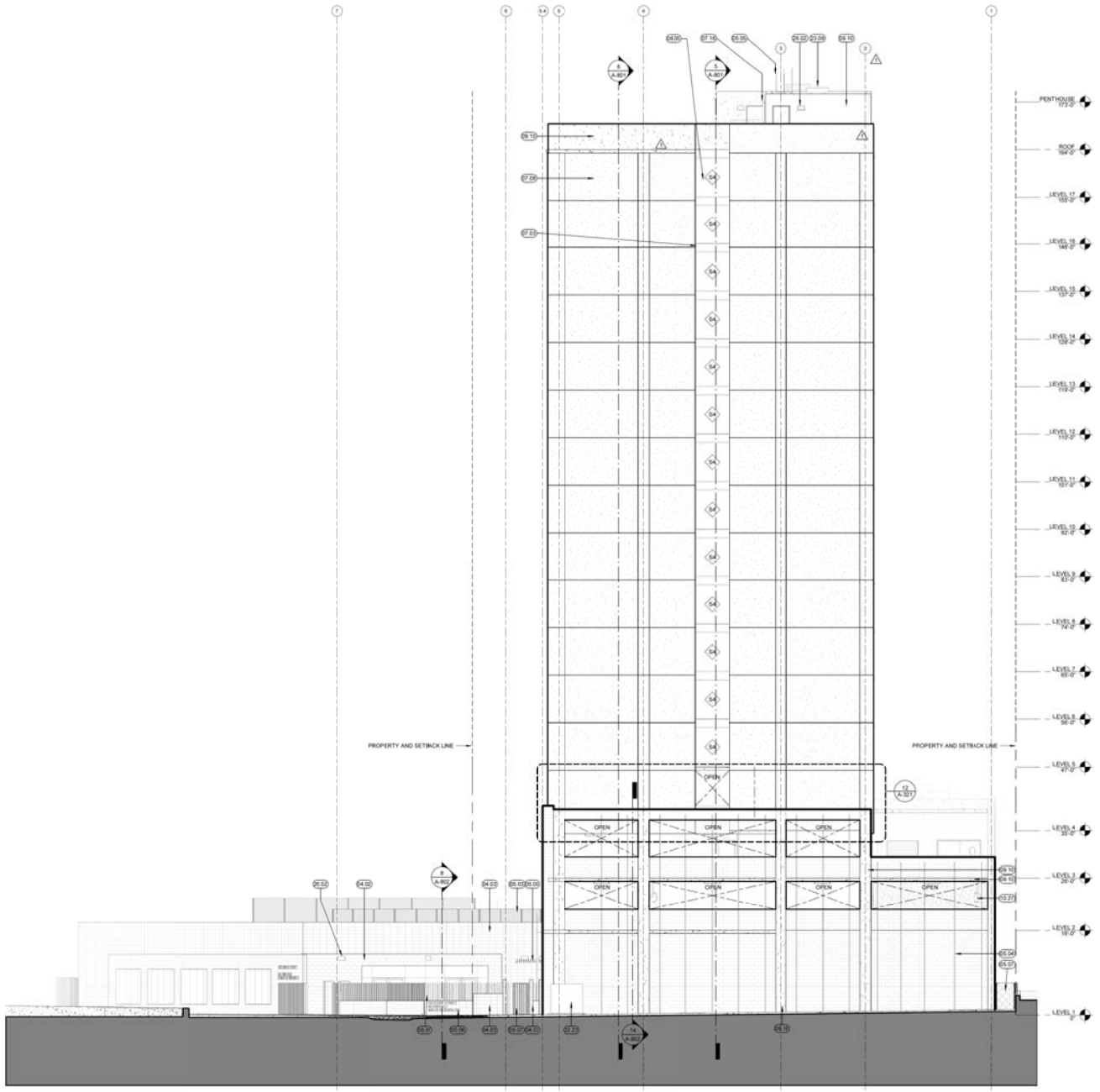
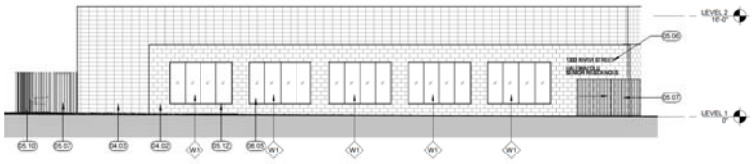
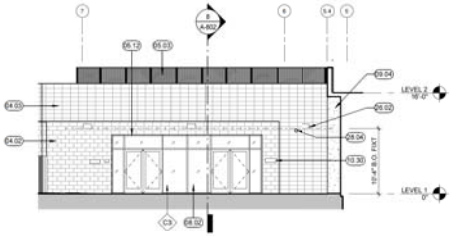
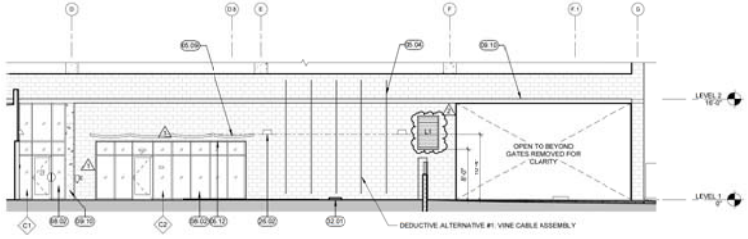

PENTHOUSE 172'-0"
ROOF 164'-0"
LEVEL 17 153'-0"
LEVEL 16 140'-0"
LEVEL 15 127'-0"
LEVEL 14 114'-0"
LEVEL 13 101'-0"
LEVEL 12 88'-0"
LEVEL 11 75'-0"
LEVEL 10 62'-0"
LEVEL 9 49'-0"
LEVEL 8 36'-0"
LEVEL 7 23'-0"
LEVEL 6 10'-0"
LEVEL 5 -3'-0"
LEVEL 4 -16'-0"
LEVEL 3 -29'-0"
LEVEL 2 -42'-0"
LEVEL 1 0"
PROPERTY AND SETBACK LINE
PROPERTY AND SETBACK LINE
OPEN
OPEN
OPEN



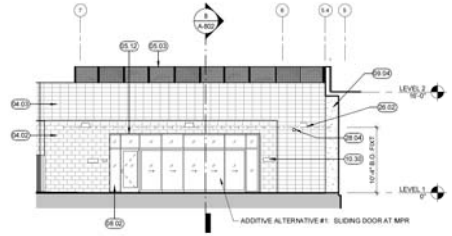
1 WEST ELEVATION - MPR
1/8" = 1'-0"



2 SOUTH ELEVATION - MPR
1/8" = 1'-0"



3 WEST ELEVATION - COURTYARD
1/8" = 1'-0"



4 SOUTH ELEVATION - MPR - DESIGN ALTERNATIVE
1/8" = 1'-0"

SHEET NOTES

1. ALL DIMENSIONS AND NOTES ARE TYPICAL UNLESS OTHERWISE NOTED
2. SEE WALL SECTIONS FOR VERTICAL DIMENSIONS NOT SHOWN
3. SEE FLOOR PLANS FOR DOOR TAGS, SIZE DOOR SCHEDULES FOR DOOR AND FRAME FINISHES

KEY NOTES

###	KEYNOTE
04.02	UNIT MASONRY, RUNNING BOND INTEGRAL COLOR, STANDARD FACE
04.03	UNIT MASONRY, STACK BOND INTEGRAL COLOR, STANDARD FACE
05.03	SCREEN OR GUARDRAIL, CHAINLINK WITH WOVEN PRIVACY SLATS
05.04	LANDSCAPE, VERTICAL VINE BRACKET CABLE
05.06	AUTO-GATE, HOT-DIPPED GALVANIZED DECORATIVE METAL GATE WITH KYNAR FINISH, SWING
05.07	GATE, HOT-DIPPED GALVANIZED DECORATIVE METAL GATE WITH KYNAR FINISH, SWING AND SLIDING
05.09	AWNING, 3/4" ANODIZED ALUMINUM PLATES
05.10	FENCE, HOT-DIPPED GALVANIZED DECORATIVE METAL WITH KYNAR FINISH
05.12	STEEL PLATE SURROUND AT OPENING, PAINTED
08.02	ALUMINUM STOREFRONT
08.05	ALUMINUM WINDOW
09.04	SKIM COAT FINISH, SEE EXTERIOR FINISH SCHEDULE
09.10	PAINTED CONCRETE
10.30	SIGNAGE, WALL MOUNTED, SEE SIGNAGE SHEETS
26.02	WALL MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
28.04	SECURITY CAMERA
32.01	FILTERRA WATER FILTRATION UNIT, SCD

LEGEND

- GL-1: VISION GLASS
- GL-2: TEMPERED GLASS
- EIFS - TEXTURE TYPE F-A
- EIFS - TEXTURE TYPE F-B
- EIFS - TEXTURE TYPE F-C
- CONCRETE - CMU - RUNNING BOND
- CONCRETE - CMU - STACKED BOND
- CONCRETE - CIP IN PLACE

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3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
www.wrnsstudio.com

ADAM G. WOLNY
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2020

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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

BUILDING ELEVATIONS - MPR

SHEET NO:

⚠ A-306

3/20/2020 7:58:46 AM

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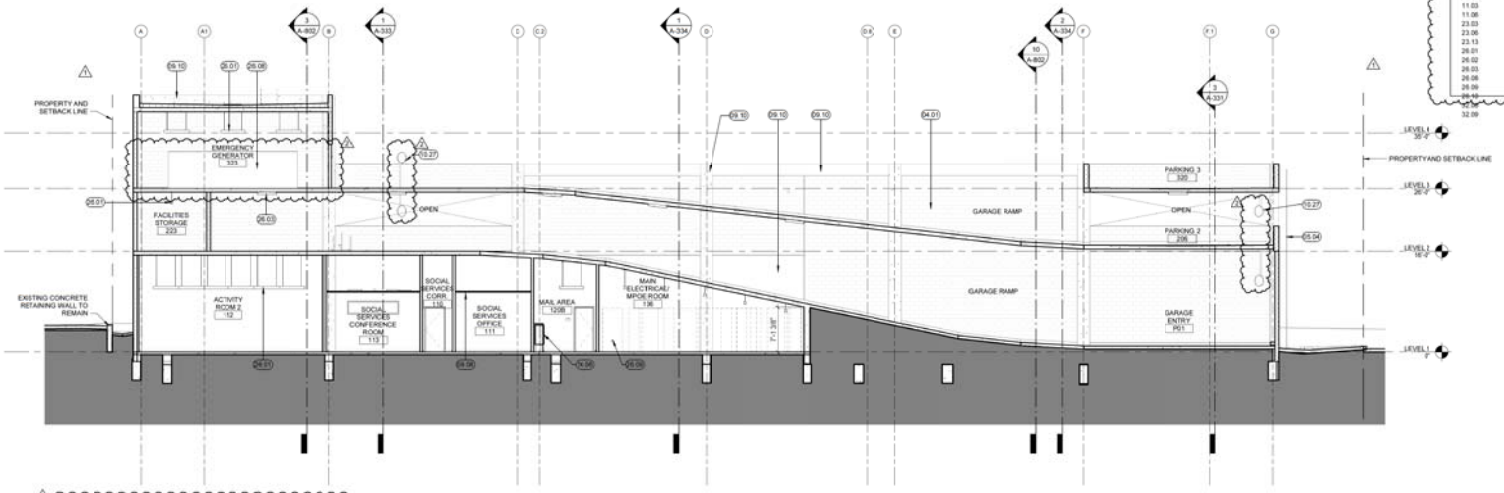
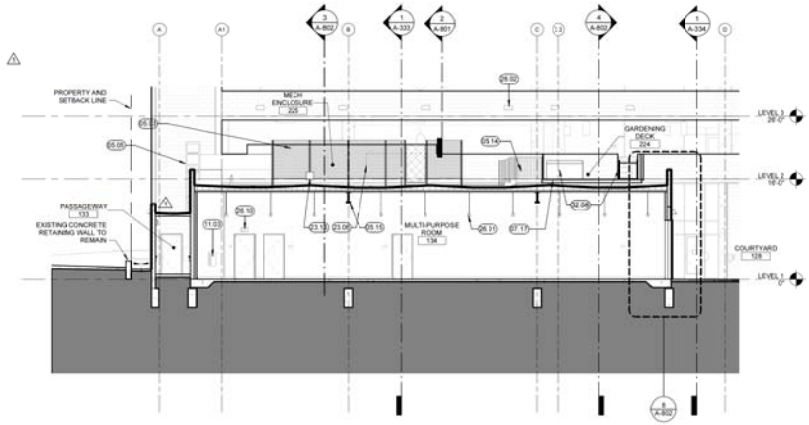
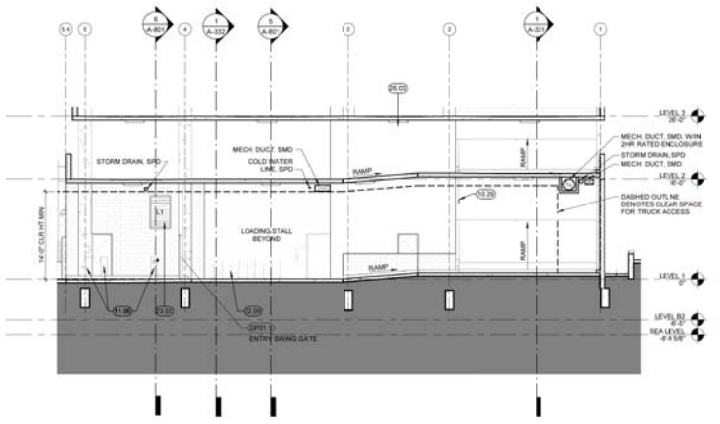


1 BUILDING SECTION - RAMP
1/8" = 1'-0"



2 BUILDING SECTION - MULTI-PURPOSE ROOM
1/8" = 1'-0"
SEE SHEET A-302 FOR ADDITIONAL INFORMATION



3 BUILDING SECTION - GARAGE ENTRY
1/8" = 1'-0"

KEYNOTE LEGEND

###	KEYNOTE
04.01	UNIT MASONRY, STANDARD CONCRETE UNITS INTEGRAL COLOR
05.03	SCREEN OR GUARDRAIL, CHAINLINK WITH WOVEN PRIVACY SLATS
05.04	LANDSCAPE, VERTICAL VINE BRACKET CABLE
05.05	LADDER, STEEL, LADDER WITH WALK THRU
05.14	GALVANIZED STEEL STAIR, LANDING, AND RAILING, PAINTED
05.15	STEEL BEAM WITH SPRAY APPLIED FIREPROOFING
07.17	ADJUSTABLE PEDESTALS, CONCRETE PAVERS
09.08	ACOUSTIC CEILING
09.10	PAINTED CONCRETE
10.06	MAILBOX SUITES, MAIL SLOTS & PARCEL LOCKERS
10.27	PARKING GARAGE MIRROR
10.29	SIGNAGE, CEILING MOUNTED, SEE SIGNAGE SHEETS
11.03	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, RECESSED
11.06	PARKING CONTROL EQUIPMENT, AUTOMATIC BARRIER GATES
23.03	LOUVER-STORM RESISTANT, SMD
23.06	DOAS, SMD
23.13	EXHAUST FAN, SMD
26.01	SUSPENDED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.02	WALL MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.03	CEILING MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.06	EMERGENCY GENERATOR, SED
26.09	ELECTRICAL EQUIPMENT, SED
26.10	EXIT SIGN, SED
32.08	BIKE RACK

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.358.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLNEK
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HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: 1/8" = 1'-0"

SHEET TITLE:
BUILDING SECTION - LONGITUDINAL

SHEET NO:
A-331

3/20/2020 7:59:41 AM

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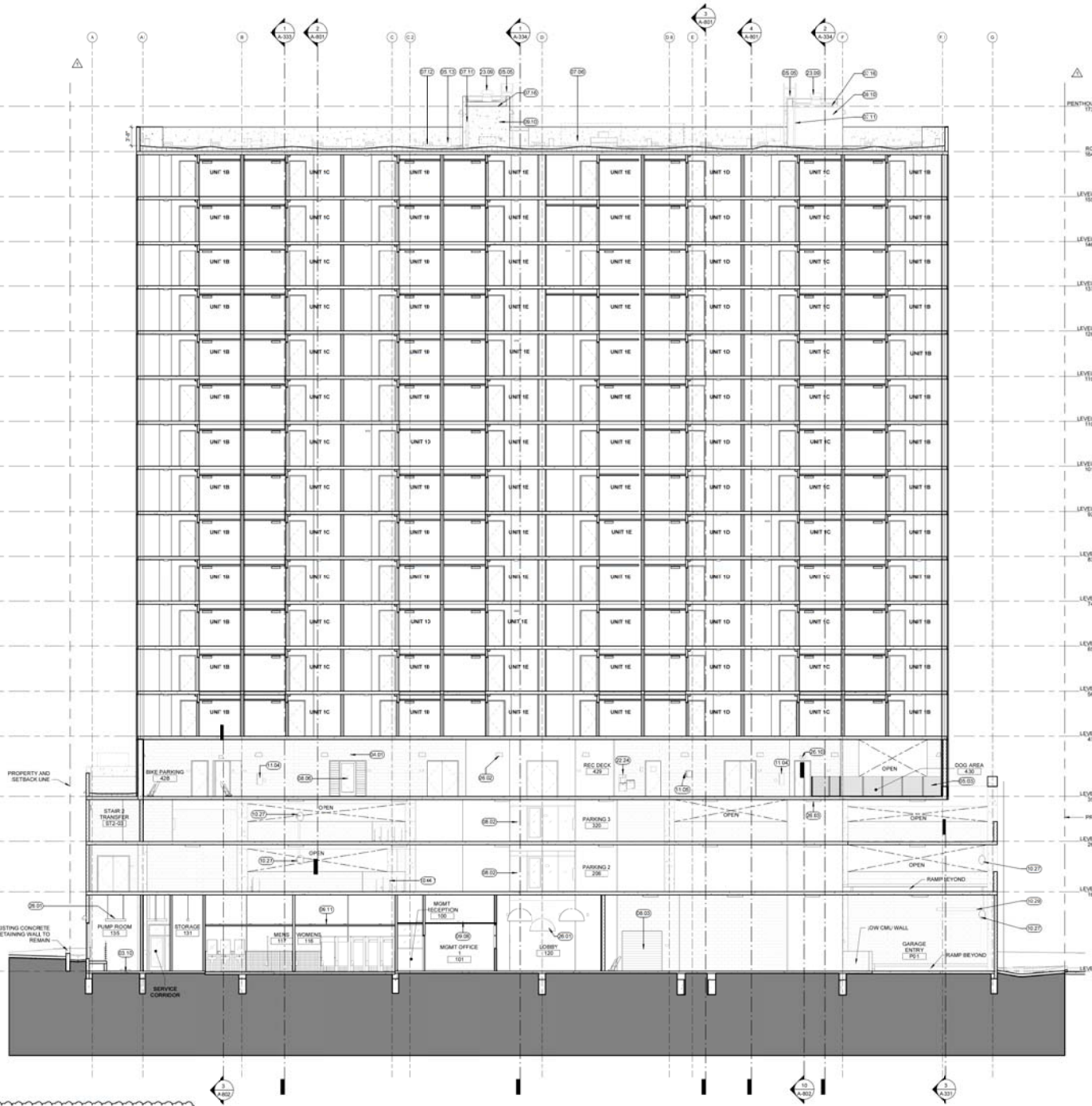

1 BUILDING SECTION - LOBBY
1/8" = 1'-0"

KEYNOTE LEGEND

###	KEYNOTE
03.10	CONCRETE RAISED PAD
04.01	UNIT MASONRY*, STANDARD CONCRETE UNITS INTEGRAL COLOR
05.03	SCREEN OR GBARDRAIL, CHAINLINK WITH WOVEN PRIVACY SLATS
05.05	LADDER, STEE, LADDER WITH WALK THRU
05.13	GALVINIZED STEEL, DAVIT PEDESTAL
07.06	FALL ARREST ANCHOR-WALL
07.11	DOWNSPOUT AND SPLASHBLOCK
07.12	SCUPPER, THRU WALL
07.16	GUTTER
08.02	ALUMINUM STOREFRONT
08.03	DOOR, OVERHEAD COILING
08.06	ALUMINUM GLASS DOOR WITH JALOUSIE LOUVER SIDELIGHTS
09.08	ACOUSTIC CEILING
09.10	PAINTED CONCRETE
09.11	GYPSUM SUSPENDED CEILING
10.04.1	BIKE PARKING RACK, HIGH DENSITY OFFSET, FLOOR MOUNTED, TYP.
10.27	PARKING GARAGE MIRROR
10.28	SIGNAGE, CEILING MOUNTED, SEE SIGNAGE SHEETS
11.04	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, SURFACE-MOUNTED
11.05	LIFE SAFETY EQUIPMENT, AED CABINET, SEMI-RECESSED
22.24	DUAL HEIGHT DRINKIG FOUNTAIN, BOTTLE FILLER
23.05	ROOF HOOD, BMD
26.01	SUSPENDED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.02	WALL MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.03	CEILING MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.10	EXIT SIGN, SEE

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3RD FLOOR, STE 307
HONOLULU
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808 358 5880 TEL
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HALEWAI'OLU SENIOR RESIDENCES

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TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: 1/8" = 1'-0"

SHEET TITLE:

BUILDING SECTION - LONGITUDINAL

SHEET NO:

A-332

3/20/2020 7:59:53 AM

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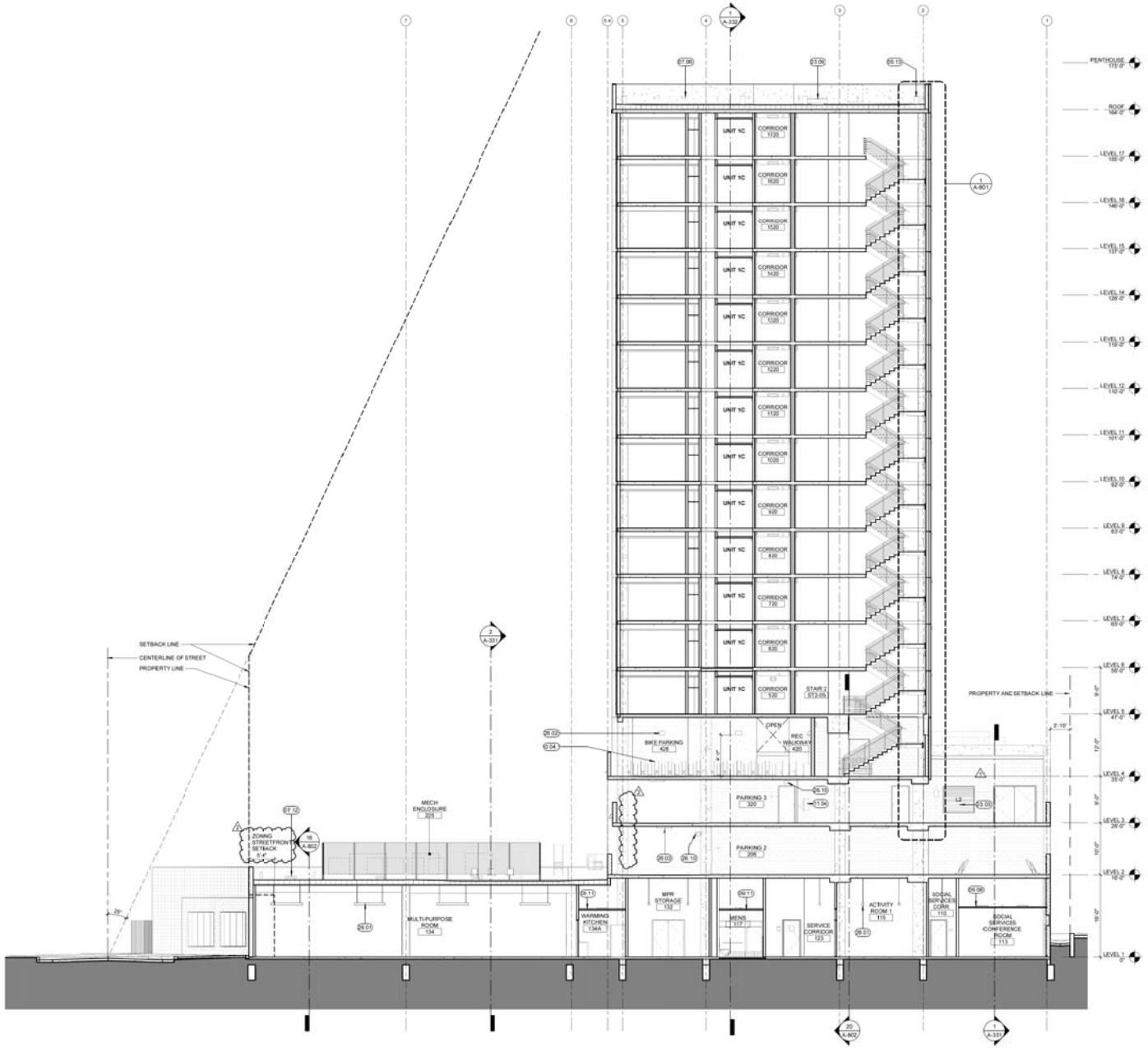

1 BUILDING SECTION CROSS STAIR 2 @ TOWER
1/8" = 1'-0"

KEYNOTE LEGEND

###	KEYNOTE
05.05	LADDER, STEEL; LADDER WITH WALK THRU
05.13	GALVINIZED STEEL, DAVIT PEDESTAL
07.06	FALL ARREST ANCHOR-WALL
07.12	SCUPPER, THRU WALL
09.08	ACOUSTIC CEILING
09.11	GYPSUM SUSPENDED CEILING
10.04.1	BIKE PARKING RACK, HIGH DENSITY OFFSET, FLOOR MOUNTED, TYP.
11.04	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, SURFACE-MOUNTED
23.03	LOUVER-STORM RESISTANT, SMD
23.09	ROOF HOOD, SMD
26.01	SUSPENDED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.02	WALL MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.03	CEILING MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
26.10	EXIT SIGN, SED

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
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LICENSED PROFESSIONAL ARCHITECT No. 18327 HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020
2	REVISION 2 - PERMIT RESPONSE	03/20/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: 1/8" = 1'-0"

SHEET TITLE:
BUILDING SECTION - CROSS

SHEET NO:
A-333

3/20/2020 8:00:01 AM

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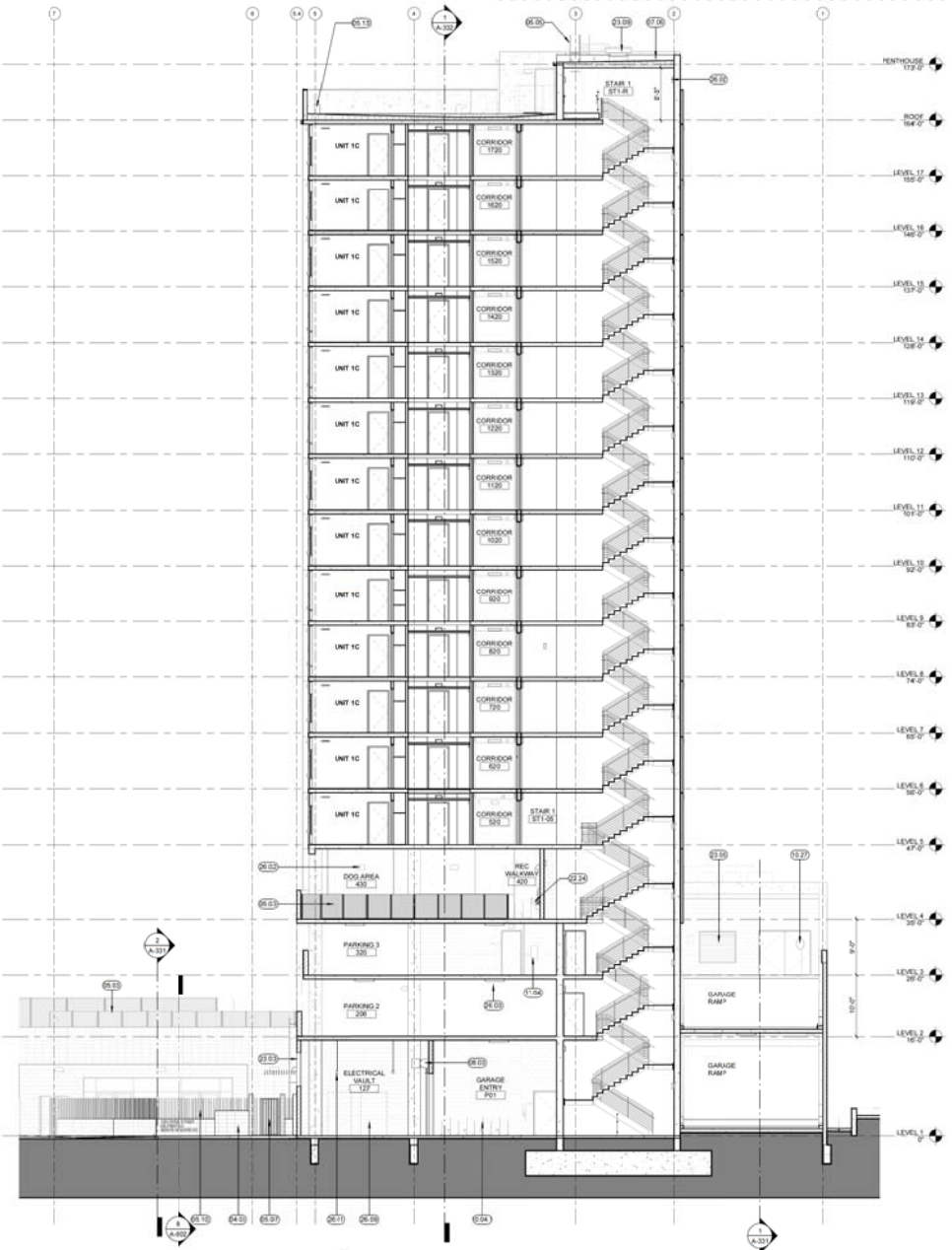
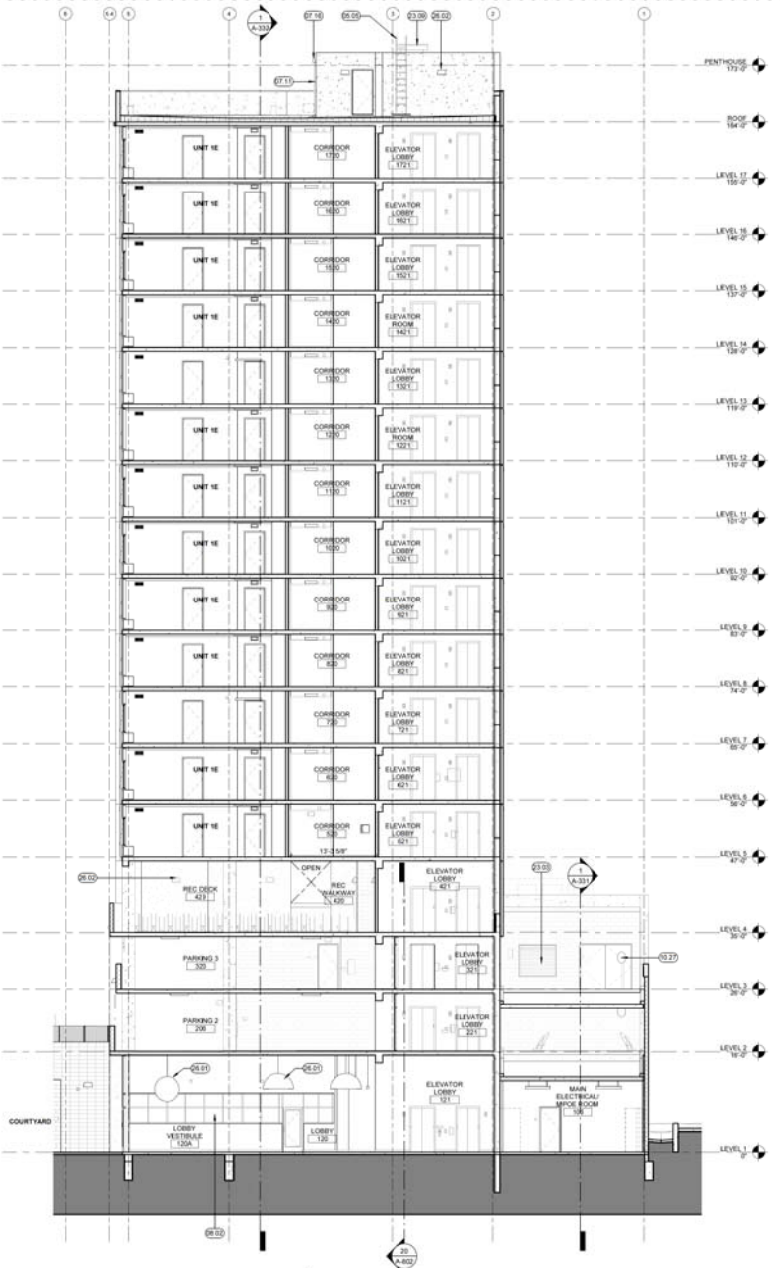
KEYNOTE LEGEND

###	KEYNOTE	###	KEYNOTE	###	KEYNOTE	###	KEYNOTE
04.03	UNIT MASONRY, STACK BOND INTEGRAL COLOR, STANDARD FACE	07.06	FALL ARREST ANCHOR WALL	10.27	PARKING GARAGE MIRROR	26.02	WALL MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
05.03	SCREEN OR GUARDRAIL, CHAINLINK WITH WOVEN PRIVACY SLATS	07.11	DOWNSPOUT AND SPLASHBLOCK	11.04	LIFE SAFETY EQUIPMENT, FIRE EXTINGUISHER CABINET, SURFACE MOUNTED	26.03	CEILING MOUNTED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE
05.05	LADDER, STEEL LADDER WITH WALK THRU	07.16	GUTTER			26.09	ELECTRICAL EQUIPMENT, SEE
05.07	GATE, HOT-DIPPED GALVANIZED DECORATIVE METAL GATE WITH KYNAR FINISH, SWING AND SLIDING	08.02	ALUMINUM STOREFRONT	22.24	DUAL HEIGHT DRINKING FOUNTAIN, BOTTLE FILLER		
05.10	FENCE, HOT-DIPPED GALVANIZED DECORATIVE METAL WITH KYNAR FINISH	08.03	DOOR, OVERHEAD COILING	23.03	LOUVER-STORM RESISTANT, SMD		
05.13	GALVINIZED STEEL, DAVIT PEDESTAL	10.04.1	BIKE PARKING RACK, HIGH DENSITY OFFSET, FLOOR MOUNTED, TYP.	23.09	ROOF HOOD, SMD		
				26.01	SUSPENDED LIGHTING FIXTURE, SEE LIGHTING SCHEDULE		



2 BUILDING SECTION - CROSS STAIR 1
1/8" = 1'-0"



1 ELEVATOR LOBBY SECTION 2
1/8" = 1'-0"

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3/20/2020 8:00:17 AM

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808 356 5860 TEL
415 358 9100 FAX
WWW.WRNSSTUDIO.COM

LICENSED PROFESSIONAL ARCHITECT No. 16327 HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

SIGNATURE

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

	REVISION LIST	DATE
2	REVISION 2 - PERMIT RESPONSE	03/20/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2320
SCALE: 1/8" = 1'-0"

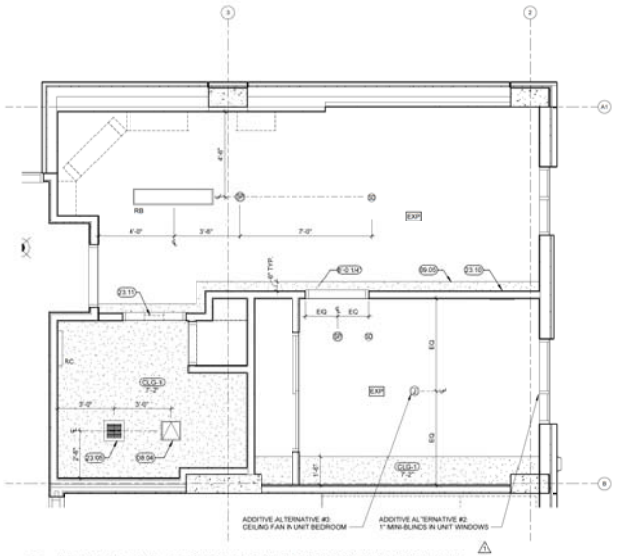
SHEET TITLE:

BUILDING SECTION - CROSS

SHEET NO:

A-334

UNIT 1A



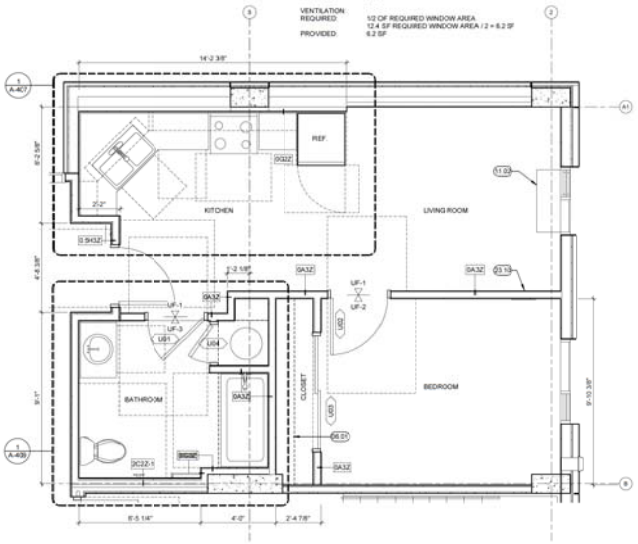
2 UNIT 1A ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"

NATURAL LIGHT AND VENTILATION ONE BED UNIT BEDROOM (R3H CH 27-4.4)

FOR ACCESSIBLE PLAN OPTION SEE 1 / A-405

NATURAL LIGHT:
REQUIRED: 1/10TH OF FLOOR AREA OR 10 SF MINIMUM
124 SF / 10 = 12.4 SF
PROVIDED: 26 SF

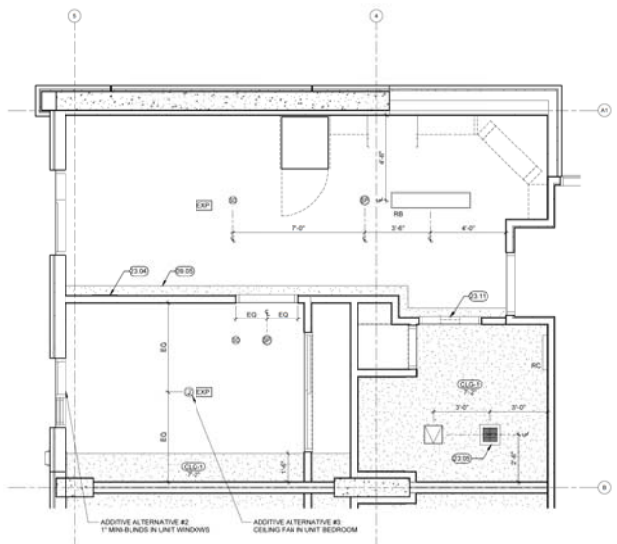
VENTILATION:
REQUIRED: 1/2 OF REQUIRED WINDOW AREA
12.4 SF REQUIRED WINDOW AREA / 2 = 6.2 SF
PROVIDED: 6.2 SF



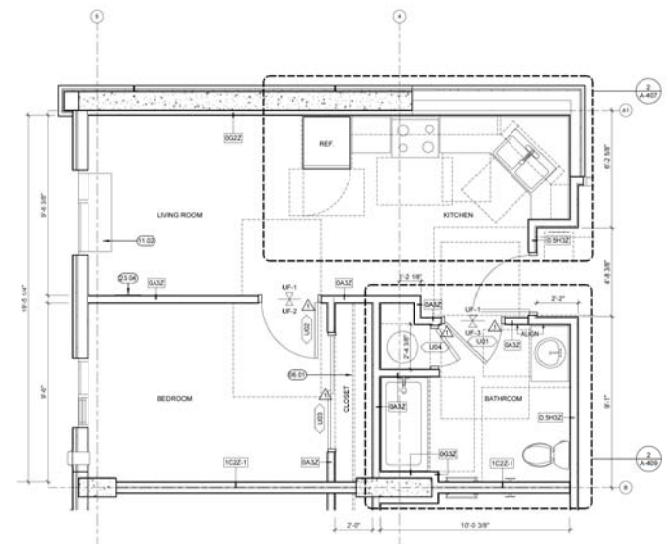
1 UNIT 1A ENLARGED PLAN
3/8" = 1'-0"

UNIT 1B

FOR ACCESSIBLE PLAN OPTION SEE 2 / A-405



4 UNIT 1B ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



3 UNIT 1B ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-405 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES, GRAB BARS AND TOILET ACCESSORIES.
3. SEE A-405 AND A-406 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-402 AND A-405 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-405 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/DEVICES AS REQUIRED.
7. CONTRACTOR TO PROVIDE AND INSTALL 16 GA. FLAT STRAP BACKING FOR GRAB BAR INSTALLATION AT ALL DWELLING UNITS. SEE INTERIOR ELEVATIONS AND SPECIFICATIONS.

KEY NOTES

###	KEYNOTE
06.01	INTERIOR ARCHITECTURAL WOODWORK, CLOSET & UTILITY SHELVING
08.04	ACCESS PANEL, COORDINATE LOCATION WITH PLUMBING DRAWINGS
09.05	GYPSUM BOARD SOFFIT ENCLOSING FIRE SPRINKLER LINE, SFPD
11.02	PTAC WINDOW UNIT, SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.10	TRANSFER FAN, SMD
23.11	EXHAUST FAN LOUVER, SMD

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1 HR RATED PARTITION
- 2 HR RATED PARTITION
- 3 HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- PARTITION TAG
- SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLNEK
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

ENLARGED PLANS AND REFLECTED CEILING PLANS - UNITS

SHEET NO:

A-401

3/20/2020 8:00:27 AM

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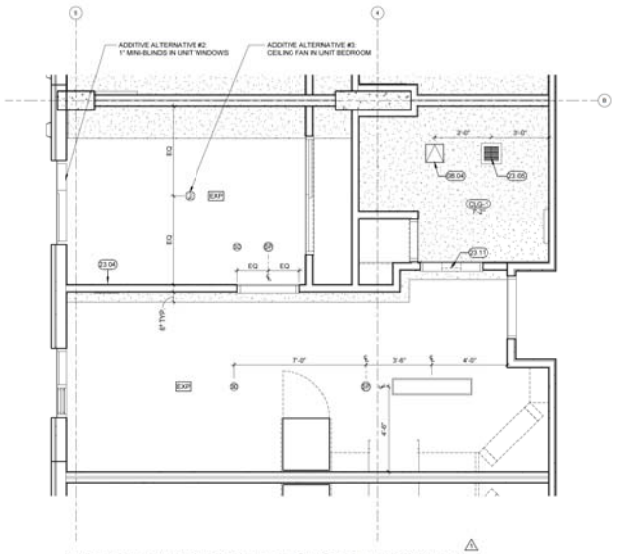
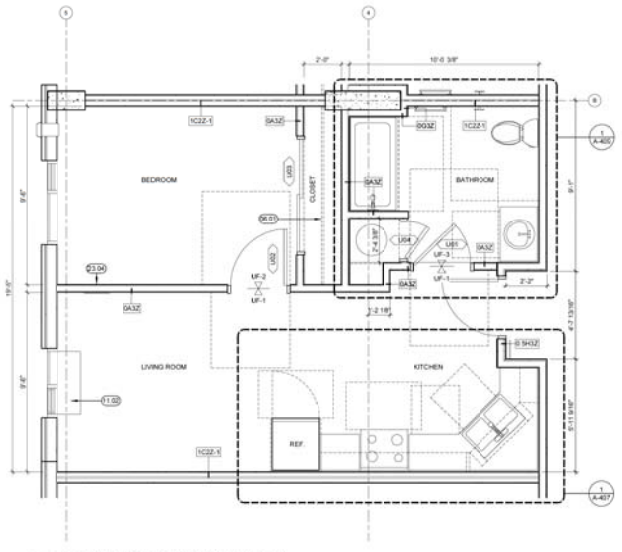
UNIT 1C

FOR ACCESSIBLE PLAN OPTION SEE



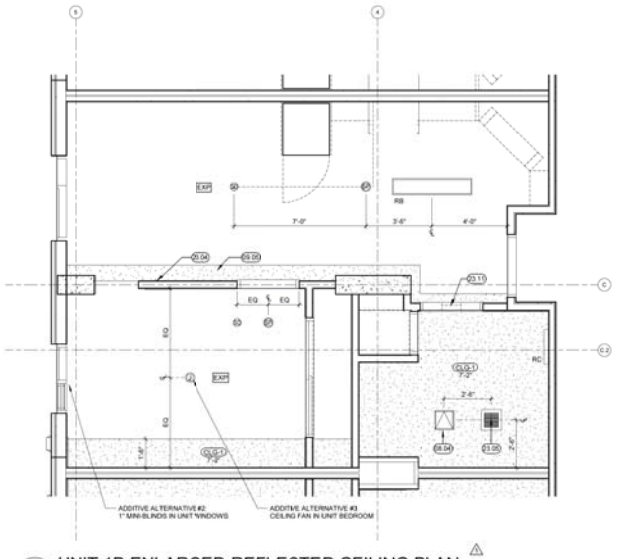
2 UNIT 1C ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



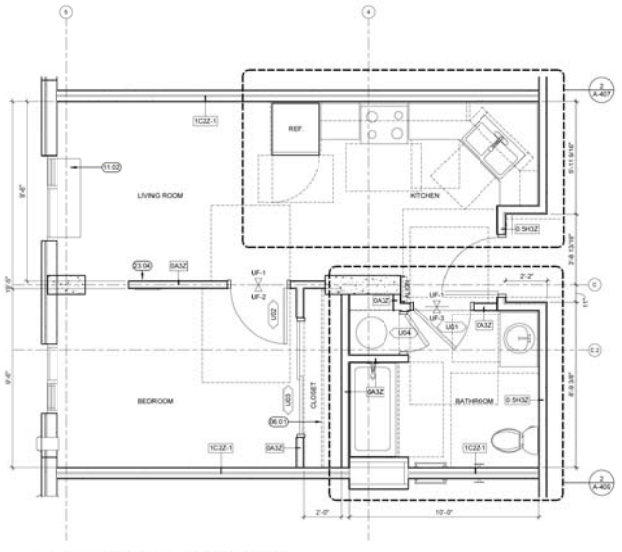
1 UNIT 1C ENLARGED PLAN
3/8" = 1'-0"

UNIT 1D

FOR ACCESSIBLE PLAN OPTIONS SEE



4 UNIT 1D ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



3 UNIT 1D ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-400 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES, GRAB BARS AND TOILET ACCESSORIES.
3. SEE A-408 AND A-406 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-407 AND A-408 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-409 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/DEVICES AS REQUIRED.
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KEY NOTES

###	KEYNOTE
06.01	INTERIOR ARCHITECTURAL WOODWORK; CLOSET & UTILITY SHELVING
06.04	ACCESS PANEL. COORDINATE LOCATION WITH PLUMBING DRAWINGS
09.05	GYPSUM BOARD SOFFIT ENCLOSING FIRE SPRINKLER LINE, SFPD
11.02	PTAC WINDOW UNIT. SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.11	EXHAUST FAN LOUVER, SMD

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1 HR RATED PARTITION
- 2 HR RATED PARTITION
- 3 HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- RD — ROOF DRAIN
- FD — FLOOR DRAIN
- REQUIRED ADA CLEARANCES. SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808 359 5880 TEL
415 358 9100 FAX
www.wrnsstudio.com

ADAM G. WOLNY
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

SIGNATURE

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:

ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS

SHEET NO:

A-402

3/20/2020 8:00:32 AM

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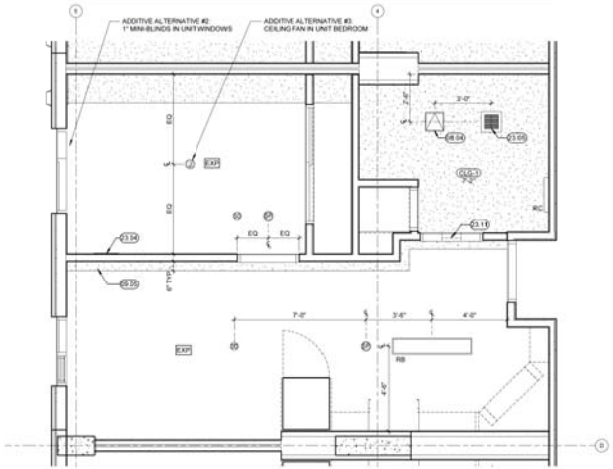
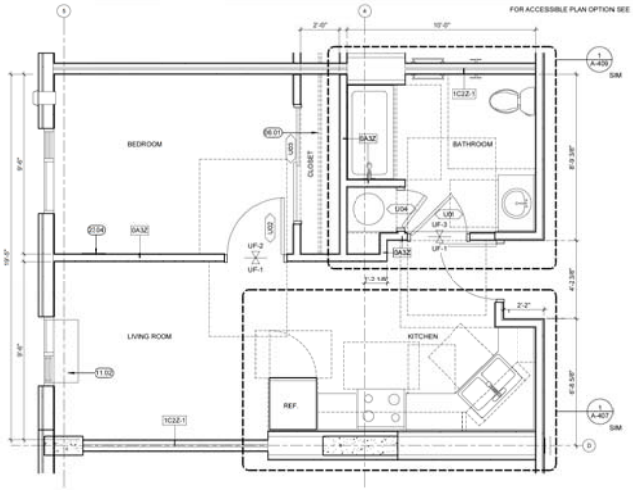
UNIT 1E

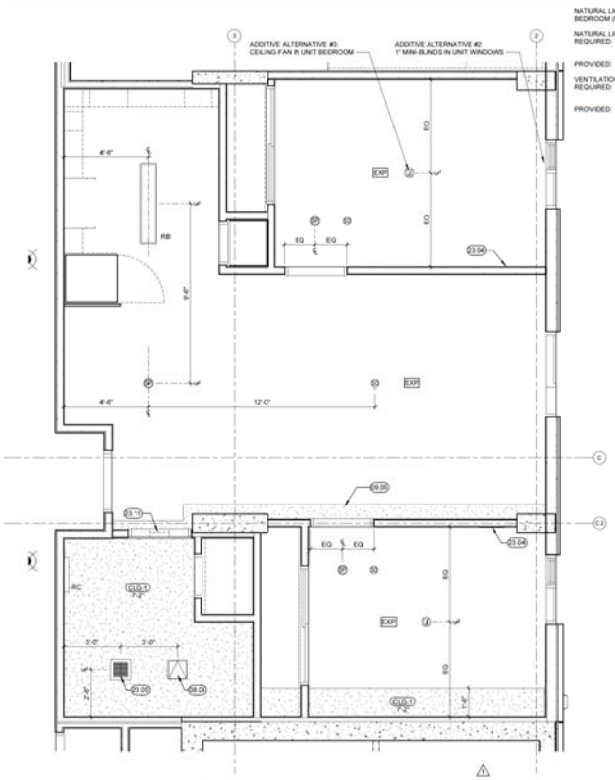


2 UNIT 1E ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"

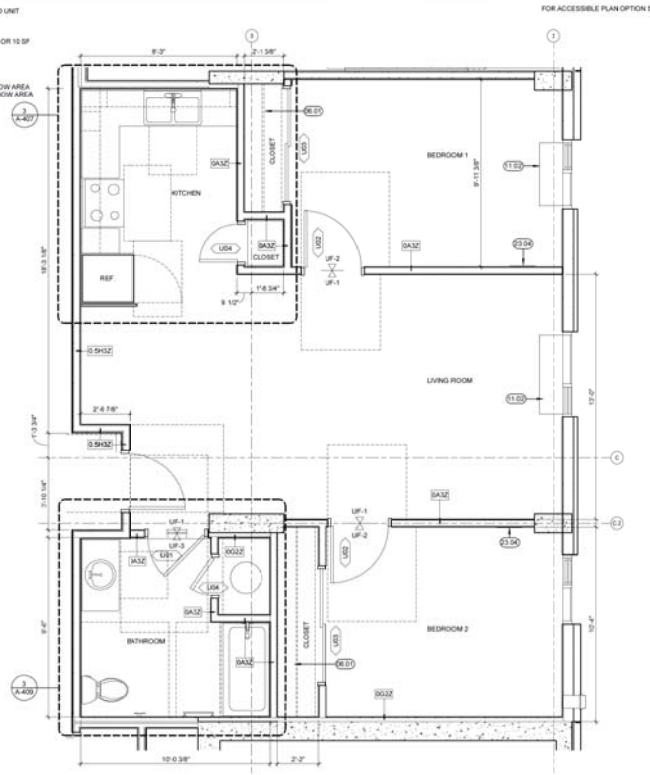


1 UNIT 1E ENLARGED PLAN
3/8" = 1'-0"

UNIT 2A



4 UNIT 2A ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



3 UNIT 2A ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-400 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES, GRAB BARS AND TOILET ACCESSORIES.
3. SEE A-408 AND A-406 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-402 AND A-408 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
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KEY NOTES

###	KEYNOTE
06.01	INTERIOR ARCHITECTURAL WOODWORK, CLOSET & UTILITY SHELVING
08.04	ACCESS PANEL. COORDINATE LOCATION WITH PLUMBING DRAWINGS
09.05	GYPSUM BOARD SOFFIT ENCLOSING FIRE SPRINKLER LINE, SFPD
11.02	PTAC WINDOW UNIT. SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.11	EXHAUST FAN LOUVER, SMD

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
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- NON-RATED PARTITION
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- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES. SEE SHEET A-701 FOR TYP MANEUVERING DIMENSIONS AT DOORS

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
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HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2020

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2020
SCALE: As indicated

SHEET TITLE:

ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS

SHEET NO:

A-403

3/20/2020 8:00:38 AM

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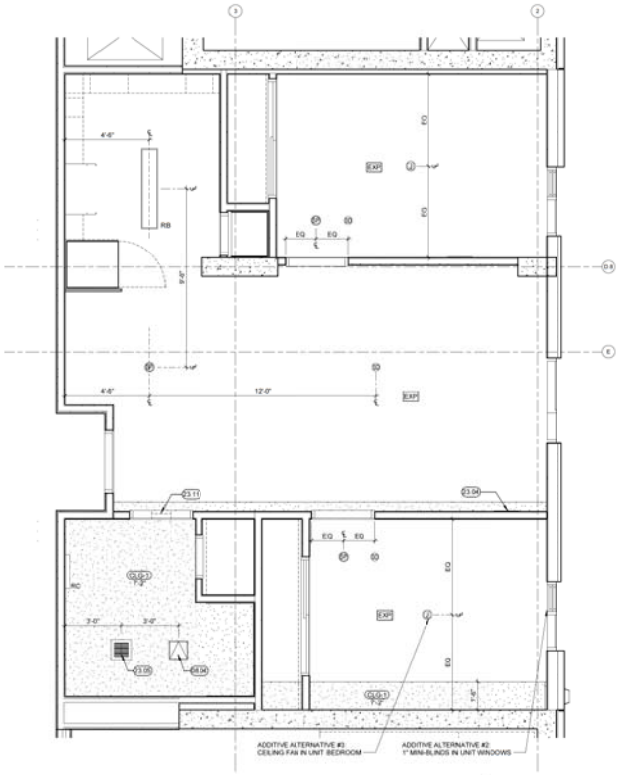
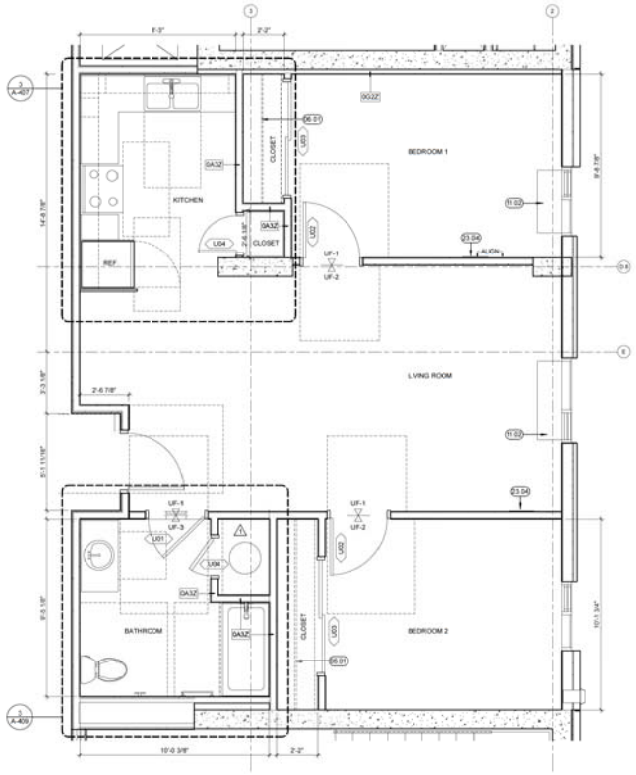
UNIT 2B

FOR ACCESSIBLE PLAN OPTIONS, SEE 4 / A-406



2 UNIT 2B ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



1 UNIT 2B ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-405 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES, GRAB BARS AND TOILET ACCESSORIES.
3. SEE A-406 AND A-408 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-407 AND A-408 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-409 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/DEVICES AS REQUIRED.
7. CONTRACTOR TO PROVIDE AND INSTALL 16 GA. FLAT STRAP BACKING FOR GRAB BAR INSTALLATION AT ALL DWELLING UNITS. SEE INTERIOR ELEVATIONS AND SPECIFICATIONS.

KEY NOTES

###	KEYNOTE
06.01	INTERIOR ARCHITECTURAL WOODWORK, CLOSET & UTILITY SHELVING
08.04	ACCESS PANEL. COORDINATE LOCATION WITH PLUMBING DRAWINGS
11.02	PTAC WINDOW UNIT, SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.11	EXHAUST FAN/LOUVER, SMD

LEGEND

- PROPERTY LINE
- LINE ABOVE
- HIDDEN LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- BACKING FOR GRAB BAR INSTALLATION
- FRAMED WALL
- NON-RATED PARTITION
- 1 HR RATED PARTITION
- 2 HR RATED PARTITION
- 3 HR RATED PARTITION
- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

WRNS STUDIO
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LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2020

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:
ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS

SHEET NO:
A-404

3/20/2020 8:00:41 AM

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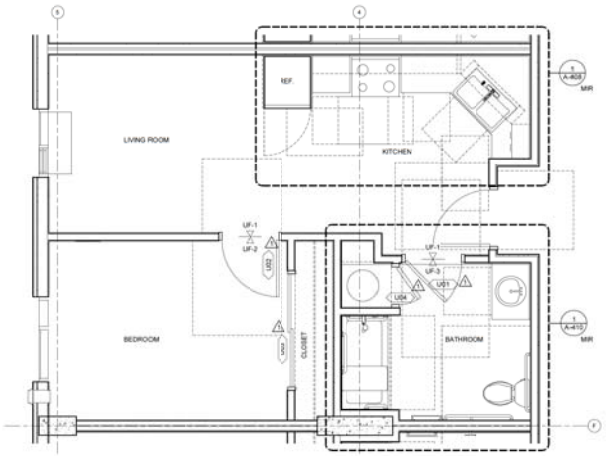
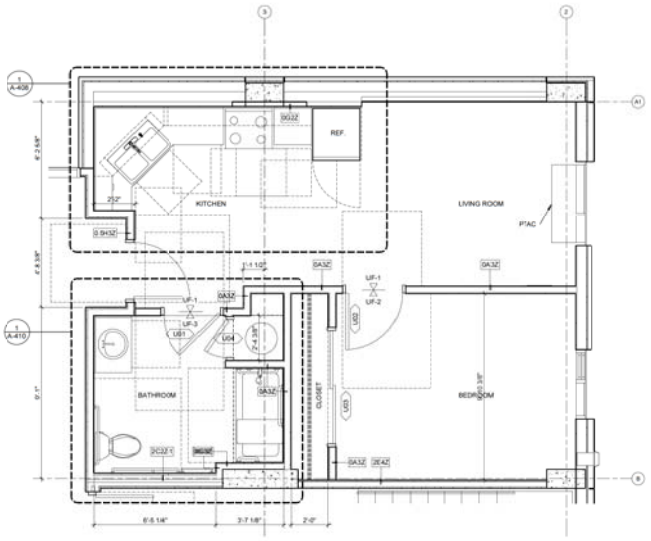
UNIT 1C - ACCESSIBLE



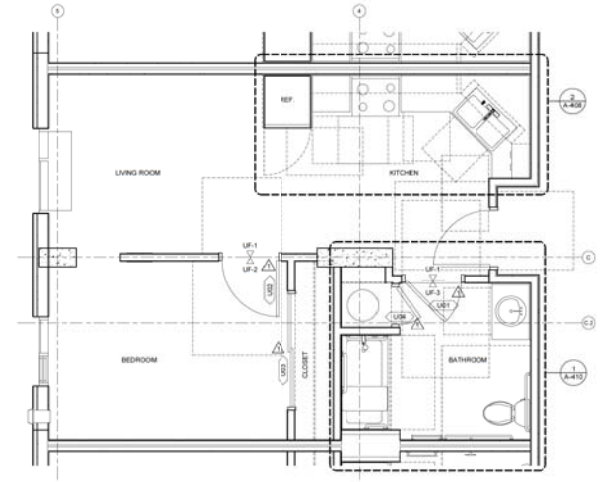
3 ACCESSIBLE UNIT 1C ENLARGED PLAN
3/8" = 1'-0"

UNIT 1A - ACCESSIBLE



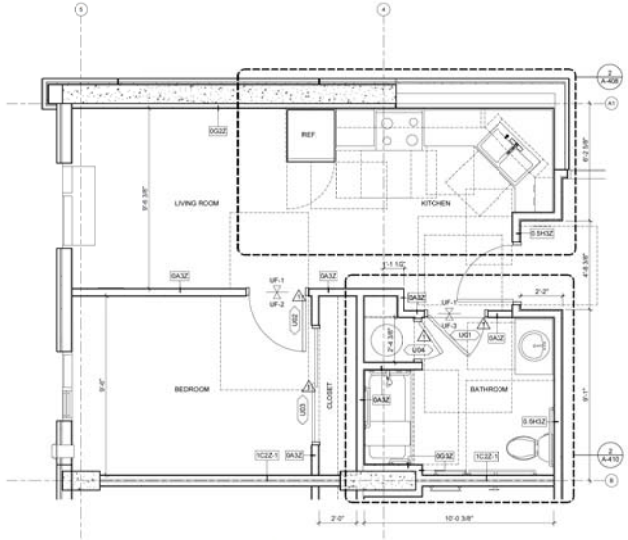
1 ACCESSIBLE UNIT 1A ENLARGED PLAN
3/8" = 1'-0"

UNIT 1D - ACCESSIBLE



4 ACCESSIBLE UNIT 1D ENLARGED PLAN
3/8" = 1'-0"

UNIT 1B - ACCESSIBLE



2 ACCESSIBLE UNIT 1B ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-400 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES, GRAB BARS AND TOILET ACCESSORIES.
3. SEE A-408 AND A-406 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-402 AND A-408 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-409 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/DEVICES AS REQUIRED.
7. CONTRACTOR TO PROVIDE AND INSTALL 16 GA. FLAT STRAP BACKING FOR GRAB BAR INSTALLATION AT ALL DWELLING UNITS. SEE INTERIOR ELEVATIONS AND SPECIFICATIONS.

ACCESSIBLE UNIT QUANTITIES & LOCATIONS

UNITS WITH ACCESSIBLE MOBILITY FEATURES:
TOTAL # OF UNITS: 156
5% x 156 = 7.8 = 8 UNITS
1-BEDROOM
602
706
910
1104
1306
1401
1507
2-BEDROOM
805

UNITS WITH ACCESSIBLE COMMUNICATION FEATURES (HEARING / VISUALLY IMPAIRED):
2% x 156 = 3.12 = 4 UNITS
1-BEDROOM
602
706
910
2-BEDROOM
805

KEY NOTES

KEYNOTE

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1 HR RATED PARTITION
- 2 HR RATED PARTITION
- 3 HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- RD — ROOF DRAIN
- FD — FLOOR DRAIN
- REQUIRED ADA CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

WRNS STUDIO
677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808 359 5880 TEL
415 358 9100 FAX
www.wrnsstudio.com

ADAM G. WOLNEK
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

SIGNATURE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (AS DEFINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 16, CHAPTER 115).

ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO: 19005.00
DATE: 20 MARCH 2020
SCALE: As indicated

SHEET TITLE:
ENLARGED PLANS - ACCESSIBLE UNITS

SHEET NO:
A-405

3/20/2020 8:00:49 AM

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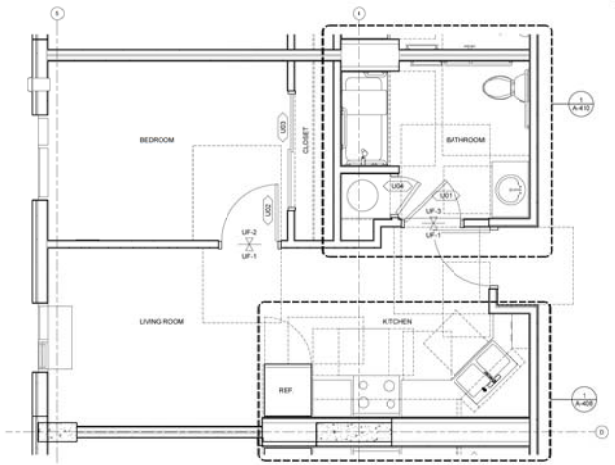
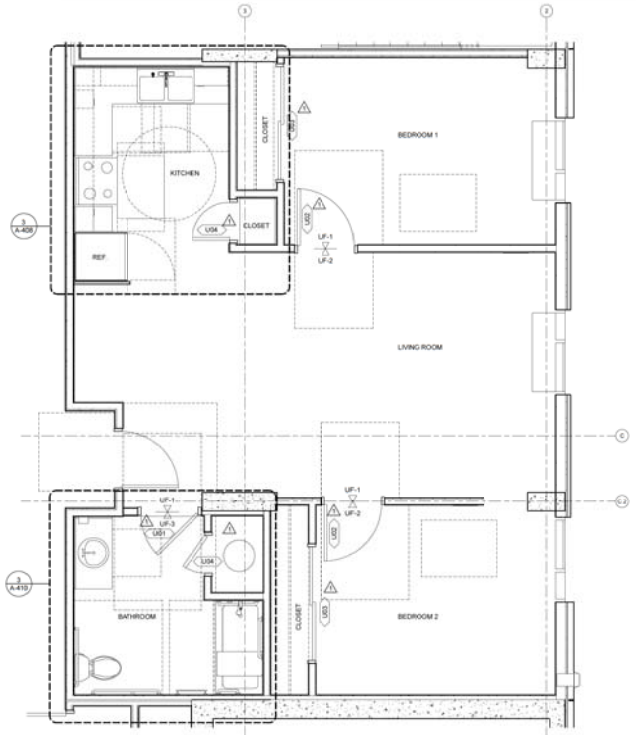
UNIT 1E - ACCESSIBLE



3 ACCESSIBLE UNIT 1E ENLARGED PLAN
3/8" = 1'-0"

UNIT 2A - ACCESSIBLE



4 ACCESSIBLE UNIT 2A ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-405 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES, GRAB BARS AND TOILET ACCESSORIES.
3. SEE A-408 AND A-406 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-402 AND A-408 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-409 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/DEVICES AS REQUIRED.
7. CONTRACTOR TO PROVIDE AND INSTALL 16 GA. FLAT STRAP BACKING FOR GRAB BAR INSTALLATION AT ALL DWELLING UNITS. SEE INTERIOR ELEVATIONS AND SPECIFICATIONS.

ACCESSIBLE UNIT QUANTITIES & LOCATIONS

UNITS WITH ACCESSIBLE MOBILITY FEATURES:
TOTAL # OF UNITS: 156
5% x 156 = 7.8 = 8 UNITS
1-BEDROOM
602 △
706
910
1104
1304
1401
1507
2-BEDROOM
805

UNITS WITH ACCESSIBLE COMMUNICATION FEATURES (HEARING / VISUALLY MPAIRED):
2% x 156 = 3.12 = 4 UNITS
1-BEDROOM
602 △
706
910
2-BEDROOM
805

KEY NOTES

###	KEYNOTE

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1 HR RATED PARTITION
- 2 HR RATED PARTITION
- 3 HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES. SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
808.359.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLNEK
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2020

SIGNATURE

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

△	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/10/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-006:012

PROJECT NO.: 19005.00
DATE: 20 MARCH 2320
SCALE: As indicated

SHEET TITLE:
ENLARGED PLANS - ACCESSIBLE UNITS

SHEET NO:
A-406

3/20/2020 8:00:56 AM

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THE MICHAEL'S ORGANIZATION

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817

TMK: 1-7-006:012

REVISION 2 - PERMIT RESPONSE

20 MARCH 2020

WRNS STUDIO

677 ALA MOANA BLVD
3RD FLOOR, STE. 307
HONOLULU
HAWAII 96813
808.356.5880 TEL
415.358.9100 FAX
WWW.WRNSSTUDIO.COM

ADAM G. WOLFAG
LICENSED PROFESSIONAL ARCHITECT
No. 18327
HAWAII, U.S.A.

EXPIRATION DATE 04/30/2020

SIGNATURE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (AS DEFINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 16, CHAPTER 11b)

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817

TMK: 1-7-006:012

THE MICHAEL'S ORGANIZATION

PROJECT NO.: 19005.00

AHJ #

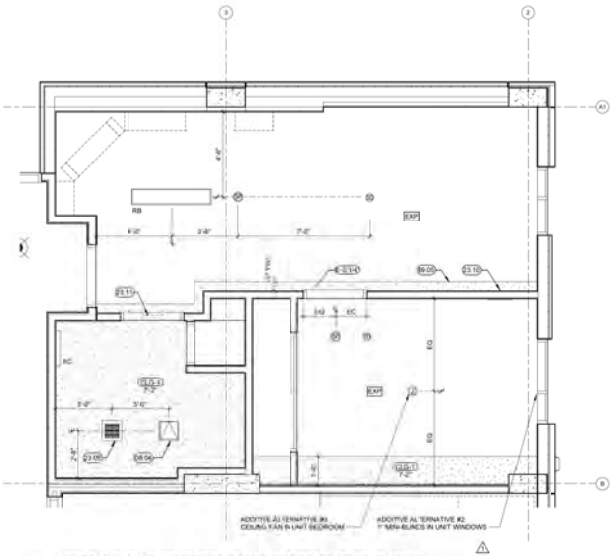
ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

REVISION LIST	DATE
REVISION 1 - PERMIT RESPONSE	01/18/2020
REVISION 2 - PERMIT RESPONSE	03/17/2020

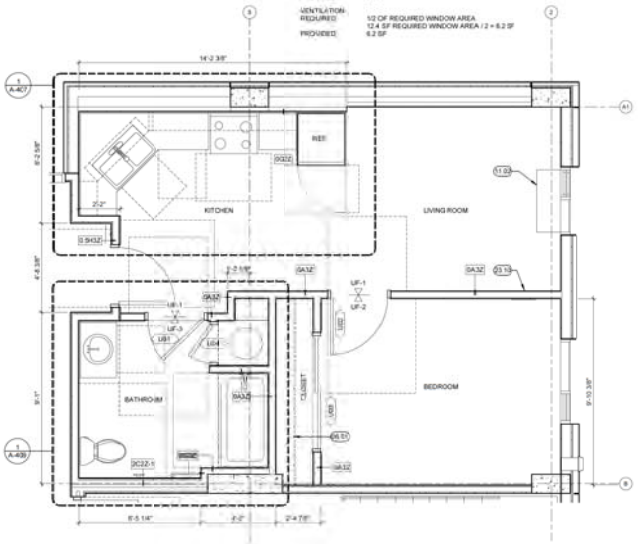
COVER

G-000

UNIT 1A



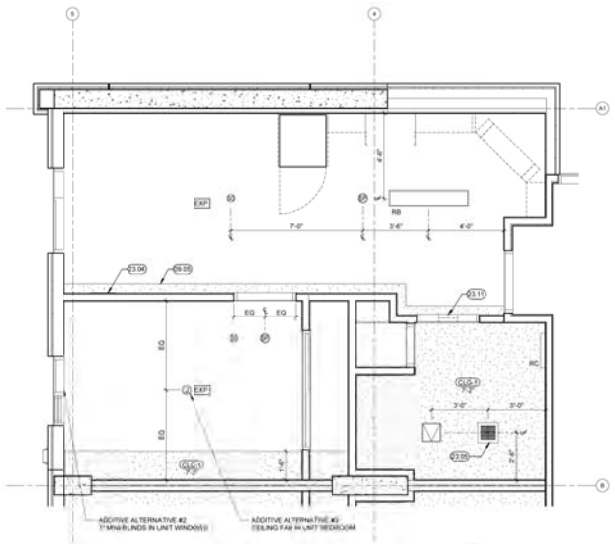
2 UNIT 1A ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



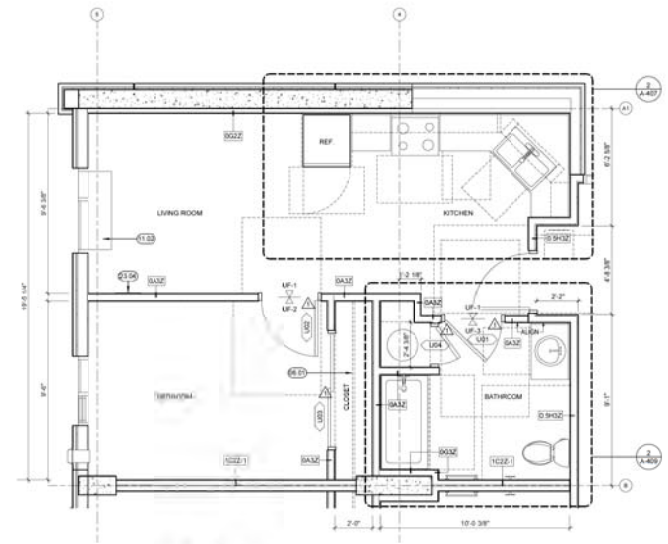
1 UNIT 1A ENLARGED PLAN
3/8" = 1'-0"

UNIT 1B

FOR ACCESSIBLE PLAN OPTION SEE 2 / A-405



4 UNIT 1B ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



3 UNIT 1B ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-408 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES (SINK, BARN, AND TOILET ACCESSORIES).
3. SEE A-408 AND A-409 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-410 AND A-411 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-408 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/ACCESSORIES AS REQUIRED.
7. CONTRACTOR TO PROVIDE AND INSTALL 18 GA. FLAT STRAP BACKING FOR GRAB BAR INSTALLATION AT ALL DWELLING UNITS. SEE INTERIOR ELEVATIONS AND SPECIFICATIONS.

KEY NOTES

###	KEYNOTE
06.01	INTERIOR ARCHITECTURAL WOODWORK, CLOSET & UTILITY SHELVING
08.04	ACCESS PANEL. COORDINATE LOCATION WITH PLUMBING DRAWINGS
09.05	GYPSUM BOARD SOFFIT ENCLOSING FIRE SPRINKLER LINE, SFPD
11.02	FTAC WINDOW UNIT, SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.10	THERMOSTAT(S), IGAD
23.11	EXHAUST FAN (DRYER, SMD

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1-HR RATED PARTITION
- 2-HR RATED PARTITION
- 3-HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- PARTITION TAG
- +1'-0" SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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3RD FLOOR, STE 301
HONOLULU
HAWAII 96813
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LICENSED PROFESSIONAL ARCHITECT No. 13371 STATE OF HAWAII U.S.A.

EXPIRATION DATE: 04/30/2021

SIGNATURE:

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1227 RIVER STREET, HONOLULU, HI 96817
(TMK: 1-7-025:015)

PROJECT NO: 1820.000
DATE: 03/20/2020
SCALE: As indicated

SHEET TITLE:

ENLARGED PLANS AND REFLECTED CEILING PLANS - UNITS

SHEET NO:

A-401

3/20/2020 8:00:27 AM

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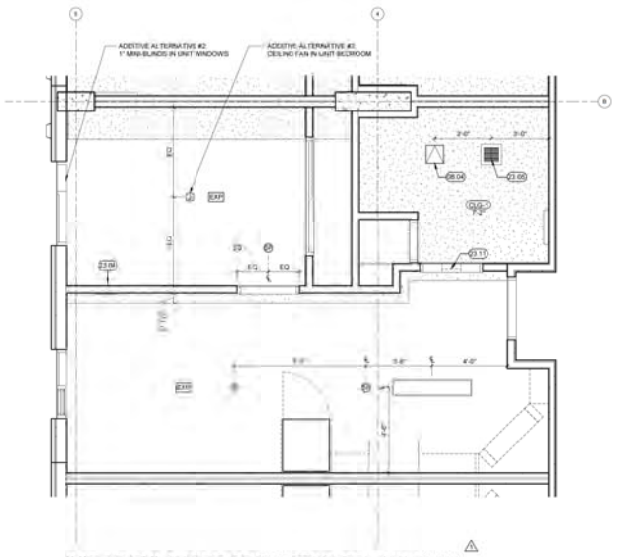
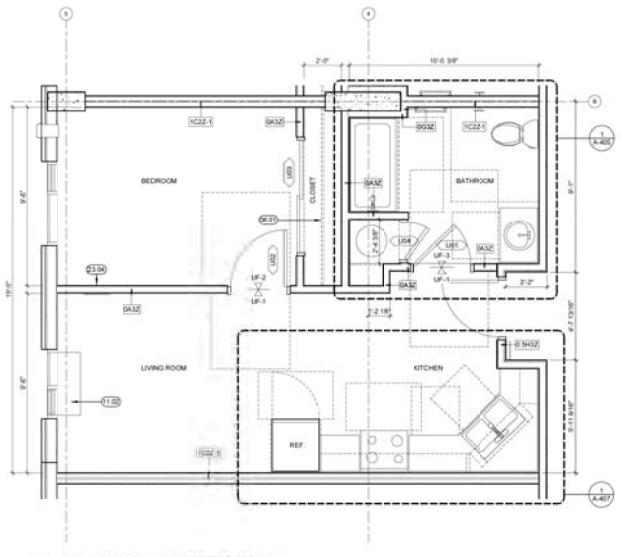
UNIT 1C

FOR ACCESSIBLE PLAN OPTION SEE



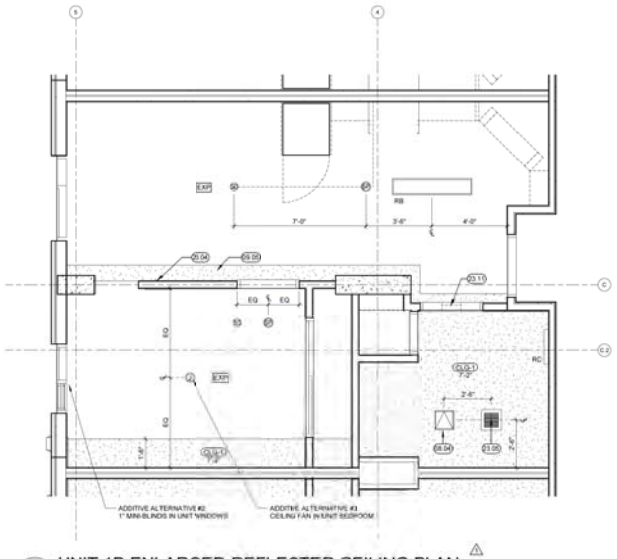
2 UNIT 1C ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



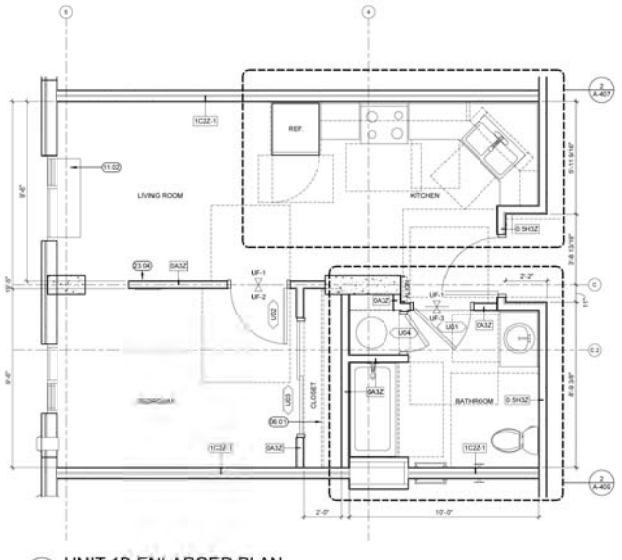
1 UNIT 1C ENLARGED PLAN
3/8" = 1'-0"

UNIT 1D

FOR ACCESSIBLE PLAN OPTIONS SEE



4 UNIT 1D ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



3 UNIT 1D ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-408 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES, GRAB, BARS, AND TOILET ACCESSORIES.
3. SEE A-408 AND A-409 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-410 AND A-411 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-408 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/DEVICES AS REQUIRED.
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KEY NOTES

###	KEYNOTE
06.01	INTERIOR ARCHITECTURAL WOODWORK, CLOSET & UTILITY SHELVING
06.04	ACCESS PANEL. COORDINATE LOCATION WITH PLUMBING DRAWINGS
09.05	GYPSUM BOARD SOFFIT ENCLOSING FIRE SPRINKLER LINE, SFPD
11.02	FTAC WINDOW UNIT. SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.11	EXHAUST FAN LOUVER, SMD

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1 HR RATED PARTITION
- 2 HR RATED PARTITION
- 3 HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES. SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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LICENSED PROFESSIONAL ARCHITECT
No. 13371
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

SIGNATURE:

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-020:010

PROJECT NO:
DATE:
SCALE: As indicated

SHEET TITLE:

ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS

SHEET NO:

A-402

3/20/2020 8:00:32 AM

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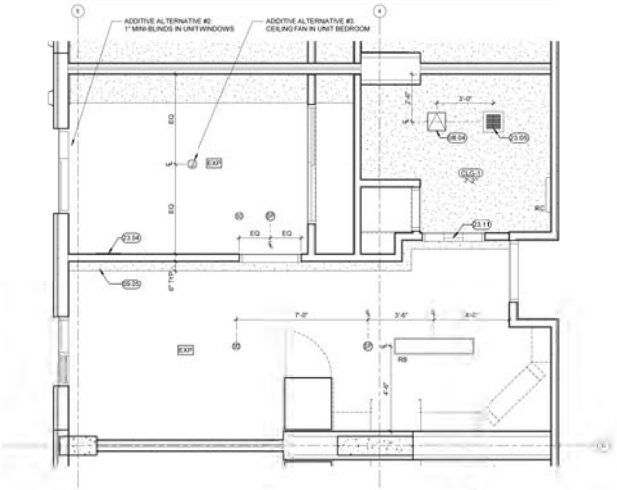
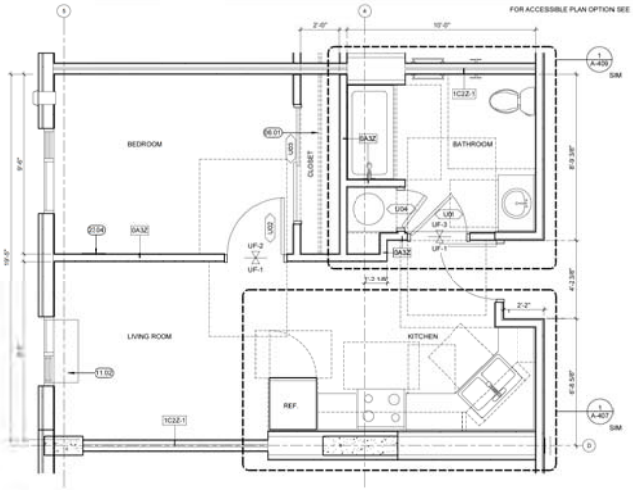
UNIT 1E

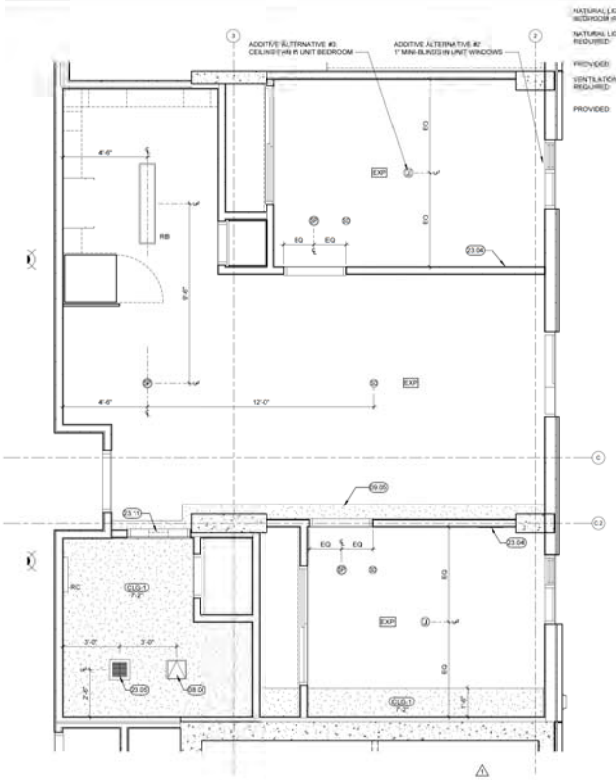


2 UNIT 1E ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"

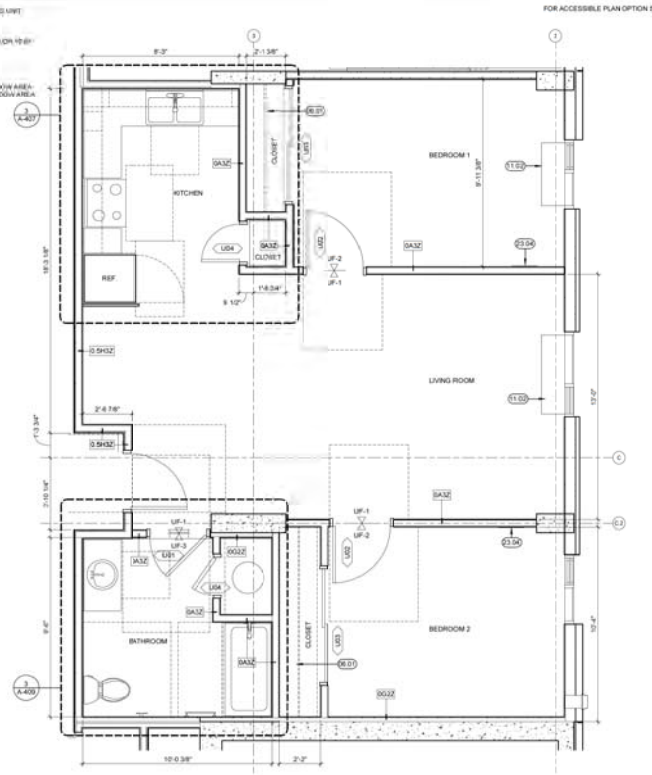


1 UNIT 1E ENLARGED PLAN
3/8" = 1'-0"

UNIT 2A



4 UNIT 2A ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"



3 UNIT 2A ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-408 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES (SHAD, BARS) AND TOILET ACCESSORIES.
3. SEE A-408 AND A-409 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-410 AND A-411 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
5. SEE A-408 AND A-410 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS.
6. CONTRACTOR TO INSTALL BLOCKING FOR ALL WALL-MOUNTED FIXTURES/ACCESSORIES AS REQUIRED.
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KEY NOTES

###	KEYNOTE
06.01	INTERIOR ARCHITECTURAL WOODWORK, CLOSET & UTILITY SHELVING
08.04	ACCESS PANEL. COORDINATE LOCATION WITH PLUMBING DRAWINGS
09.05	GYPSUM BOARD SOFFIT ENCLOSING FIRE SPRINKLER LINE, SFPD
11.02	FTAC WINDOW UNIT, SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.11	EXHAUST FAN LOUVER, SMD

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1-HR RATED PARTITION
- 2-HR RATED PARTITION
- 3-HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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917 ALA MOANA BLVD
3RD FLOOR, STE 301
HONOLULU
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808 356 5860 TEL
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LICENSED PROFESSIONAL ARCHITECT No. 13371 STATE OF HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2024

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-020:010

PROJECT NO:
DATE:
SCALE: As indicated

SHEET TITLE:
ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS

SHEET NO:
A-403

3/20/2020 8:00:38 AM

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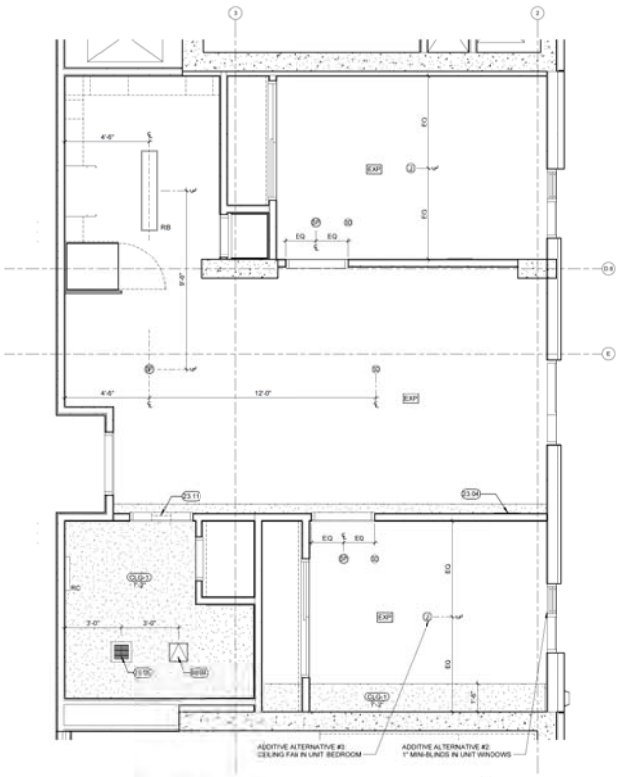
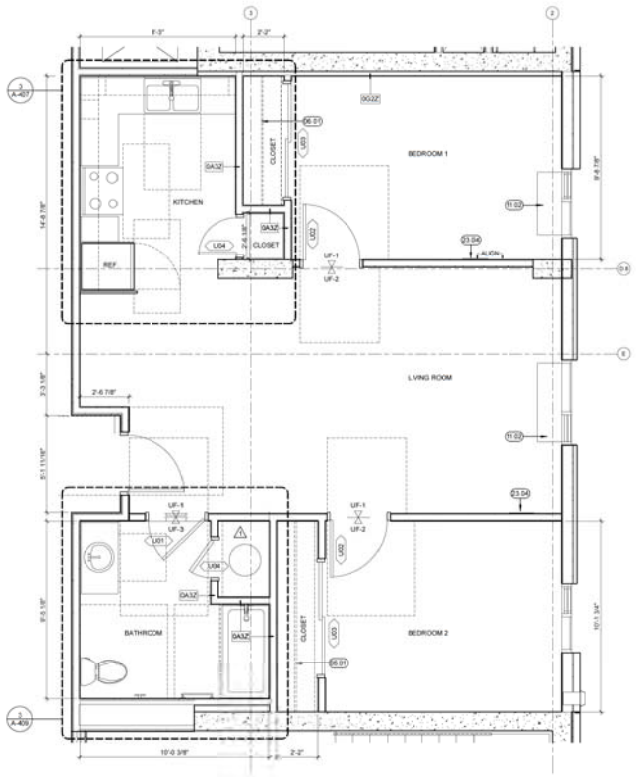
UNIT 2B



2 UNIT 2B ENLARGED REFLECTED CEILING PLAN
3/8" = 1'-0"

FOR ACCESSIBLE PLAN OPTIONS, SEE 4 / A-406



1 UNIT 2B ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-408 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES (SINK, BARN, AND TOILET ACCESSORIES).
3. SEE A-408 AND A-409 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS.
4. SEE A-410 AND A-411 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS.
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KEY NOTES

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08.04	ACCESS PANEL. COORDINATE LOCATION WITH PLUMBING DRAWINGS
11.02	PTAC WINDOW UNIT, SEE EQUIPMENT SCHEDULE
23.04	TRANSFER FAN, SMD
23.05	BATHROOM EXHAUST FAN, SMD
23.11	EXHAUST FAN/LOUVER, SMD

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1-HR RATED PARTITION
- 2-HR RATED PARTITION
- 3-HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- A3A — PARTITION TAG
- +1'-0" — SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

WRNS STUDIO
917 ALA MOANA BLVD
3RD FLOOR, STE 301
HONOLULU
HAWAII 96813
808 356 5860 TEL
415 358 0100 FAX
www.wrnsstudio.com

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No. 13371
STATE OF HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2021

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

⚠	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/15/2020

HALEWAI'OLU SENIOR RESIDENCES
1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-020:010

PROJECT NO:
DATE:
SCALE: As indicated

SHEET TITLE:
ENLARGED PLANS AND REFLECTED CEILING PLAN - UNITS

SHEET NO:
A-404

3/20/2020 8:00:41 AM

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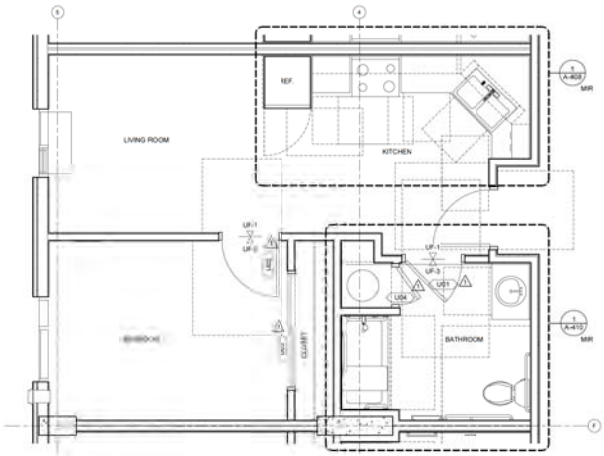
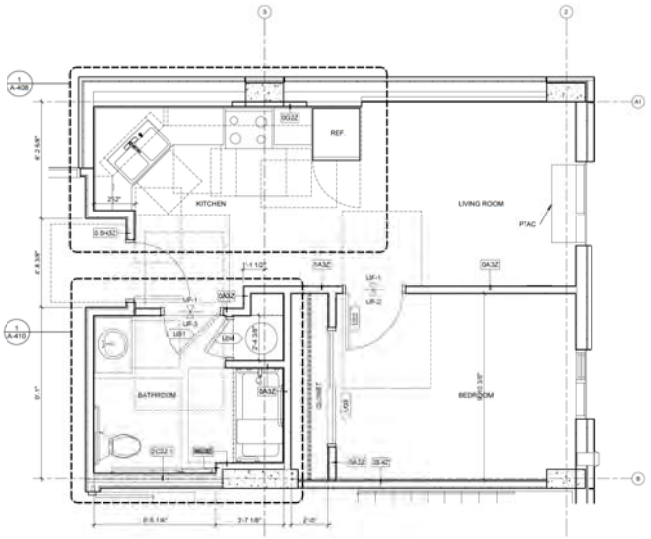
UNIT 1C - ACCESSIBLE



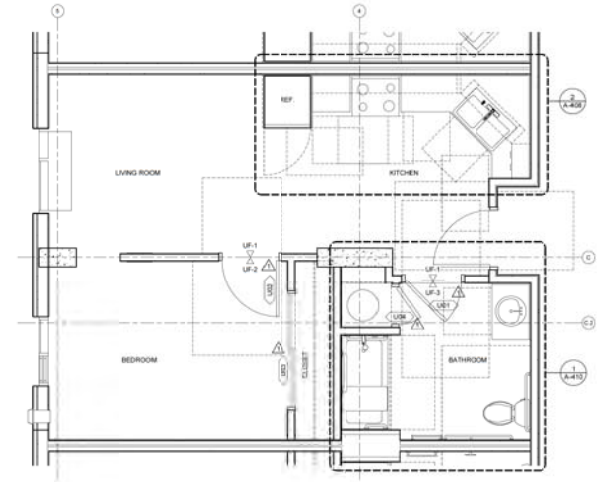
3 ACCESSIBLE UNIT 1C ENLARGED PLAN
3/8" = 1'-0"

UNIT 1A - ACCESSIBLE



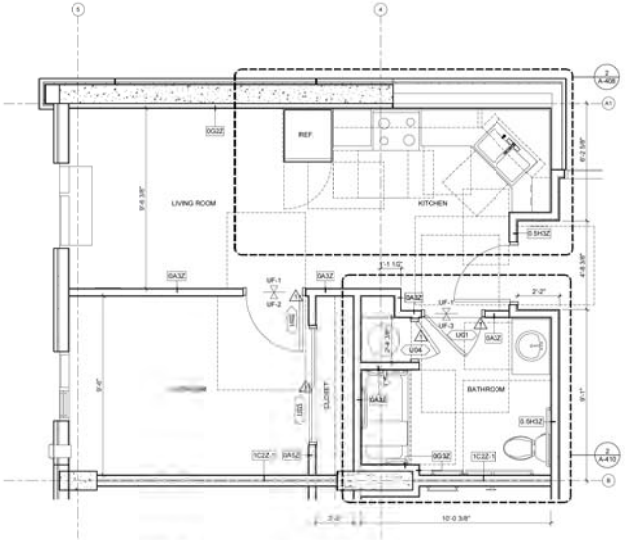
1 ACCESSIBLE UNIT 1A ENLARGED PLAN
3/8" = 1'-0"

UNIT 1D - ACCESSIBLE



4 ACCESSIBLE UNIT 1D ENLARGED PLAN
3/8" = 1'-0"

UNIT 1B - ACCESSIBLE



2 ACCESSIBLE UNIT 1B ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS ARE TO FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A408 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES (SINK) SATIN AND TOILET ACCESSORIES.
3. SEE A-408 AND A-4.8 FOR ADDITIONAL DIMENSIONS AT ACCESSIBLE UNITS
4. SEE A-410 AND A-4.10 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT KITCHENS
5. SEE A-408 AND A-4.10 FOR ADDITIONAL DIMENSIONS AND NOTES AT UNIT BATHROOMS
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7. CONTRACTOR TO PROVIDE AND INSTALL 18 GA. FLAT STRAP BACKING FOR GRAB BAR INSTALLATION AT ALL DWELLING UNITS. SEE INTERIOR ELEVATIONS AND SPECIFICATIONS.

ACCESSIBLE UNIT QUANTITIES & LOCATIONS

UNITS WITH ACCESSIBLE MOBILITY FEATURES:
TOTAL # OF UNITS: 150
2% x 150 = 3.12 = 4 UNITS
1-BEDROOM
607
700
815
1154
1200
1403
1507
2-BEDROOM
809

UNITS WITH ACCESSIBLE COMMUNICATION FEATURES (HEARING / VISUALLY IMPAIRED):
2% x 150 = 3.12 = 4 UNITS
1-BEDROOM
607
700
815
2-BEDROOM
809

KEY NOTES

KEY NOTES

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 1-HR RATED PARTITION
- 2-HR RATED PARTITION
- 3-HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- PARTITION TAG
- +1'-0" SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES, SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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3RD FLOOR, STE 301
HONOLULU
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808 356 5860 TEL
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LICENSED PROFESSIONAL ARCHITECT
No. 13321
STATE OF HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2020

SIGNATURE:

I HEREBY CERTIFY THAT THIS PLAN, DRAWING, SPECIFICATION, REPORT OR ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF HAWAII.

ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	09/30/2019

	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/10/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-020:010

PROJECT NO: 1920000
DATE: 20 MARCH 2020
SCALE: As indicated

SHEET TITLE:
ENLARGED PLANS - ACCESSIBLE UNITS

SHEET NO:
A-405

3/20/2020 8:00:49 AM

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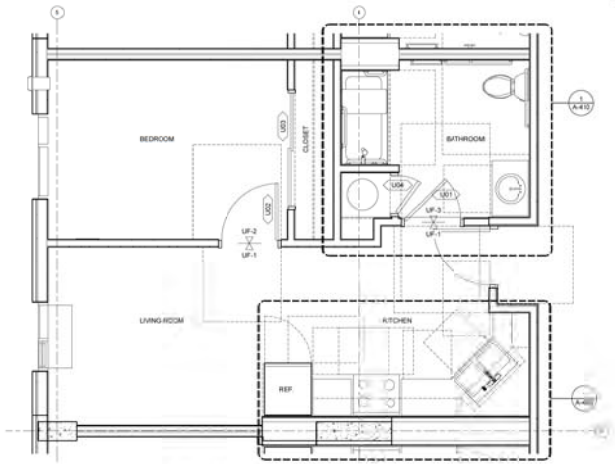
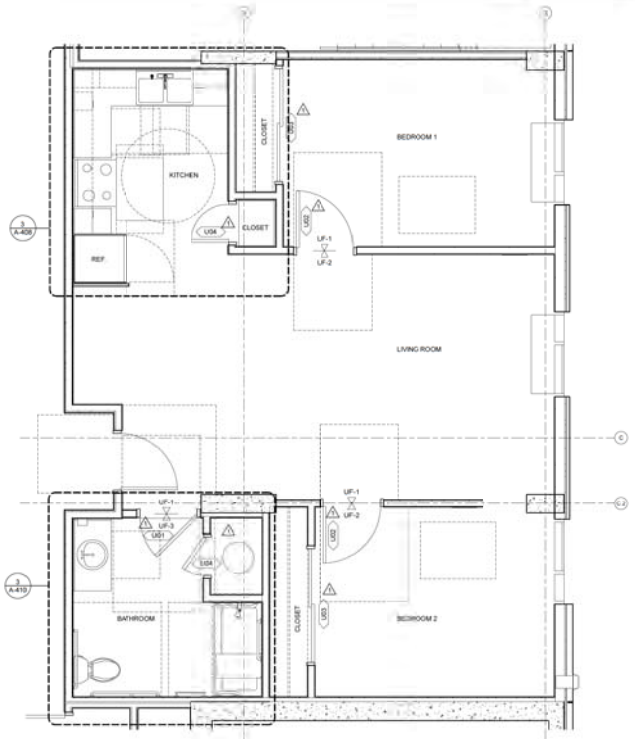
UNIT 1E - ACCESSIBLE



3 ACCESSIBLE UNIT 1E ENLARGED PLAN
3/8" = 1'-0"

UNIT 2A - ACCESSIBLE



4 ACCESSIBLE UNIT 2A ENLARGED PLAN
3/8" = 1'-0"

SHEET NOTES

1. DIMENSIONS INDICATE FACE OF FINISH UNLESS OTHERWISE NOTED.
2. SEE A-408 FOR REQUIRED ACCESSIBLE CLEARANCES AT TYPICAL PLUMBING FIXTURES AND ADDITIONAL DIMENSIONS FOR INSTALLATION OF FIXTURES (SINK) AND TOILET ACCESSORIES.
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7. CONTRACTOR TO PROVIDE AND INSTALL 16 GA. FLAT STRAP BACKING FOR GRAB BAR INSTALLATION AT ALL DWELLING UNITS. SEE INTERIOR ELEVATIONS AND SPECIFICATIONS.

ACCESSIBLE UNIT QUANTITIES & LOCATIONS

UNITS WITH ACCESSIBLE MOBILITY FEATURES:
TOTAL # OF UNITS: 180
5% = 180 X 7.5 = 9 UNITS
1-BEDROOM
600
700
910
1104
1309
1401
1507
2-BEDROOM
800

UNITS WITH ACCESSIBLE COMMUNICATION FEATURES (HEARING / VISUALLY MPAIRED):
2% = 180 X 2.0 = 9 UNITS
1-BEDROOM
600
700
910
2-BEDROOM
800

KEY NOTES

KEYNOTE

LEGEND

- PROPERTY LINE
- CIP CONCRETE WALL / COLUMN, SSD
- CMU WALL
- FRAMED WALL
- NON-RATED PARTITION
- 3 HR RATED PARTITION
- 2 HR RATED PARTITION
- 3 HR RATED PARTITION
- LINE ABOVE
- HIDDEN LINE
- BACKING FOR GRAB BAR INSTALLATION
- A3A PARTITION TAG
- +1'-0" SPOT ELEVATION
- ROOF DRAIN
- FLOOR DRAIN
- REQUIRED ADA CLEARANCES. SEE SHEET A-701 FOR TYP. MANEUVERING DIMENSIONS AT DOORS

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677 ALA MOANA BLVD
3RD FLOOR, STE 307
HONOLULU
HAWAII 96813
628 350 5550 TEL
615 358 8100 FAX
WWW.WRNSSTUDIO.COM

LICENSED PROFESSIONAL ARCHITECT
HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2020

SIGNATURE

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ISSUES	DATE
50% CONSTRUCTION DOCUMENTS	07/31/2019
PERMIT SET	08/30/2019

#	REVISION LIST	DATE
1	REVISION 1 - PERMIT RESPONSE	01/16/2020

HALEWAI'OLU SENIOR RESIDENCES

1333 RIVER STREET, HONOLULU, HI 96817
TMK: 1-7-020-010

PROJECT NO: 1600000
DATE: 20 MARCH 2020
SCALE: As Indicated

SHEET TITLE

ENLARGED PLANS - ACCESSIBLE UNITS

SHEET NO:

A-406

3/20/2020 8:00:56 AM

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Appendix B

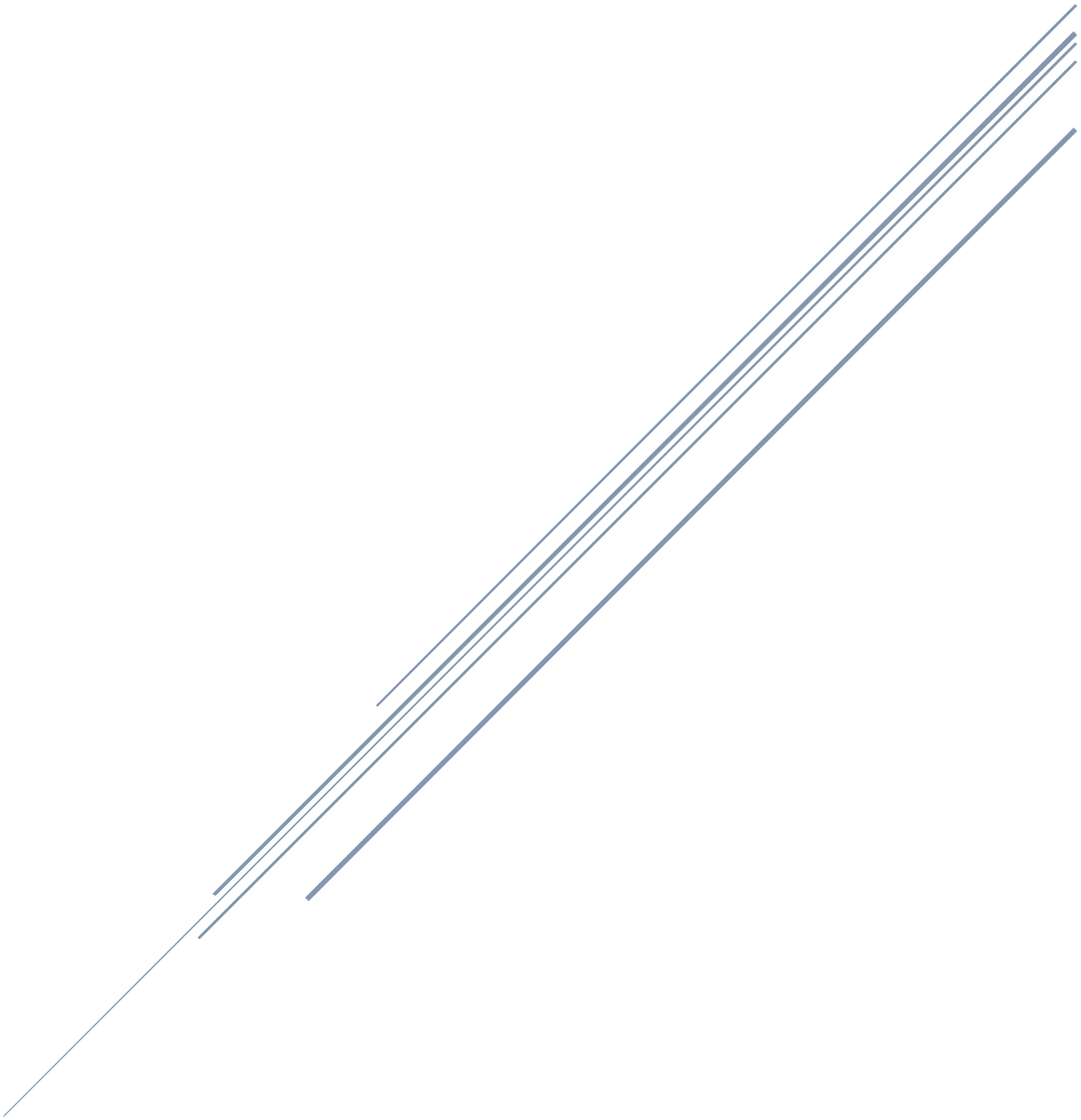
2019 Market Study

Ricky Cassiday

April 28, 2019

HALEWAI'OLU SENIOR RESIDENCES

2019 Market Study



Ricky Cassiday

I. OVERVIEW

The **Halewai'olu Senior Development LLC** is proposing to build an affordable senior rental housing project in Honolulu, Hawaii. They have engaged Ricky Cassiday to describe and analyze the market for affordable housing rentals by senior households on the island of Oahu, relative to the guidelines provided by the Hawaii Housing Finance & Development Corporation (HHFDC) for performing such studies.

II. SCOPE OF WORK

As stipulated by the Hawaii Housing Finance and Development Corporation, this Market Study will include:

- A statement of the competence of the market analyst**.**
- A description of the proposed site**.**
- Geographic definition and analysis of the market area**.**
- Identification of the project including location, unit counts, income levels and target population**.**
- Analysis of household sizes and types in market.
- Demographic analysis of the number of households in the market area, which are income eligible, and can afford to pay the rent. Estimate of capture rates for the market areas.
- A description of comparable developments in the market area.
- Analysis of practically available rents, vacancy rates, operating expenses and turnover rates of comparable properties in the market area.
- Analysis of practically available rents, vacancy rates and turnover rates of market rate properties in the market area.
- Expected market absorption of the proposed rental housing, including a description of the effect of the market area.
- Identification and commentary of proposed projects in the market areas.

III. DESCRIPTION OF MARKET ANALYST

Since 1991, Ricky Cassiday has provided the residential l real estate markets of Hawaii with real estate consulting services. A list of clients and studies is attached hereto as Exhibit A.

Note that the data and statements herein are based on independent research and are in no way contingent upon outside findings or recommendations.

IV. DESCRIPTION OF PROPOSED SITE

The subject property is **Halewai'olu Senior Residences,** 1331-1347 River Street, Honolulu, Hawaii, TMK (1) 1-7-006:012

The immediate neighborhood consists of residential housing in an urban setting, with a regional stream running in front of it.

V. GEOGRAPHIC DEFINITION OF AND ANALYSIS OF MARKET AREA

The City and County of Honolulu will serve as the market area for this study. Such a definition was analyzed and deemed appropriate for the following reasons:

- There are no natural boundaries in Honolulu to inhibit relocation;
- The entire island's population lives in close proximity to one another, within a 22-mile radius; and
- There is an acute need for affordably priced shelter on the island.

Further analysis determined that the Principle Market Area (PMA) would encompass the entire island of Oahu.

An analysis of the housing market, rental housing in particular, illustrates that the supply is low while demand continues to rise.

HOUSING DEMAND: Numerous factors affect the demand for housing, the primary being population, household formations and job creation. In the short run, job creation is the most important, as it leads to in-migration (meaning population growth and household formation).

Currently, job creation (as well as income generation, mainly wages) in the island economy is very strong. The table below shows that the rate of unemployment has been steadily falling since 2009-2010. This coincides with the rise in hotel occupancy as well as hotel room rates and is in synch with the general excise tax trend, which is an indicator of overall business activity.

SELECTED HONOLULU ECONOMIC TRENDS

	Unemployment Rate	Hotel Occupancy	Hotel Room Rates	Ave GE Tax ($000)
1995	4.6%	80%	$102	$97,433
2000	4.1%	76%	$115	$110,441
2005	2.8%	86%	$139	$158,946
2006	2.5%	83%	$156	$171,301
2007	2.6%	77%	$168	$180,857
2008	3.9%	75%	$170	$178,448
2009	6.0%	73%	$169	$161,174
2010	6.0%	78%	$150	$168,270
2011	5.9%	81%	$150	$187,260
2012	5.4%	85%	$165	$203,370
2013	4.4%	84%	$183	$208,946
2014	4.1%	85%	$207	$213,399
2015	3.4%	86%	$211	$227,377
2016	3.1%	87%	$221	$231,377
2017	2.2%	89%	$241	$236,538
2018	1.9%	89%	$242	$237,118

Such growth in economic activity has led to growing demand for housing, both for-sale and for-rent units. In addition, this growth exerts pressure on for-sale prices and for-rent rental rates. This makes it more difficult for households with fixed or low-incomes to secure affordable shelter. There are other factors which serve to increase housing demand overall such as vacationers and military households.

HOUSING SUPPLY: The best solution to combat the growing demand is to increase the supply of housing for this segment of the population. Unfortunately, Oahu's housing development process is uncertain, time consuming and expensive, the future supply of units is low. Factors that contribute to such short supply include the scarcity of land as well as the arduous process of zoning for housing under the laws governing land use. Furthermore, construction is costly, labor is tight, and the costs of inputs are high due to the long supply chain.

The aforementioned can be seen in the table below - condo production has been declining since the 1970s, for reasons noted above. This is described in the next section, both island-wide as well as within the urban core.

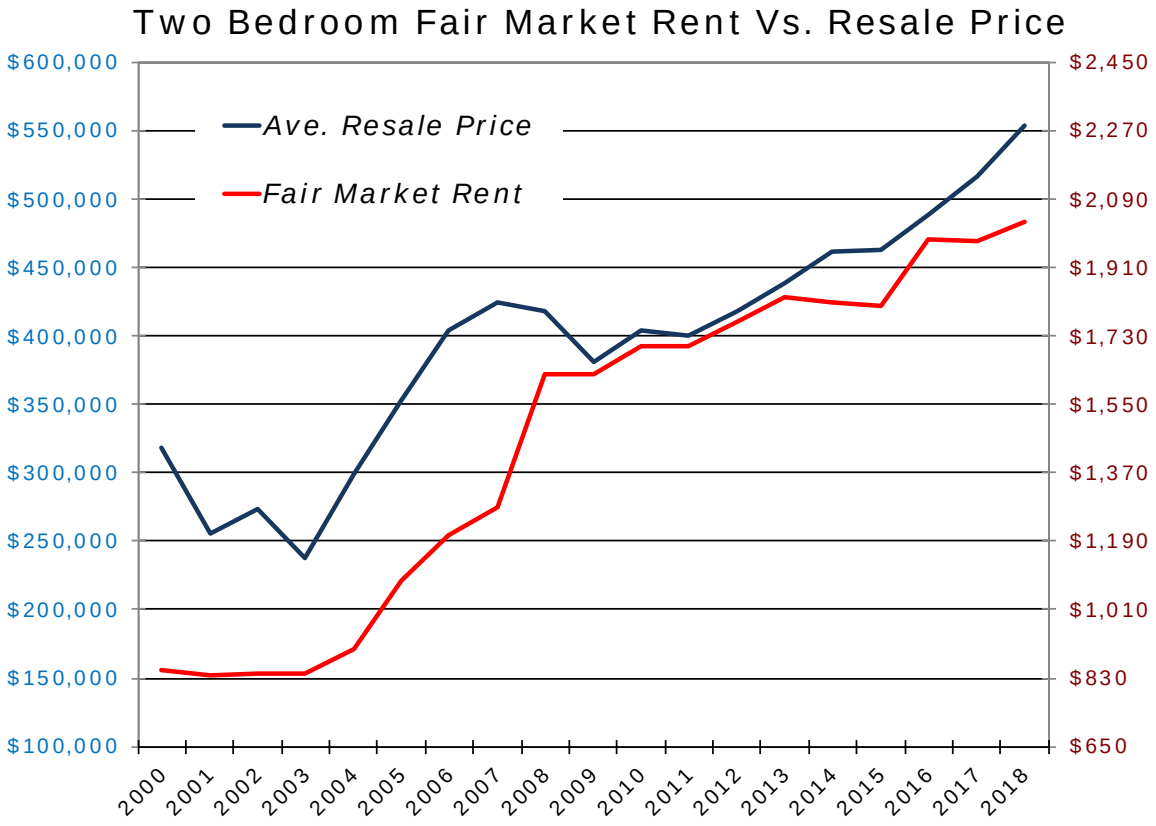
As such, the combination of inelastic supply and elastic demand lends to this market's extreme volatility over the swing between the bottom and the top of the market where sales can more than triple and prices can more than double. Furthermore, the length of the cycle is usually 5 to 8 years, depending often on external conditions including the direction of interest rates, economic growth in the visitor and offshore buyer markets and the costs of materials.

CURRENT MARKET CONDITIONS: The condominium market is well into the upward swing of the housing cycle in terms of sales activity and price levels (data source is the MLS of the Honolulu Board of Realtors and the Bureau of Conveyances of the State). The last such swing started in 1998 and ended in 2005, ran for some 7 to 8 years and then had 4 to 5 years of falling sales and prices. It turned in 2011-2012, with a reversal of the trend for lower

sales and prices, as demand grew at a time of shrinking inventory. Going forward, we foresee that this cycle's sales and price levels will run for the next several years and exceed the peaks of the last cycle.

This will negatively impact the rental market in a number of ways. Higher for-sale housing prices usually encourage landlords to sell to owner occupants removing rental units from the market. Also, higher housing prices paid by investors for rental units translate into higher rental rates to consumers, as the investor needs a higher cash flow.

The next chart illustrates how sale and rent prices are trending using MLS data for the resale prices and HUD Fair Market Rent data for the rental data. It shows that the prices paid for for-sale two-bedroom units serves as a leading indicator for rental prices for two-bedroom rental units.



Given the County's average wage rate, rents charged are generally above what an average household would like to pay. As such, the need for affordable housing is acutely felt throughout the market highlighting the willingness of renters to relocate. For example, almost 35% of the County's population makes 60% of AMI and below of which 20% are renters.

VII. PROJECT IDENTIFICATION

OVERVIEW: The location is on the edge of Chinatown in the Downtown/Chinatown area of Honolulu, near the Honolulu urban core and the Honolulu Central Business District (CBD), on a tract known as Foster Gardens. The site is landlocked by two adjacent neighbors whose use is commercial. The area surrounding the tract is a mix of commercial and residential uses. The Foster Botanical Garden is located across the site on Vineyard Boulevard. The street fronting the property is River Street, which runs along Nu'uanu Stream. The site was acquired by the City and County of Honolulu with Community Development Block Grant (CDBG) in the 1990s.

The developer is proposing to construct a high-rise affordable senior rental project. The project's proposed unit count and unit mix is detailed in the following table, as well as the target market.

PROJECT UNIT BREAKDOWN, TOTAL

Beds	30% AMI	60% AMI	80%AMI	Total
1-Bedroom	8	115	7	130
2-Bedroom		16	9	25
Total	8	131	16	155

VIII. ANALYSIS OF HOUSEHOLD TYPES IN THE MARKET

The study guidelines call for an analysis of household sizes and types in the market. Thus, the following table describes this.

HOUSING STOCK, OAHU, BY AREA, BY TYPE AND BY UNIT COUNT

	Ewa	Kahuku-Kaawa	East Oahu	Central Oahu	North Shore	Waianae	Honolulu	East Honolulu	Total
Single	175,128	2,796	26,403	22,967	11,082	5,658	72,708	13,744	330,485
Condominium	44,375	369	1,628	1,378	423	1,668	35,790	1,237	86,867
Townhouse	23,240	0	2,604	6,737	1,859	595	5,159	1,184	41,378
Apartment	44,436	192	2,315	4,823	1,822	1,622	30,147	813	86,169
Duplex/Multiplex	21,705	30	2,279	842	2,540	2,065	12,897	141	42,499
Co-op	1,661	0	398	38	258	0	967	0	3,322
Other	6,540	302	543	1,493	258	47	3,385	512	13,080
Unreported	374	0	0	0	166	12	161	35	748
Total	317,459	3,688	36,169	38,278	18,408	11,666	161,214	17,666	604,548

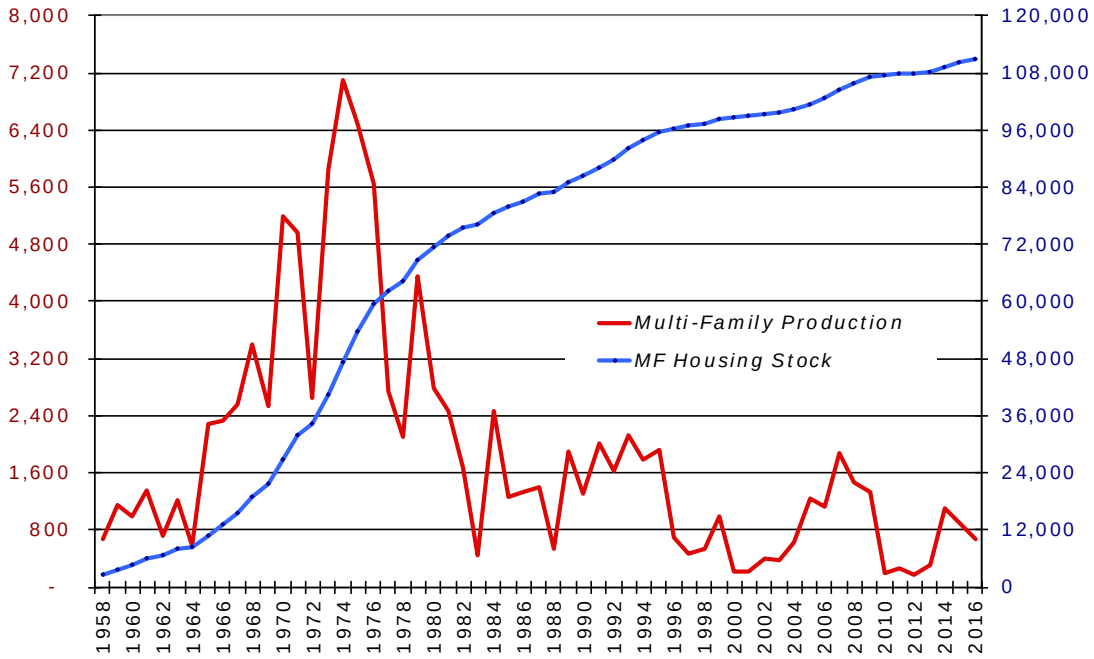
Since the project is categorized as attached housing, the study will focus on this type of dwelling. Our analysis of household types and sizes will employ housing statistics provided by the City and County of Honolulu's Real Property Assessment and Property Assessment Division.

The majority of the attached housing stock on the island is old. The table shows that 60% of the attached dwellings on Oahu were built before 1980.

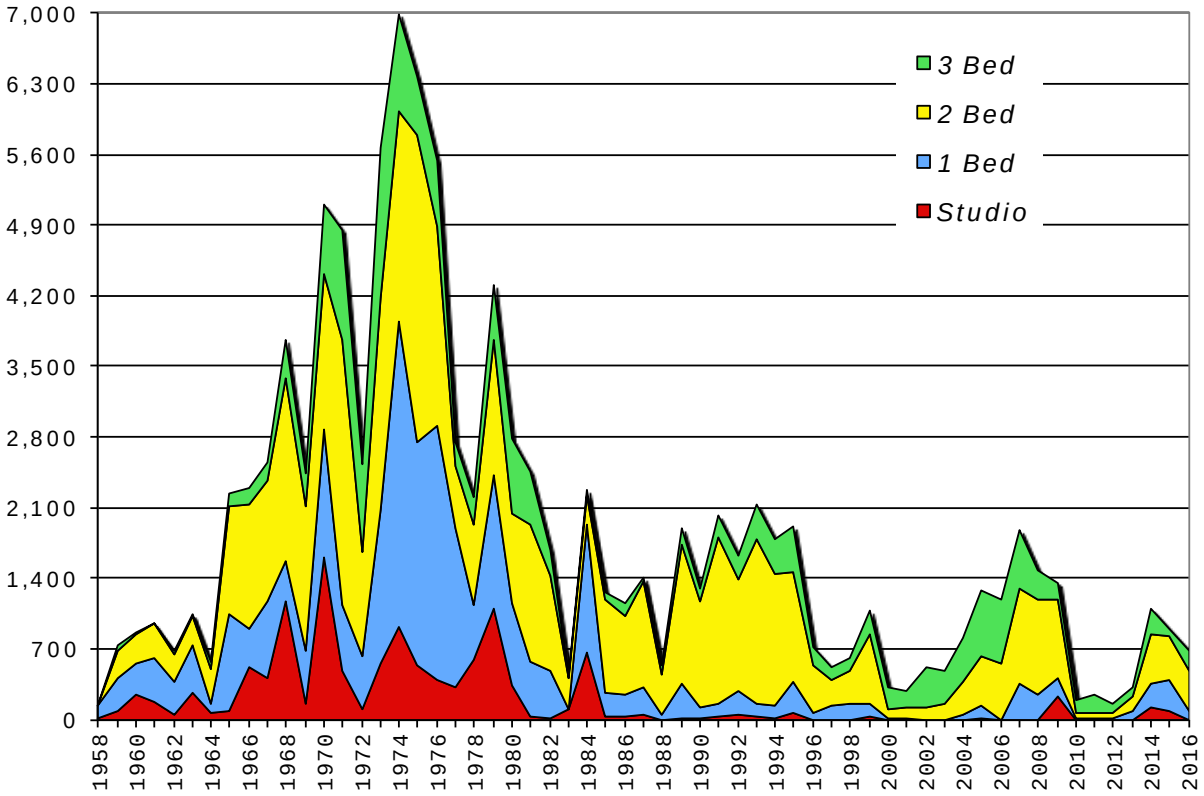
CONDOMINIUM HOUSING PRODUCTION TRENDS, ISLAND WIDE

	Units	Ave. Sq Ftg	Ave. Assessed Values
1955 or less	289	503	$346,326
1960 - 1964	2,429	589	$449,458
1965 - 1969	4,867	618	$410,882
1970 - 1974	13,088	721	$415,926
1975 - 1979	25,730	803	$387,334
1980 - 1984	21,326	714	$379,057
1985 - 1989	9,847	815	$426,401
1990 - 1994	6,440	834	$427,274
1995 - 1999	8,859	917	$448,083
2000 - 2004	4,605	826	$524,536
2005 - 2009	1,836	1,143	$594,289
2010 - 2014	7,024	1,062	$833,913
2015+	2,050	1,056	$892,611

MF Unit Growth & Total Housing Stock



Annual Production of Condos, Oahu



When examining the attached housing stock by bedroom count, one can see that it is comprised primarily of one and two-bedroom units.

CONDOMINIUM HOUSING BEDROOM TYPES, ISLAND WIDE

	Units	Ave. Sq Ftg	Ave. Assessed Values	Ave. Values Per Sq Ft
Studios	8,439	361	$202,080	$561
1 Bed	23,800	582	$309,853	$533
2 Bed	45,103	882	$412,141	$467
3 Bed	16,882	1,245	$493,991	$397
4 Bed	1,623	1,517	$525,142	$346

Hawaii has one of the lowest percentage ownership housing markets in the nation and is among one of the least affordable. Such can be attributed to the limited supply of land, very high costs of production and very strong housing demand, resulting in low housing production and high prices. The problem is exacerbated by the fact that housing prices have exceeded household incomes for over 25 years.

Per the 2010 Census, the total number of housing units in Honolulu was 329,724, with 92% of them occupied. This left some 26,000 units vacant, with about one-third of them or 9,477 accessible to those seeking a residential housing unit. Most of these are in locations and in a condition conducive to high rental rates, such as Waikiki (high visitor demand) and Makiki (high demand for middle- and upper-income households, due to close proximity to employment centers and good schools). Thus, they remained unaffordable to households with low- to moderate-incomes.

Given high demand and low supply, the large numbers of low- to moderate-income households currently have very few options for housing. Further, this condition has existed for over 25 years, since the implementation of land zoning regulations at the county level (supply constraints) and the dramatic rise in the price of housing, fed by the Japanese visitor and housing demand explosion. These conditions, high prices and low supply, continue on today, with Honolulu being named as the least affordable housing market in the nation in a number of studies.

For instance, in 2016, Hawaii ranked #1 in the nation for having the widest gap between wages and the price of rental housing by The National Low-Income Housing Coalition's annual report, Out of Reach. It showed that in 2016, the national Housing Wage is $20.30 for a two-bedroom rental unit, assuming a 40-hour workweek, 52 weeks per year. In comparison, Hawaii's Housing Wage is $32.44 for a two-bedroom rental unit.

HOUSEHOLD CONDITIONS, SIZE AND OWNERSHIP: A major effect of high housing costs on families is that they re-rent part of their shelter to friends or family. The US Census measures evidence of this, and they define crowding as 2 or more persons per bedroom.

They also measure doubling up via surveys and define that as 'more than one family group' in a household. In the last Housing Planning Study, such a survey was performed and the results from Oahu show the following:

CROWDING & DOUBLING UP, ALL OAHU HOUSEHOLDS SURVEYED

	Owners	Renter
Crowded	5.00%	21.60%
Doubled up	12.30%	10.70%
Crowded & Doubled Up	16.50%	26.80%

The following tables show the data by area.

HOUSEHOLDS DOUBLING UP, BY AREA

	Ewa	Central Oahu	Waianae	Honolulu	Total
Yes	4,495	4,096	2,298	18,378	37,778
No	25,875	34,182	9,368	142,836	279,681

OAHU HOUSEHOLDS CROWDING, BY AREA

People / Bedroom	Ewa	Central Oahu	Waianae	Honolulu	Total
Less than 2	27,880	35,445	10,091	137,354	281,269
More than 2	2,490	2,833	1,575	23,860	36,190

Another way that this condition is made apparent is the measurement of household size. Indeed, as households cannot afford housing, then overtime pent-up demand increases, household formation is delayed, and the average household size grows. The statewide average for household size increased by 2.8% from 2.88 persons per household to 3.11. This is consistent with a housing market where demand was greater than supply. The following table shows that Oahu had highest increase in average household size over the 10-year period.

HOUSEHOLDS DOUBLING UP & CROWDING, BY AREA

	Population Growth	Household Growth	Housing Size Growth
Hawaii	19.1%	17.0%	0.3%
Honolulu	10.9%	3.5%	8.8%
Kauai	14.3%	11.7%	2.3%

IX. OVERVIEW OF HONOLULU'S RENTAL MARKET

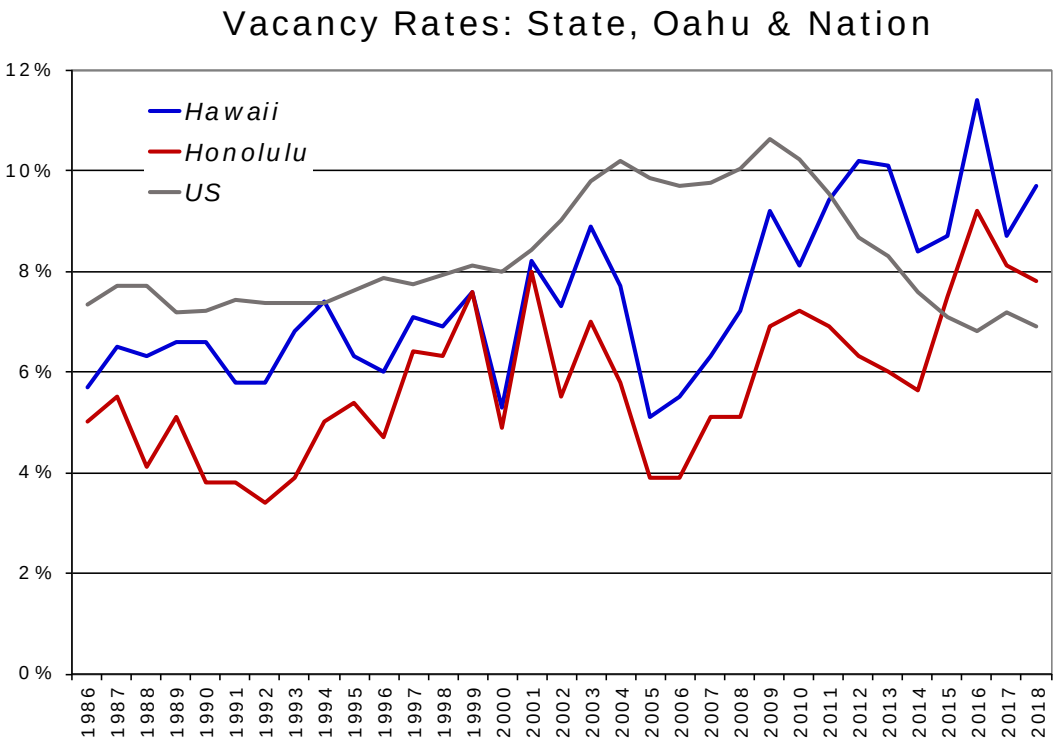
HISTORY: As described above, the rental market in the County is expensive. Unlike most urban areas in the United States where large rental operators are common, the island of Oahu consists of many small developments. Most multifamily development for local renter households occurred on small parcels of land by small groups of local investors due to the ease of financing. As a result, the rental market is predominantly comprised of small rental operations and/or mom-and-pop landlords. The large number of two-story walk-ups most commonly located in and around Moiliili, Kalihi, Makiki, Kapahulu and Kaimuki serve as evidence of such small rental operations.

All of these factors have contributed to Honolulu continually being named one of the least affordable cities in the US (using US Census data). The flipside of that is that, in terms of the vacancy rate of rental units, historically it is one of the lowest in the nation.

RENTAL MARKET CURRENT CONDITIONS: As previously stated, Honolulu is a small market with very few large rental operators and therefore data describing rental rates of specific projects is not readily available. There are, however, general sources that can be used.

U.S. Public Agencies

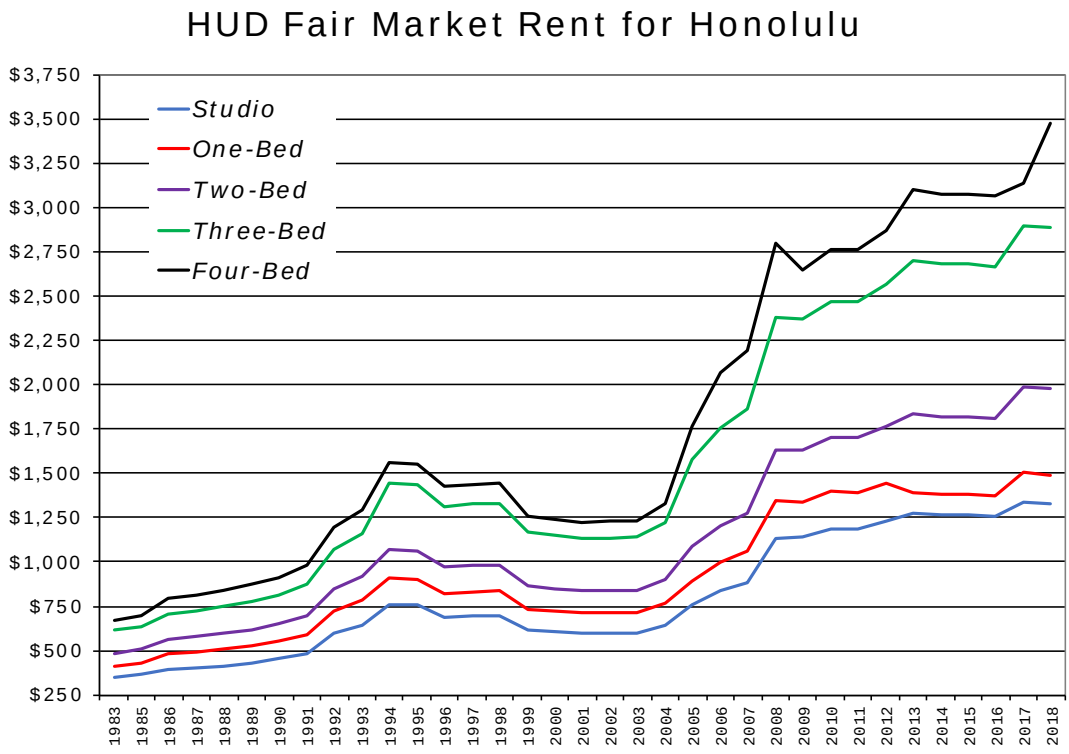
The U.S. Census has data detailing rentals of all housing types for Oahu. The following table illustrates the trend for the vacancy rate:



Note that the rates for Honolulu and the state used to be lower than that of the U.S. as a whole. However, that is not the case today – in the aftermath of the Great Depression, this rate has not returned to the levels it enjoyed during the 2005 top of real estate market.

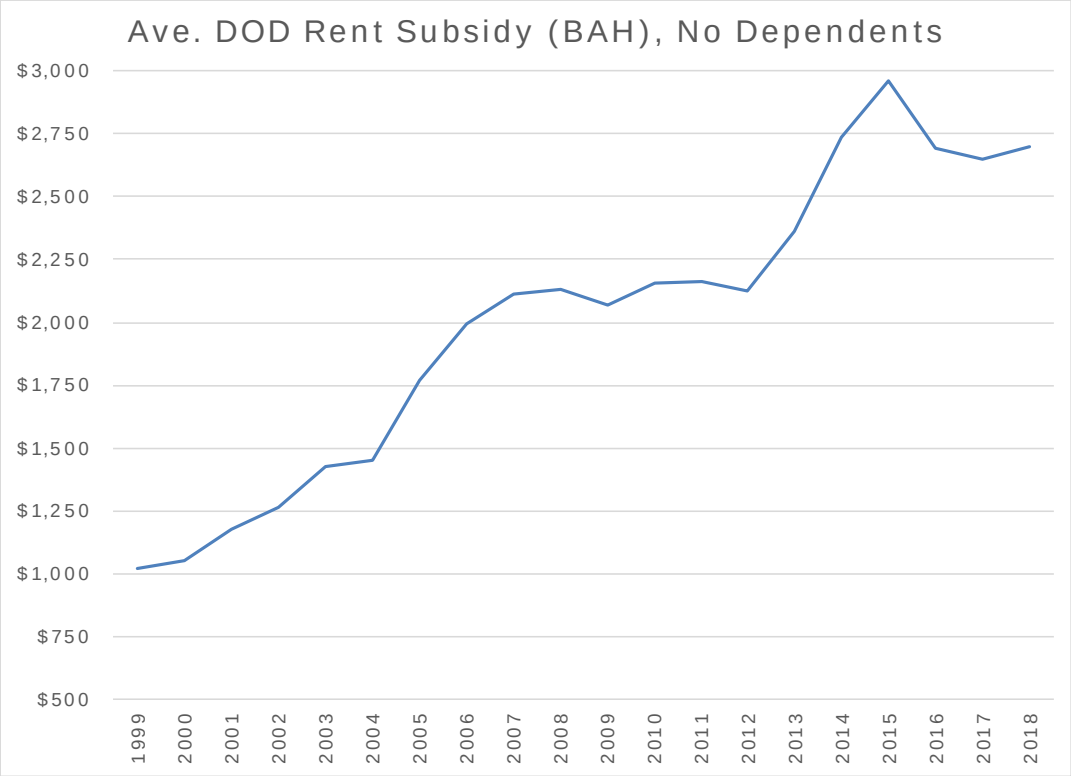
This trendline flies in the face of logic, given high housing costs and extremely low unemployment, existing in Honolulu since 2010 every available unit should be occupied, not vacant. This anomaly leads to speculation that the Census data somehow captures the existence on Oahu of short-term rental units. There are a goodly number of such units, and they produce a very healthy cash flow, better say many landlords than long-term rentals. This should explain why there are such a large percentage of 'vacancies.'

Turning to an examination of the actual rental rates being charged in the market, the best known one is called "Fair Market Rents" (FMR) and comes from the US Housing and Urban Development department (HUD). Every year, HUD analyzes the rental markets across the country, and then publishes a set of gross rent estimates for an area. They include the shelter rent plus the cost of all tenant-paid utilities, minus conveniences, like telephone and Internet. HUD does so by using (to quote them) "the most accurate and current data available" – per(http://www.huduser.org/datasets/fmr.html) - and this data includes the 2010 US Census data, the last American Community Survey (ACS) data, and telephone surveys of eligible recent rental unit movers.



As seen, the trend for HUD-defined rents is generally higher. Note also that these rents are above those proposed by this subject development.

Another source of rental trend information comes from the Department of Defense (DOD). It is called the Base Allowance for Housing (BAH), and it is their description of the rental market rates, done in conjunction with providing their personnel based in the county with a rental allowance. This is done for all counties where military personnel are based and adjusted for a cost of living. The following chart shows the average allowance that the military provides to its households when stationed in Oahu, in this case. As seen, the DOD allowance has moved in an opposite direction to the Fair Market Rent trend for Oahu for the same period (which is curious, looking at the spike up and down the last 3 years).



As seen, this data's historical trend is cohesive with the Zillow and the Honolulu Board of Realtor trend.

Given that, rental housing research and researchers have used publicly available data on rental rates to describe the market place. Historically, the best source, in terms of depth, breadth and consistency, was classified advertising in the local newspapers. The listings here provided a wealth of important data, such as asking rents, unit size, unit location, unit features, unit restrictions, etc. This data, when collected over time, then allowed for research to show rental rate and unit availability trends, and do so by location, bed count, rents and other features.

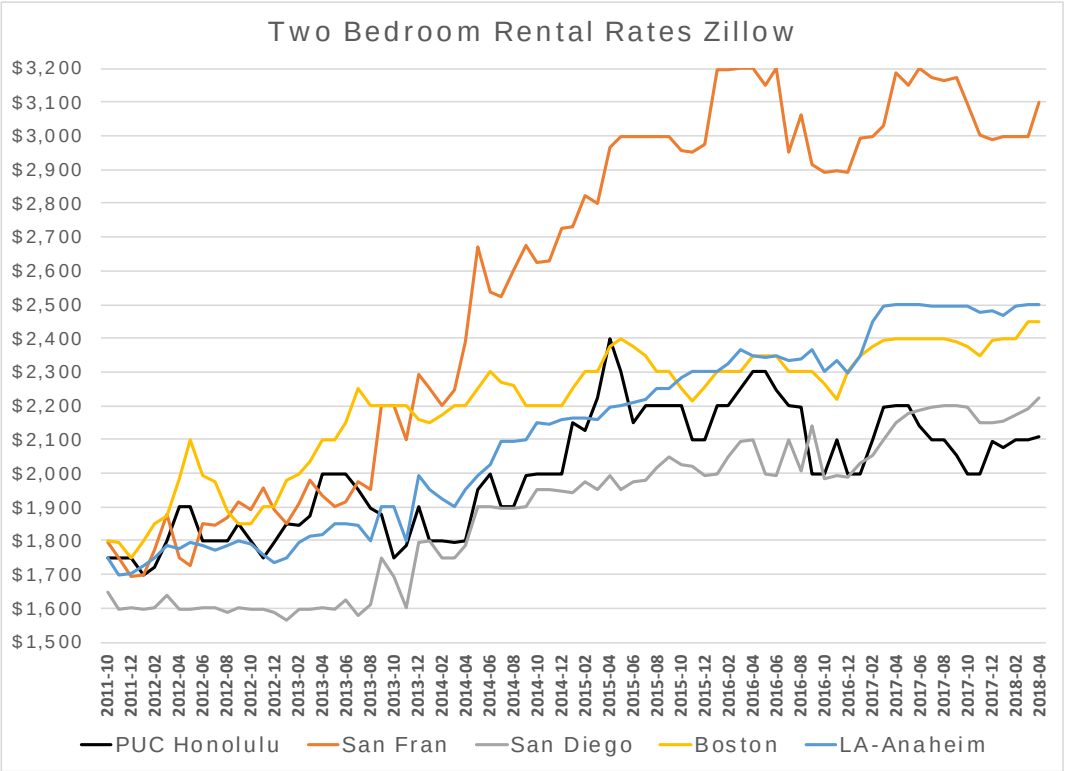
However, the advent of the internet disrupted the classified advertising marketplace by allowing that activity – and information - to migrate from a hard copy print in a newspaper into an electronic data held within a website. Thus, the research done using newspaper classified waned while that done using Internet websites that specialize in rental units in the area.

One that provides rental information most comprehensively is Craigslist. In essence, this website replaced the classified ads in the newspapers in terms of being the clearinghouse for renters and renters. Another source is Zillow.

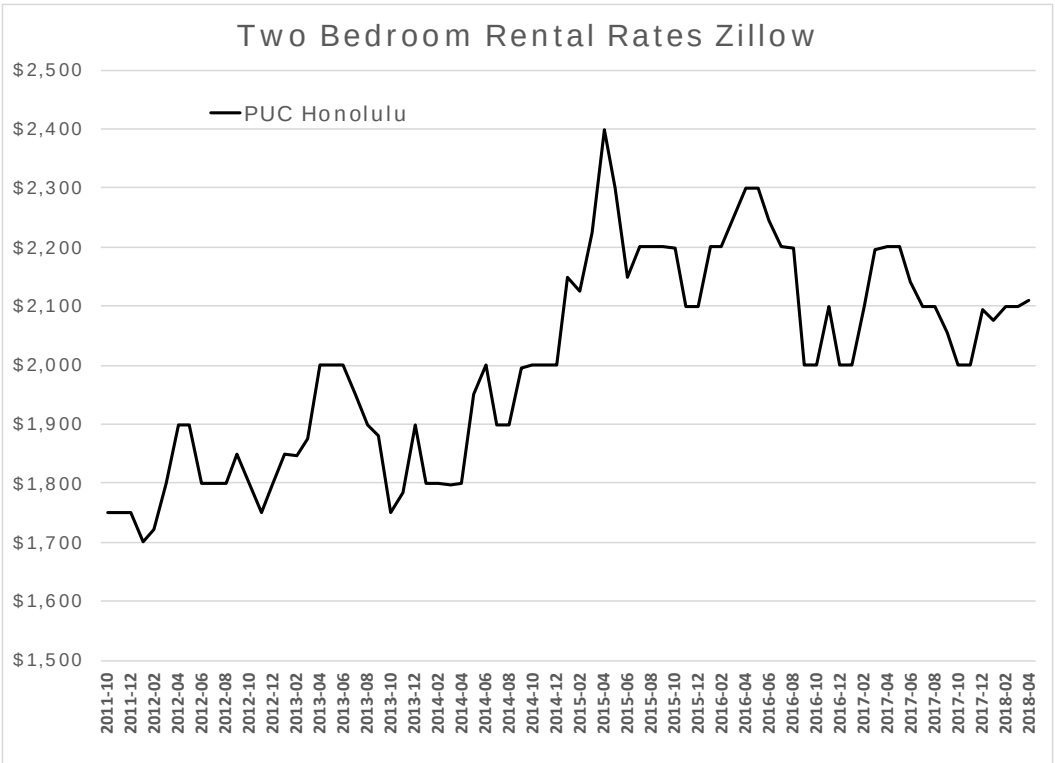
Zillow Data

Zillow Group is an online real estate database company that was founded in 2005 by former Microsoft executives. In addition to giving value estimates of homes, it offers several features including value changes of each home in a given time. Where it can access appropriate public data, it also provides basic information on a given home, such as square footage and the number of beds and baths. In December 2009, Zillow expanded its services to include the rental market. The addition of rental listings enabled users to list a home for rent and search for both rental homes and homes for sale.

Zillow rental data consists of listings, listing prices, estimated listing prices per square foot, and can be segmented by county, zip code, city and neighborhood. it breaks the data out by property type – homes vs. condos vs. apartments – it does not allow one to combine townhomes, condominiums and apartments. As such, it is a good tool for looking at the market overview, but not a good one for making fine distinctions and comparisons between the properties in that data.



As seen, the trend is rising, albeit in a volatile fashion.



Honolulu Board of Realtor Data

The best data, in terms of detail and comprehensiveness, is from the Honolulu Board of Realtors (HBR) for attached housing (including townhomes, condominium and apartments). It is very complete, including zip, furnished or not, TMK addresses, starting rent rate, closing rent rates, start of list date and whether the unit listing was rented, expired or is active.

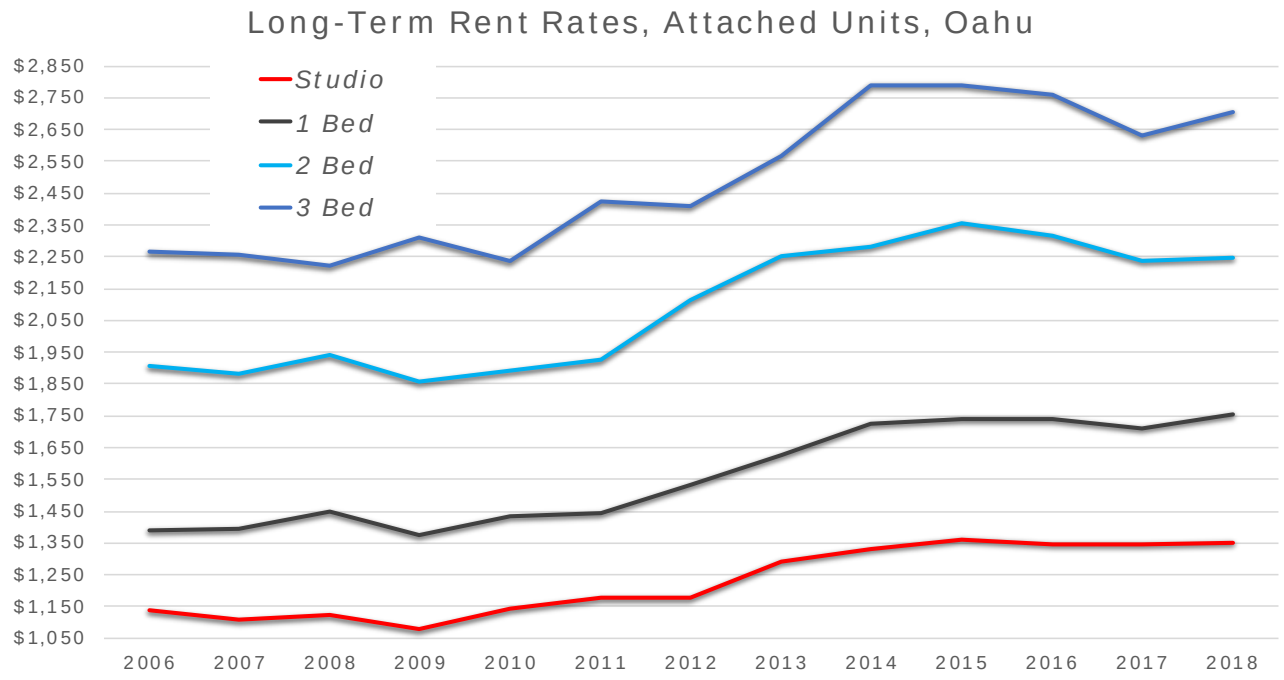
OVERVIEW: We start with an overview of the data, but just the listings that were rented out (with their rented price), and that were partially furnished (which was the largest category numerically – the others were not furnished, fully furnished and negotiable). The other data selection was to exclude single family homes and duplexes, but to lump together town homes, apartments and condos.

TIME FRAME 2008-2018: The following table gives an overview of the attached housing (including townhomes, condominium and apartments) database, all listings since 2008 by area and by bed counts. Note that this property sits in the TMK Zone 1-9, Ko Olina to Mililani to Aiea.

ALL LISTING COUNTS, FOR ATTACHED DWELLING UNITS, 2008-2018

TMK	Zone1	Studio	1 Bed	2 Bed	3 Bed
1-1	Salt Lake - Downtown	149	494	1,013	236
1-2	Downtown - Waikiki	2,251	5,584	5,659	637
1-3	D Head/Kaimuki - H Kai	169	642	1,204	439
1-4	Waimanalo - Hauula	34	265	944	527
1-5	Hauula – Sunset Beach	43	46	14	8
1-6	Waimea - Mokuleia	3	104	132	5
1-7	Wahiawa	19	99	157	15
1-8	Makaha - W Oahu	81	193	142	53
1-9	Ko Olina - Pearl City	296	1,209	4,954	2,165
1	TOTAL	1,312	4,953	9,541	2,918

The following chart shows the average rents per bed for all multifamily rentals for the past 10 years.



XI HOUSING DEMAND:

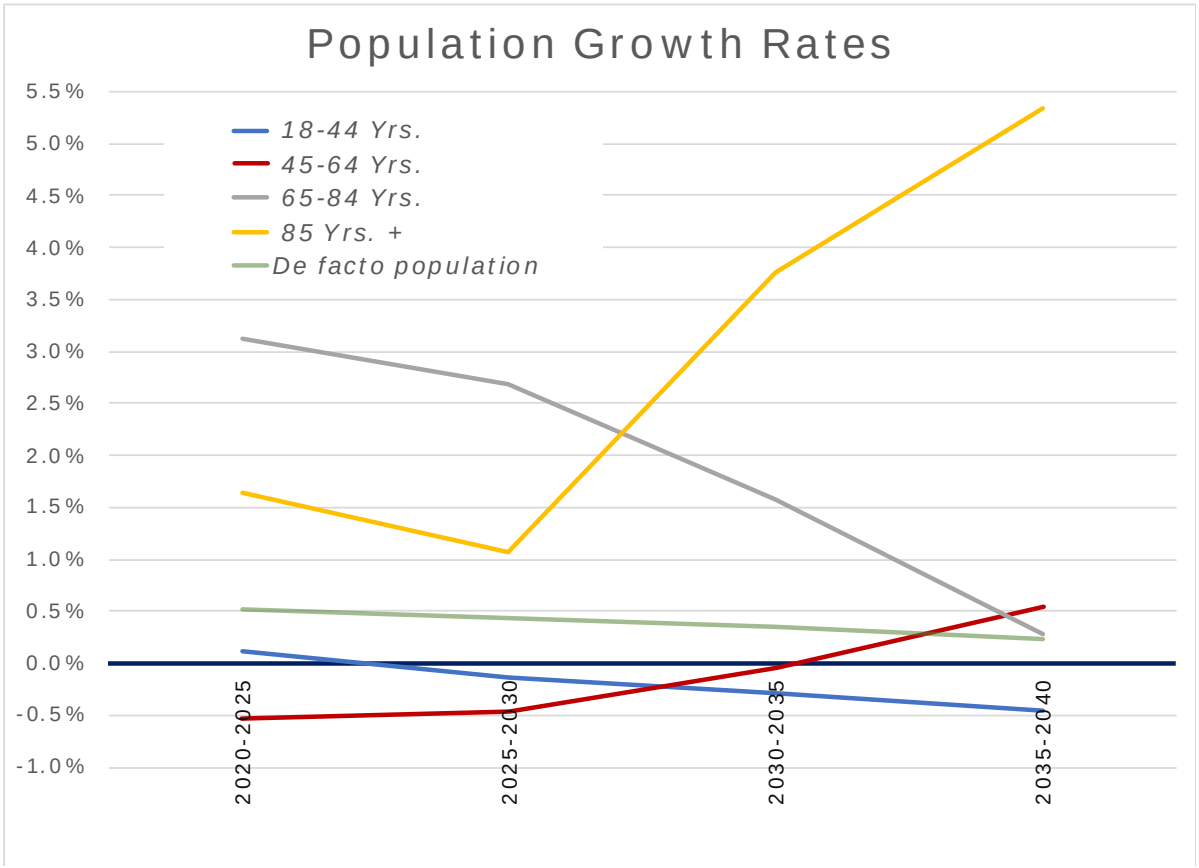
Numerous factors affect the demand for housing, the primary being population, household formations and job creation.

In the long run, population growth is the most important determinate of housing demand – although, for Hawaii, housing demand has a strong offshore component. The following table shows population projections by DBEDT for Oahu.

PROJECTED HONOLULU POPULATION TRENDS

	2020	2025	2030	2035	2040
Total resident population	**1,010,123**	**1,032,705**	**1,050,077**	**1,062,059**	**1,069,269**
Population: 0 to 4 years	68,086	69,898	67,117	64,182	62,606
School age children: 5 to 11 years	83,577	86,260	91,316	87,850	83,716
School age children: 12 to 13 years	22,332	23,769	24,516	24,989	23,901
School age children: 14 to 17 years	39,842	41,043	40,320	46,034	44,945
Population: 18 to 44 years	375,683	373,036	367,712	359,283	352,327
Population: 45 to 64 years	235,770	230,332	229,785	236,088	250,365
Population: 65 to 84 years	154,087	175,938	190,301	193,048	190,661
Population: 85 years and over	30,748	32,428	39,011	50,584	60,748
De facto population	**1,070,437**	**1,093,992**	**1,112,667**	**1,125,876**	**1,133,609**

The changes projected over the next 20+ years are shown in the chart below. Clearly, the growth in demand in the next ten years is in the senior component of the population.



X. AREA HOUSEHOLDS DEMOGRAPHIC ANALYSIS

OVERVIEW: Generally, the demographic trend for the island is that the population as a whole is aging. Additionally, the most populous segment of this market is the ones for 45 to 54 years old, followed by the one above it, the 55 to 64 years old.

The scope of work calls for a demographic analysis of the number of households in the market area that are income eligible and can afford to pay the rent. The target market is comprised of those family households who satisfy the income restrictions and other requirements for entering into a rental contract for these units.

The subject property will be producing one and two-bedroom unit rentals for those making 30% to 60% of the Area Median Income (AMI). The project's proposed unit mix is detailed in the following tables.

PROJECT UNIT BREAKDOWN, TOTAL

Beds	30% AMI	60% AMI	80%AMI	Total
1-Bedroom	8	115	7	130
2-Bedroom		16	9	25
Total	8	131	16	155

PROJECT RENT BREAKDOWN, 2018 GUIDELINES

Beds	30% AMI	60% AMI	80%AMI
1-Bedroom	$612	$1,225	$1,634
2-Bedroom		$1,312	$1,750

Next, we take these bedroom sizes and translate them into the households that would qualify to live in them by their household size (number of people) (and then later by AMI).

Per household size, there is an occupancy requirement for the minimum and maximum number of persons in a household buying (or renting) an affordable unit.

OCCUPANCY REQUIREMENT

Bedrooms	Occupancy Range
1 Bedroom	1-2 Persons
2 Bedroom	2-5 Persons

We then look at this, given the income limits of the household. This is given by the HUD 2018 AMI definition. These tax subsidy income limits are described in the table below.

MULTIFAMILY TAX SUBSIDY PROJECT INCOME LIMITS, 2018

AMI	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person	7 Person
30%	$24,510	$27,990	$31,500	$34,980	$37,800	$40,590	$43,380
50%	$40,850	$46,650	$52,500	$58,300	$63,000	$67,650	$72,300
60%	$49,020	$55,980	$63,000	$69,960	$75,600	$81,180	$86,760
80%	$65,360	$74,640	$84,000	$93,280	$100,800	$108,240	$115,680

Using the above guidelines, the table below depicts the total population of households in the County (meaning, on the island) who are renting, categorized by income bracket according to the number of people in the household.

This data comes from Ribbon Demographics, a firm that specializes in taking US Census data and separating it into segments that are useful for projecting the demographic demand for affordable housing. It defines the relevant target markets of the project.

The next step is to determine the number of people in the household who would qualify to live in a unit. This is done relative to the number of bedrooms, per the project's unit supply. The rules regulating the rental of the one bedrooms say that no less than one person and no more than two people can rent a one-bedroom unit. For two-bedroom units, no fewer than two people and no more than five people can rent a unit.

SENIOR RENTER ONLY HOUSEHOLDS BY AMI AND FAMILY SIZE, 2018

AMI	1-Person	2-Person	3-Person	4-Person	5-Person
30%	7,877	2,814	818	589	274
50%	3,588	2,059	941	575	244
60%	1,293	964	510	246	153
80%	2,360	1,515	580	585	125

The next step is to determine the number of people in the household who would qualify to live in a unit. This is done relative to the number of bedrooms, per the project's unit supply.

The rules regulating the rental of the one bedrooms say that no less than one person and no more than two people can rent a one-bedroom unit. For two-bedroom units, no fewer than two people and no more than five people can rent a unit.

From this one can derive the number of households in the market area who make the allowable income or less. This becomes the number of households that constitutes the total potential demand for the project's supply. This analysis begins with deriving the demand for the one-bedroom unit.

ONE BEDROOM UNITS: The supply by bedroom and target AMI is defined below.

PROJECT SUPPLY, BY TARGET AMI

Target AMI	Bed/Bath	Unit Count
30%	1 Bed	8
60%	1 Bed	115
80%	1 Bed	7

The next table describes the maximum income that a household qualifying for a one-bedroom unit can make.

LIMITS OF INCOME BY HOUSEHOLD SIZE

One Bedroom Limits	30% of AMI	60% of AMI	80% of AMI
1 Person	$24,510	$49,020	$65,360
2 Person	$27,990	$55,980	$74,640

With this, one can get to the number of one and two-person households who reside within the market area who satisfy income limit restrictions. This represents the potential demand in terms of the number of households that would be able to rent one of these units.

The table below shows this potential demand for one and two-person households by AMI.

RENTER HOUSEHOLDS POTENTIAL DEMAND FOR ONE BEDROOM UNITS

Target AMI	1-Person	2-Person	Renter Population
30%	7,877	2,814	10,691
60%	1,293	964	2,257
80%	2,360	1,515	3,875

The next table shows the total potential demand relative to the project's actual supply. Using that, it derives the share of market percentage that the unit supply represents verses total potential demand.

And we consider what an appropriate capture rate could be for the units of the project. Given the location of this project, as well as the fact this is new construction, we think the rate easily could be 40% to 60% of total potential demand. We then apply a factor of 50%, the midway point between the ranges, and arrive at the number of households that would apply for these units.

ONE BEDROOM SHARE OF TOTAL POTENTIAL MARKET, BY AMI

Target AMI	Unit Supply	Potential Demand	Capture Rate 50%
30%	8	10,691	5,346
60%	115	2,257	1,129
80%	7	3,875	1,938

Using either total potential demand or lower capture rate potential demand, the demographic composition of the County says that there is more potential demand than supply.

TWO BEDROOM UNITS: Per two-bedroom units, the supply of these units by AMI is detailed below.

PROJECT SUPPLY, BY TARGET AMI

Target AMI	Total Count
60%	16
80%	9

The next table describes the maximum income a household can make for these units.

LIMITS OF INCOME BY HOUSEHOLD SIZE

Two Bedroom Limits	60% of AMI	80% AMI
2 Person	$55,980	$74,640
5 Person	$75,600	$100,800

The next table shows how many two to five-person households existing within the given income limits for the area.

RENTER HOUSEHOLDS POTENTIAL DEMAND FOR 2 BEDROOM UNITS

AMI	Renters
60%	1,657
80%	2,298

The next table defines the project supply, by the number of units, and sets it against the potential demand. With that, we can derive the share of market percentage that the unit supply represents verses total potential demand, below.

Again, we consider what an appropriate capture rate could be for this proposed development's units. Given the location of this project, as well as new construction, we again assign the rate as 50%, to get a final potential demand.

2 BEDROOM CAPTURE RATE, BY AMI

AMI	Total Count	Potential Demand	Capture Rate 50%
60%	16	2,968	1,484
80%	9	2,254	1,127

As with the one bedroom, these tables show that there is more potential demand than supply.

XI. DESCRIPTION OF COMPARABLE UNITS IN THE MARKET AREA

The following tables describe the comparable units in the market area for projects that have one, two and three-bedroom units serving families making 30%, 80% and 100% of AMI.

30% AMI AFFORDABLE RENTAL INVENTORY BY BEDROOM FOR OAHU

Bedrooms in Unit	Count of Projects with Units	Count of Built Units	Average Sq Ft Size	Total Count Project Units
1 Bed	12	279	467	8

60% AMI AFFORDABLE RENTAL INVENTORY BY BEDROOM FOR OAHU

Bedrooms In Unit	Projects With Units	Built Units	Average Sq Ft Size	Total Count Project Units
1 Bed	14	687	513	115
2 Bed	2	13	672	16

80% AMI AFFORDABLE RENTAL INVENTORY BY BEDROOM FOR OAHU

Bedrooms In Unit	Projects With Units	Count of Built Units	Average Sq Ft Size	Total Count Project Units
1 Bed	12	1,144	498	7
2 Bed	1	58	71	9

These tables illustrate how the supply of the proposed subject development compares to the existing housing stock of comparable units, by bedrooms and the AMI of their target market. They describe specifically that – on the supply side - the numbers that will be provided by this proposed development are small (but only relative to the larger number, the existing stock).

XII. ANALYSIS OF COMPARABLE PROPERTIES IN THE AREA.

OVERVIEW: By way of overview, the Oahu marketplace within which “market rate properties” compete is comprised of very few large unit rental properties and a great many small unit properties. Relative to other US urban centers, this is a unique characteristic and has much to do with the development of the visitor industry and the nature of the urbanization (or the lack thereof) on Oahu.

As short a while ago as 40 years, Oahu was primarily an agrarian economy, at least in terms of the dispersion of population near the plantation areas. As such, there was no real urban core around which people lived. Thus, there is no real core area with lots of large condominium projects, other than hotel and luxury units. The main area for that was in Waikiki, which targeted short-term visitors. The rest of condominium development was small-scale, due to the rugged topography on Oahu, due to the lack of capital for building large projects, and due to the lack of land for development (leasehold system). As such, the rental marketplace was dispersed as well as highly fragmented, and the result of that is that Oahu’s rental market contains a great many 10-20 unit two-story ‘walk-ups’ (no elevator necessary, due to the limitation to two stories).

As a practical matter for this study, there are no large operators to call and survey for their rents, vacancy rates, operating expenses and turnover rates. Indeed, almost all of those who were surveyed would not divulge anything more than the asking rent.

ANALYSIS: The following tables describe the comparable units in the market area for projects that have one, two and three-bedroom units serving families making 30%, 60%, 80% and 100% of AMI.

30% AMI INVENTORY BY BEDROOM

Bedroom Count	Existing Projects	Existing Units	Ave Months of Waitlist	Ave Vacancy Rate	Ave Turnover Rate	Total Units
1-Bedroom	12	279	84	0.000	0.02	8

60% AMI INVENTORY BY BEDROOM

Bedroom Count	Existing Projects	Existing Units	Ave. Months of Waitlist	Ave Vacancy Rate	Ave Turnover Rate	Project Units
1-Bedroom	14	687	33	0.007	0.011	115
2-Bedroom	2	13	18	0.000		16

80% AMI INVENTORY BY BEDROOM

Bedroom Count	Existing Projects	Existing Units	Ave. Months of Waitlist	Ave Vacancy Rate	Ave Turnover Rate	Project Units
2-Bedroom	12	1,144	30	0.013	0.02	7
3-Bedroom	1	58	24	0.000	0.02	9

An analysis shows the following trends:

- The lower the income of the households served, the lower the vacancy rate;
- The lower the income of the households served, the lower the turnover rate;

Given that, the market would be most served by having (producing) more units for the lower income households. It would also be beneficial to have more, larger sized units.

XIII. ANALYSIS OF MARKET RATE PROPERTIES IN THE AREA

Again, there are no large operators to call and survey for their rents, vacancy rates, etc. Instead, the Internet was used to research websites that specialize in rental units. The rental averages for rented units below are from the Honolulu Board of Realtors.

AVERAGE RENTAL RATE TRENDS FOR HONOLULU, HBR

Period	One Bedroom	Two Bedroom	Three Bedroom
2016	$1,711	$2,257	$2,751
2017	$1,695	$2,255	$2,740
2018	$1,755	$2,293	$2,809

It shows a slightly rising trend for rents.

Next, we reviewed the listings for rental apartment units on the Internet over the last 2 months, specifically those advertised as being the 'least expensive'. The following tables describe those units, a comparison can be made between those rents to the highest rents for the subject property.

ONE BEDROOM MARKET RENTAL RATES, SELECTED AREA PROJECTS

School Street, no W/D, street parking	Kuakini, Ground Floor, Walk-up, No W/D	Kewalo Street Walk-up, No W/D	Wilder Street, Walk-up, No W/D, no parking	Pensacola Street, Walk-up, no W/D or parking	Kukui Gardens Apartments -	Kewalo Gardens Punahou
$900	$1,310	$1,100	$1,125	$1,250	$1,239	$1,300

TWO-BEDROOM MARKET RENTALS, SELECTED OFFERINGS

728 Kinau Street, Seniors only	1227 Alexander Street, Walkup,	Marin Tower, No W/D	1104 Hoolai Street, Walk-up, No W/D	1426 Keeaumoku Walkup, No W/D	Kokea Gardens, Kalihi, Walkup, NO W/D	Kukui Gardens Apartments
$1,250	$1,260	$1,290	$1,295	$1,395	$1,400	$1,472

Note that these units are priced equal or higher than the proposed project's rents (which, themselves, are priced commensurately as a purpose-built, higher quality, better located community).

XIV. PROPOSED PROJECTS IN THE MARKET AREAS

PROJECTED NEW INVENTORY: Currently there are no affordable senior projects planned for development in the immediate market area. There is minimal land in the market area available for development, and zoning restrictions, entitlements, and other land-related covenants make development of affordable housing challenging.

XV. CONCLUSIONS AND FORECAST

Simply put, the local real estate market is poised to see several years of increased prices for all condominium units, significantly so by the end of this market cycle. Per usual, the market for rental housing will experience a similar trend, and reasonably priced units will become less available and costlier. Finally, the lack of apartment construction should allow the rental market of Honolulu to continue enjoying a decent recovery.

Currently, the market for the proposed development is robust, with the majority of the comparables exhibiting stable occupancies and low vacancy rates. The current rental rate schedule relative to units available to the general public on the open market is competitive.

Based on our demographic information and rental demand analysis, we believe that there is adequate demand in the primary market area for the Subject property as proposed. Therefore, we expect the proposed development will attain and maintain a 99 percent occupancy rate upon stabilization. And, in light of the paltry supply and growing demand for affordable housing, we do not foresee any negative impact on the existing rental housing stock. Further, it is reasonable to expect the project will be achieving 97%-100% occupancy in the first 6 to 9 months, post-completion.

Appendix C

Air Quality Impact Assessment
Trinity Consultants
November 2019

AIR QUALITY IMPACT ASSESSMENT

Halewai'olu Senior Development, LLC

Honolulu, HI

Prepared For:

Halewai'olu Senior Development, LLC
by Halewai'olu-Michaels, LLC
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Prepared By:

TRINITY CONSULTANTS
Nancy Matthews, Managing Consultant
Ronald W. Hunter, Managing Principal Consultant
330 C Street, Suite 400
Sacramento, California 95816
916-444-6666

November 2019

Project 190506.0029

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1.1. PROJECT OVERVIEW

Halewai'olu Senior Development, LLC is proposing to construct and operate the Halewai'olu Senior Residences ("HSR"), a 17-story, 155-unit plus one resident manager, senior (62 years and over, age-restricted) rental housing facility in the Chinatown area of Honolulu ("Project"). Construction of the Project will require demolition of an existing two-story building. The property on which the Project will be constructed is owned by the City and County of Honolulu and will be the subject of a long-term lease. The Project will consist of one 17-story residential building with 13 residential floors above a four-story parking podium. Levels one through four will include the building lobby; a courtyard; a multipurpose room, recreation deck, activity rooms, warming kitchen, and management office for building residents; retail; and parking.

1.2. PROJECT LOCATION

The Project is proposed to be located on River Street, Honolulu. The Project site lies south of the River Street Canal, between N Vineyard Boulevard and N Kukui Street, adjacent to the Lum Sai Ho Tong building. The property is currently occupied by a two-story commercial building that will be demolished as part of the proposed Project.

A regional and area map of the proposed site are included as Figure 1-1 and Figure 1-2 below. The Project would be constructed on approximately 0.6 acres of land along River Street, in the location shown in Figure 1-3. The elevation of the subject property is approximately eight feet above mean sea level with an overall downward gradient toward the canal, although the property is relatively flat.

Figure 1-1. Halewai'olu Project Regional Location: Honolulu, Hawaii

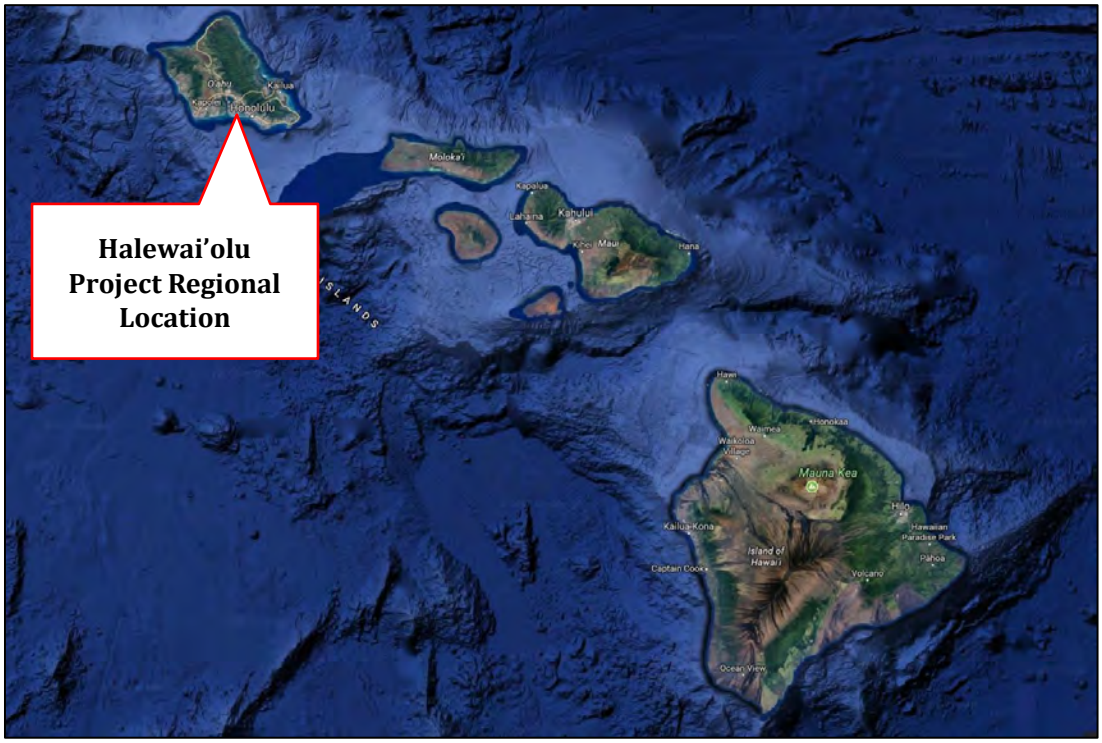


Figure 1-2. Halewai'olu Project Location

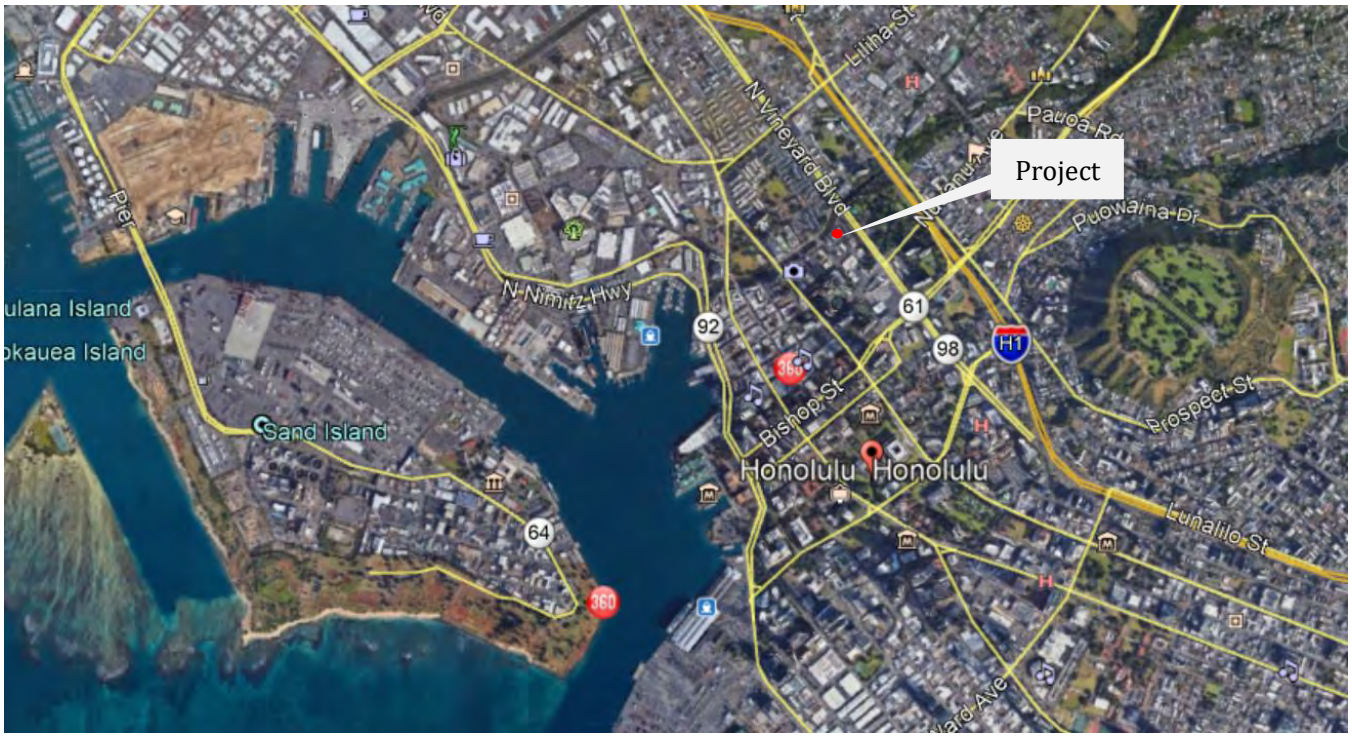


Figure 1-3. Halewai'olu Project Location



Source: Fehr & Peers, Focused Mobility Analysis Report (MAR) for the Proposed Halewai'olu Senior Residences

1.3. PROJECT DESCRIPTION

The Project will include demolition of the existing two-story commercial building on property, grading and filling, construction of a new foundation, and construction of the new 17-story building. Demolition is scheduled to be completed in the 4th quarter of 2020. Construction will be completed in the 2nd quarter of 2022, with occupancy slated to begin in April of 2022. Figure 1-4 depicts the site plan for the ground floor of the proposed Project.

1.4. GENERAL PLAN DESIGNATION AND ZONING

The proposed site is currently designated in the City and County of Honolulu as "BMX4" – "Central Business Mixed Use"- so no change in zoning is required to accommodate the proposed Project.

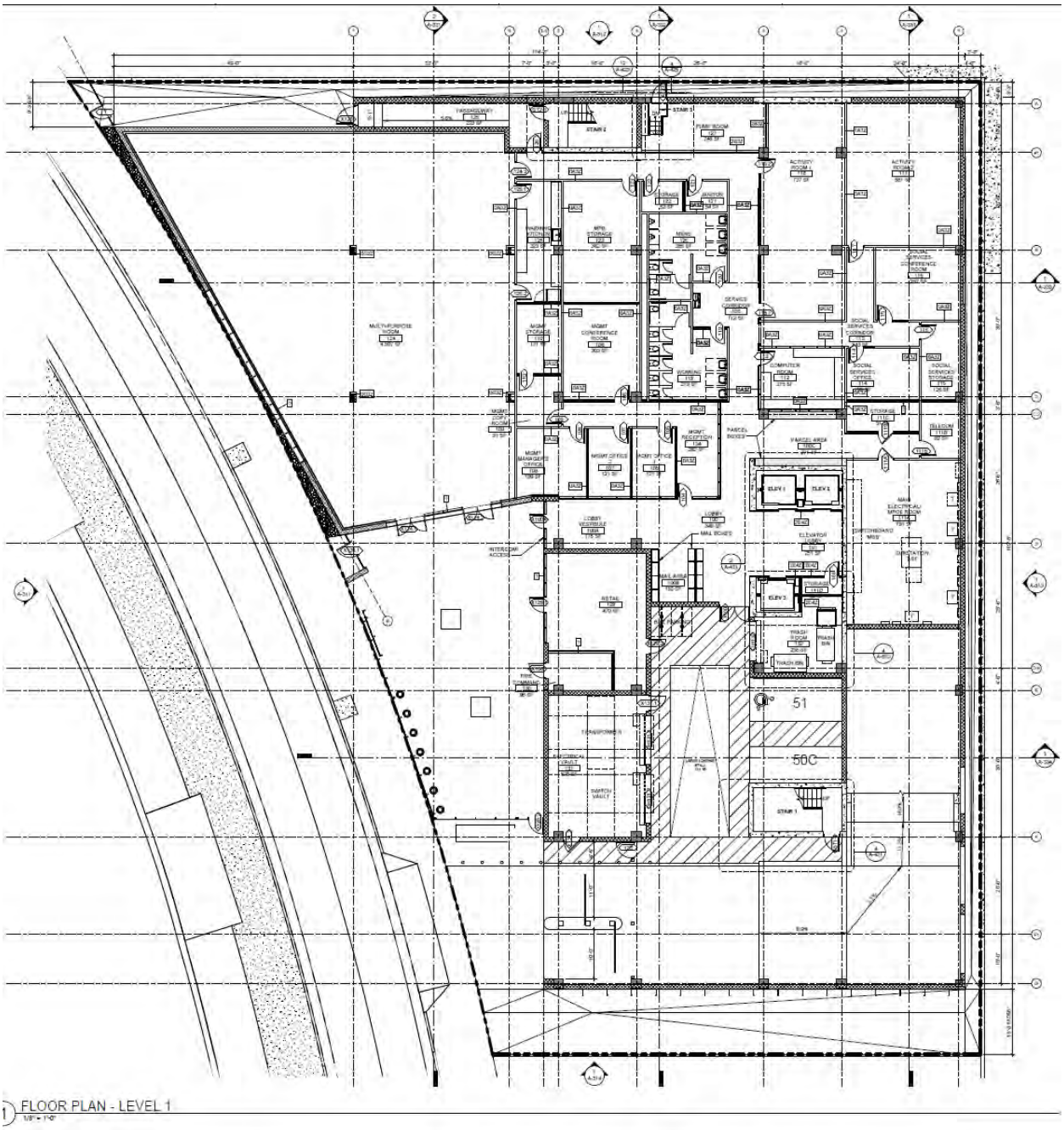
1.5. SURROUNDING LAND USES AND SETTING

West of the Project site is River Street and the sidewalks along River Street serve as a promenade along the Nu'uanu Stream called Sun Yat Sen Mall, located approximately 54 feet west of the Project site. Further west and across the stream are the Waena Apartments. The Izumo Taishkyo Mission Shinto shrine, constructed in 1968, is located approximately 322 feet northwest of and across the stream from the Project site. College Walk promenade is on the west side of Nu'uanu Stream.

The Lum Sai Ho Tong temple, constructed in 1953, is located directly adjacent to the existing structure. Approximately 254 feet further south of the Project site is the Chinatown Cultural Plaza, a popular commercial center used for seasonal community events. Alongside the Chinatown Cultural Plaza, a portion of River Street by the stream becomes a pedestrian-only promenade popularly used for recreation by seniors in the Chinatown area.

The Borthwick Mortuary Crematorium and Chapel (Hawaii Department of Health Clean Air Branch Noncovered Source Permit 0422-01-N) are located directly adjacent and to the southeast of the Project site. A portion of its surface parking lot extends north and directly borders the northeast portion of the Project site. The Kuan Yin temple and Foster Botanical Garden are located approximately 246 feet further northeast of the Project site across Vineyard Boulevard. The botanical garden is owned and operated by the City Department of Parks and Recreation (DPR) and is a historic resource listed on the National Registry of Historical Places (NRHP).

Figure 1-4. Site Plan



Source: Fehr & Peers, Focused Mobility Analysis Report (MAR) for the Proposed Halewai`olu Senior Residences

2.1. AIR QUALITY STANDARDS

The U.S. Environmental Protection Agency (EPA) sets national ambient air quality standards (NAAQS) for ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$), and lead (Pb). These standards establish the maximum concentrations of pollution considered to be acceptable, with an adequate margin of safety, to protect the public health and welfare.

The State of Hawaii has also adopted ambient air quality standards, which in some cases are more stringent than the NAAQS. Hawaii has set state standards for ozone, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, Pb, and hydrogen sulfide (H_2S).

Both national and state air quality standards consist of two parts—an allowable concentration of the pollutant, and an averaging time over which the concentration is measured. The allowable concentrations are based on studies of the effects of the pollutants on human health, crops and vegetation, and in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposure to a high concentration for a short time (e.g., one hour), or to a comparatively lower average concentration over a longer period of time (e.g., 8 hours, 24 hours, or one year). For some pollutants there is more than one air quality standard, reflecting both its short-term and long-term effects. Table 2-1 below presents the national and state ambient air quality standards for selected pollutants.

2.2. BACKGROUND AIR QUALITY

The Project will be located within the City and County of Honolulu, which is among the four counties under the jurisdiction of the State of Hawaii Department of Health (HDOH) Clean Air Branch (CAB). The HDOH CAB acts as the regulatory agency for air pollution control in Honolulu and is the local agency empowered to regulate air pollutant emissions for the Project area.

The nearest monitor to the Project site is HDOH's Downtown Honolulu monitor at 1250 Punchbowl Street, 0.6 mile from the Project. PM_{10}, $PM_{2.5}$, SO_2, and CO are monitored at this location. Ozone is monitored at Sand Island, 1.1 miles from the Project. NO_2 concentrations are monitored at the Kapolei monitoring station at 2052 Lauwiliwili Street. Air quality data collected at these stations (the nearest monitoring stations to the Project site) for the regulated criteria pollutants during the years 2015 through 2017 are presented in Table 2-2. As shown by these data, air quality in the area never exceeded the short-term or long-term national or state standards for any criteria pollutant. The available air quality data indicates that in 2015, 2016, and 2017 (the latest year for which annual reports are available), excluding the exceedances on the island of Hawai'i due to the volcano, the State of Hawaii was in attainment of all NAAQS.

Table 2-1. National and State Ambient Air Quality Standards

Pollutant	Unit	Averaging Period	NAAQS	SAAQS
SO_2	ppb	1 hour	75[a]	--
	ppm	3 hours	0.5[b]	0.5
		24 hours	--	0.14
		1 year	--	0.03
CO	ppm	1 hour	35[c]	9
		8 hours	9[c]	4.4
NO_2	ppb	1 hour	100[d]	--
	ppm	1 year	0.053[c]	0.04
PM_{10}	µg/m³	24 hours	150[e]	150
		1 year	-- [f]	50
$PM_{2.5}$	µg/m³	24 hours (block avg.)	35[g]	--
		1 year	12.0[h]	--
		1 year	15.0[i]	--
O_3	ppm	8 hours (rolling avg.)	0.070[j]	0.08
Pb	µg/m³	3 months (rolling avg.) 3 months (calendar qtr)	0.15[k] --	-- 1.5
H_2S	ppm	1 hour	--	0.025

Notes:
a. The three-year average of the 99th percentile of 1-hour maximum daily concentrations must not exceed the level of the standard.
b. Federal Secondary Standard.
c. Not to be exceeded more than once per year.
d. The three-year average of the 98th percentile of 1-hour maximum daily concentrations must not exceed the level of the standard.
e. Not to be exceeded more than once per year on average over three years.
f. EPA revoked the annual PM_{10} standard effective December 17, 2006, due to a lack of evidence linking health problems to long-term exposure. The State still has an annual standard.
g. 98th percentile, averaged over three years.
h. Annual mean, averaged over three years.
i. Annual mean, averaged over three years. Secondary standard.
j. The three-year average of the fourth highest daily maximum value must not exceed the level of the standard.
k. Rolling three-month average may not exceed the level of the standard.

Source: U.S EPA, NAAQS Table, available at https://www.epa.gov/criteria-air-pollutants/naaqs-table
State of Hawaii Department of Health, *Air Quality Data Book* (2016), available at https://health.hawaii.gov/cab/files/2019/07/aqbook_2016.pdf

Table 2-2. Air Quality in the Project Area: 2015-2017

Parameter	Statistic	2015	2016	2017	Strictest Standard
24-hour PM_{10}	Maximum	36	29	31	150 µg/m^3
Annual PM_{10}	Annual average	11.5	13.8		50 µg/m^3
24-hour $PM_{2.5}$	3-yr avg 98th percentile	10.4	10	10	35 µg/m^3
Annual $PM_{2.5}$	3-yr avg Annual average	3.7	3.4	3	12.0 µg/m^3
8-Hour O_3	4th highest daily value	0.051	0.048	0.046	0.070 ppm
1-Hour NO_2	3-yr avg 98th percentile	23	29	33	100 ppb
Annual NO_2	Annual average	0.004	0.004	0.004	0.053 ppm[c]
1-Hour CO	2nd high	1.4	1.5	1.4	9 ppm
8-Hour CO	2nd high	1.0	1.1	0.9	4.4 ppm
1-Hour SO_2	3-year avg 99th percentile	8	7	4	75 ppb
3-Hour SO_2	2nd high	0.007	0.006	--	0.5 ppm
24-Hour SO_2	Maximum	0.003	0.002	0.002	0.140 ppm
Annual SO_2	Annual average	0.000	0.000	0.0044	0.03 ppm
3-month Pb	Maximum	0.002	0.002	0.04	0.15 µg/m^3
1-Hour H_2S	2nd high	0.003	0.002	--	0.025 ppm

Sources: 2015/16 data from Hawai'i State Department of Health, Clean Air Branch records as reported in State of Hawaii Annual Summary, 2015 Air Quality Data and 2016 Air Quality Data. Available at *https://health.hawaii.gov/cab/hawaii-air-quality-data-books/*
2016/17 data from U.S. EPA Monitor Values Reports, available at https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

Under the provisions of the Federal Clean Air Act, the City and County of Honolulu is classified as in attainment with regards to the NAAQS.

3.1. DEMOLITION AND PROJECT CONSTRUCTION

3.1.1. Summary

Short-term emissions will be produced from activities related to Project construction, including demolition of the existing structures, site preparation, and building construction. These emissions will be short in duration so will not have long-term impacts on air quality. Construction emissions will result largely from off-road construction equipment activity and to a lesser extent, on-road motor vehicle trips to and from the proposed Project site. Emissions will also result from fugitive sources such as demolition, grading and road travel activities. This section describes a quantitative analysis of emissions during Project construction and resulting expected impacts on ambient air quality in the vicinity of the Project site. This analysis demonstrates that worst-case air quality impacts of Project construction, if built as proposed, are not expected to cause a significant air quality impact.

3.1.2. Analysis Methodology

The first phase of the Project will be the demolition of the existing two-story building that includes office, retail, and restaurant space, which is vacant. Demolition will involve the removal of the building, foundation, and parking lot, along with transport of the demolition materials to an offsite location where they can be disposed of.

Following the removal of all existing materials from the site, the construction phase will begin. Construction activities will include site preparation, construction of foundations, building construction and paving, and landscaping.

Fugitive dust emissions from the demolition and construction phases of the Project will result from the following activities:

- Demolition, excavation and grading at the Project site;
- Onsite travel on paved and unpaved roads and across the unpaved construction areas;
- Aggregate and soil loading and unloading operations;
- Raw material transfer to and from material stockpiles; and
- Wind erosion of areas disturbed during construction activities.

Engine exhaust will be emitted from the following sources:

- Heavy equipment used for demolition, excavation, grading, and construction of new and existing structures;
- Water trucks used to control dust emissions;
- Diesel- and gasoline-fueled welding machines, generators, air compressors, and water pumps;
- Gasoline-fueled pickup trucks and Diesel-fueled flatbed trucks used onsite to transport workers and materials around the Project site;
- Transport of mechanical and electrical equipment to the Project site; and
- Transport of raw materials to and from stockpiles.

The heavy construction equipment and other vehicles that will be used for this work (e.g., backhoes, cranes, trenchers, delivery and water trucks, etc.) will be powered by internal combustion engines that emit typical exhaust air pollutants. Because construction and demolition activities will take place over a relatively limited

period (less than two years), none of these equipment emissions is expected to add substantially to existing sources of these pollutants.

Excavation, grading, and trenching for the new Project requires the use of large diesel-fueled construction equipment. However, in the case of the proposed Project, the number of pieces of equipment operating at any one time in one location is relatively small. As a result, combustion emissions such as CO, NOx and particulate matter from this equipment are not expected to have a significant effect on air quality.

The soil disturbance caused by excavation, grading, and trenching work generates fugitive dust, which can have a more substantial (albeit temporary) effect on air quality than emissions from the engines themselves. The potential for adverse effects continues until the replacement vegetation has become established or material is placed over the exposed ground. To minimize this potential, HSR plans to limit the amount of grubbing, grading, and vegetation removal to the smallest amount possible, disturbing only the minimum area required (a total of 0.6 acres).

Specific information regarding the equipment that will be used for demolition/site preparation and Project construction will not be available until a construction contractor is selected. Consequently, overall construction emissions can only be estimated at this time. Equipment loadings and operational characteristics were taken from Appendix D of the CalEEMod model[1]. Emission factors were derived from U.S. EPA's MOVES model[2]. Estimated total emissions during demolition and Project construction are summarized in Table 3-1 below. Demolition and construction phase emissions by year are compared with total countywide emissions in Table 3-2 below. Details of the emissions calculations are provided in Appendix A.

Table 3-1. Total Estimated Project Demolition and Construction Related Emissions

	Total Emissions, tons[a]					
	Volatile Organic Compounds	**Oxides of Nitrogen**	**Carbon Monoxide**	**Sulfur Dioxide**	**PM_{10}**	**$PM_{2.5}$**
Demolition	0.07	0.49	0.48	0.00	0.08	0.05
Site Preparation	0.00	0.31	0.18	0.00	0.02	0.02
Project Construction	0.94	3.75	12.36	0.01	0.50	0.34

Note:
a. Total emissions over the construction period.

[1] See Appendix A for a more detailed discussion of CalEEMod. Documentation for CalEEMod is available at http://www.aqmd.gov/caleemod/user's-guide.

[2] MOVES (for Motor Vehicle Emission Simulator) is the official model developed by EPA for estimating on-road vehicle and non-road equipment mobile source emissions for all states in the U.S. except California. The latest version, MOVES2014b, accounts for currently-promulgated federal rules and certification standards for new vehicles and fuels. It is used to create emission factors or emission inventories for both onroad motor vehicles and nonroad equipment. Available at https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves

Table 3-2. Estimated Emissions for the Demolition and Construction Periods by Year

2020 Construction Emissions						
Source	**VOC**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
	tons	**tons**	**tons**	**tons**	**tons**	**tons**
Off-Road	0.14	0.93	1.15	0.00	0.09	0.09
On-Road	0.04	0.18	0.51	0.00	0.02	0.01
Demo - Fugitive	-	-	-	-	0.01	0.001
Grading - Fugitive	-	-	-	-	0.004	0.002
Road Travel Fugitive	-	-	-	-	0.09	0.02
Project Total	0.18	1.11	1.69	0.00	0.21	0.12
County Totals*	23,289	29,337	108,267	14,778	16,685	4,649
Project % of County	0.001%	0.004%	0.002%	0.00002%	0.001%	0.002%
2021 Construction Emissions						
Source	**VOC tons**	**NOx tons**	**CO tons**	**SOx tons**	**PM_{10} tons**	**$PM_{2.5}$ tons**
Off-Road	0.50	2.47	6.32	0.00	0.22	0.21
On-Road	0.18	0.20	2.64	0.00	0.02	0.01
Road Travel Fugitive	-	-	-	-	0.12	0.03
Project Total	0.68	2.67	8.96	0.01	0.36	0.24
County Totals*	23,289	29,337	108,267	14,778	16,685	4,649
Project % of County	0.003%	0.009%	0.008%	0.00004%	0.002%	0.005%
2022 Construction Emissions						
Source	**VOC tons**	**NOx tons**	**CO tons**	**SOx tons**	**PM_{10} tons**	**$PM_{2.5}$ tons**
Off-Road	0.13	0.71	1.62	0.00	0.06	0.06
On-Road	0.05	0.06	0.75	0.00	0.01	0.00
Road Travel Fugitive	-	-	-	-	0.03	0.01
Project Total	0.18	0.77	2.38	0.00	0.10	0.07
County Totals*	23,289	29,337	108,267	14,778	16,685	4,649
Project % of County	0.001%	0.003%	0.002%	0.00001%	0.001%	0.001%

Note:
* U.S. EPA, 2014 National Emissions Inventory Report. Available at https://gispub.epa.gov/neireport/2014/

HSR will require its contractor to implement the standard mitigation measures listed below, as well as whatever additional measures may be required by the construction-related permits that the contractor must obtain from the City and County of Honolulu.

- Maintain all construction equipment in accordance with manufacturer's specifications.
- Fuel all diesel-powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, and auxiliary power units, with ultra-low sulfur motor vehicle diesel fuel.
- Minimize the extent of disturbed area as much as possible.
- Use water trucks as needed to minimize the amount of airborne dust leaving the site.
- Cover or continuously wet dirt stockpile areas containing more than 100 cubic yards of material to minimize the formation of windblown dust.

- Install construction fencing to minimize the transmission of windblown dust onto roadways and adjacent properties.
- Implement permanent dust control measures identified in the Project plans as soon as possible following completion of any soil disturbing activities.
- Limit vehicle speed for all construction vehicles moving on any unpaved surface at the construction site.
- Cover all trucks hauling dirt, sand, soil, or other loose materials.

The implementation of these mitigation measures will further minimize any potential air quality impacts during the construction phase of the proposed Project. As a result, impacts during Project construction are not expected to be significant.

3.2. OPERATIONAL EMISSIONS

3.2.1. Summary

Once the Project is constructed, its operational emissions and ambient air quality impacts will result largely from motor vehicle trips to and from the proposed facility. This section describes a "semi-quantitative" analysis of Project operational emissions and resulting expected impacts on ambient air quality in the vicinity of the Project site. This analysis demonstrates that worst-case air quality impacts of the Project, if built, would not be expected to cause or contribute to violations of the NAAQS or SAAQS.

3.2.2. Analysis Methodology and Results

Air quality dispersion models are often used to quantify airborne pollutant concentrations and ambient air quality impacts associated with emissions from a proposed project as dictated by ambient conditions and expected emission levels of the project. For this Project, the levels of motor vehicle activity (the primary operational emission source) in the vicinity of the Project were based on estimates from the Final Focused Mobility Analysis report[3] prepared by Fehr & Peers. These incremental vehicle travel levels were combined with vehicle emissions factors (emissions for each pollutant per mile of vehicle travel) using the U.S. Environmental Protection Agency's (EPA's) latest MOVES2014b vehicle emissions model to estimate incremental operational emissions for the Project.

Table 3-3 shows the estimated incremental operational emissions from the Project due to motor vehicle trips to and from the proposed senior residences. The Project operational emissions assume an average trip length of 30 miles (which is conservatively high given the proximity of the Project to groceries, shopping, and restaurants; social, cultural, and medical facilities; and other resources/amenities; that the residences will be seniors; and that mass transit, including rail, is in walking distance from the Project) and reflect the 310 daily vehicle trips forecast by Fehr & Peers to be generated by the proposed Project. Table 3-3 also compares these incremental operational emissions to total 2020 vehicle emissions for the City and County of Honolulu, as projected by MOVES2014b. As shown in the rightmost column of Table 3-3, criteria pollutant emissions from Project operation are expected to be well below one tenth of one percent of total countywide vehicle emissions, so their impact on air quality is expected to be negligible.

[3] "Focused Mobility Analysis Report (MAR) for the Proposed Halewai`olu Senior Residences," Fehr & Peers, August 6, 2019.

Table 3-3. Project Vehicle Emissions and Comparison to Countywide Vehicle Emissions (Calendar Year 2020)

Pollutant	Project Traffic Emissions (tons/day)	City and County of Honolulu Vehicle Emissions (tons/day)	Relative Project Emissions (% of County total)
Volatile Organic Compounds (VOC)	0.0022	6.78	0.03%
Oxides of Nitrogen (NOx)	0.0015	11.83	0.01%
Carbon Monoxide (CO)	0.0325	89.05	0.04%
Fine Particulate Matter ($PM_{2.5}$)	0.0001	0.49	0.02%

To provide context for these incremental Project emissions and to assess the need to perform quantitative dispersion modeling, estimates of regional emissions (covering all source categories) and existing traffic levels were also compiled. In addition, ambient air quality monitoring data from the nearby station at the Hawaii Department of Health (HDOH) building were evaluated to determine whether the anticipated incremental Project operational emissions could be expected to cause violations of the NAAQS.

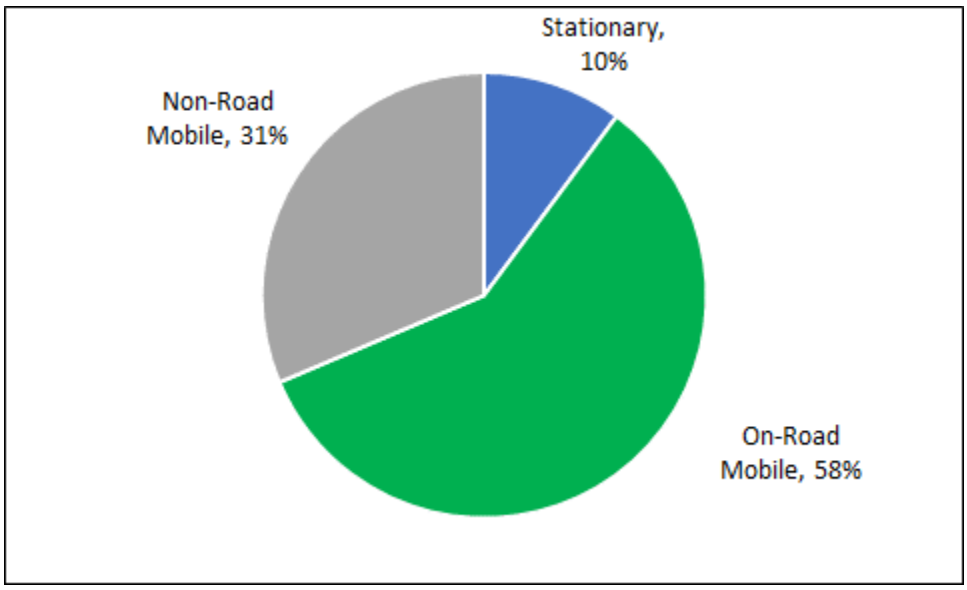
When dispersion modeling is conducted to evaluate ambient air quality impacts from projects for which the primary emission source is motor vehicles (which is the case for the Project), quantitative impacts are typically assessed only for carbon monoxide (CO). In some cases, especially when significant diesel vehicle activity is involved, particulate matter (PM) impacts are also evaluated through air quality modeling[4]. Project-related motor vehicle trips are expected to include few diesel vehicles; therefore, evaluation of Project impacts on PM is not required.

Figure 3-1 presents a breakdown of the key CO emission sources across the City and County of Honolulu. It was compiled for calendar year 2014 (the most recent year for which emissions data are available) from EPA's National Emission Inventory (NEI)[5]. As shown in Figure 3-1, roughly 90% of county-wide CO comes from mobile sources, with on-road motor vehicles contributing the greatest share. The on-road motor vehicle portion of emissions within downtown Honolulu where the proposed Project is located is even higher than that shown for the entire county, given the dense roadway network and traffic levels.

[4] Ozone impacts cannot be quantified for individual projects since it is not directly emitted, but forms in the atmosphere from "precursor" pollutants volatile organic carbon (VOC) and oxides of nitrogen (NOx) in the presence of sunlight. In addition, motor vehicles are not significant sources of two other criteria pollutants, sulfur dioxide or lead. Therefore, quantitative modeling for motor vehicle related project impacts are limited to CO and PM.

[5] https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data

Figure 3-1. Relative CO Emissions Contributions by Source Sector - City and County of Honolulu (2014 NEI)



As presented earlier in Table 2-2, ambient air quality levels in the Project area are well below the NAAQS for all criteria pollutants. The nearest ambient monitoring site for CO is located at the Hawaii Department of Health (HDOH) building on 1250 Punchbowl Street, only 0.6 miles to the southeast of the Project site in downtown Honolulu. Figure 3-2 and Figure 3-3 present maximum CO levels recorded at this monitor over the last four years and compare them to the federal and state 1-hour and 8-hour CO standards, respectively.

Figure 3-2. Peak Ambient 1-Hour CO Trends at Downtown Honolulu Monitor

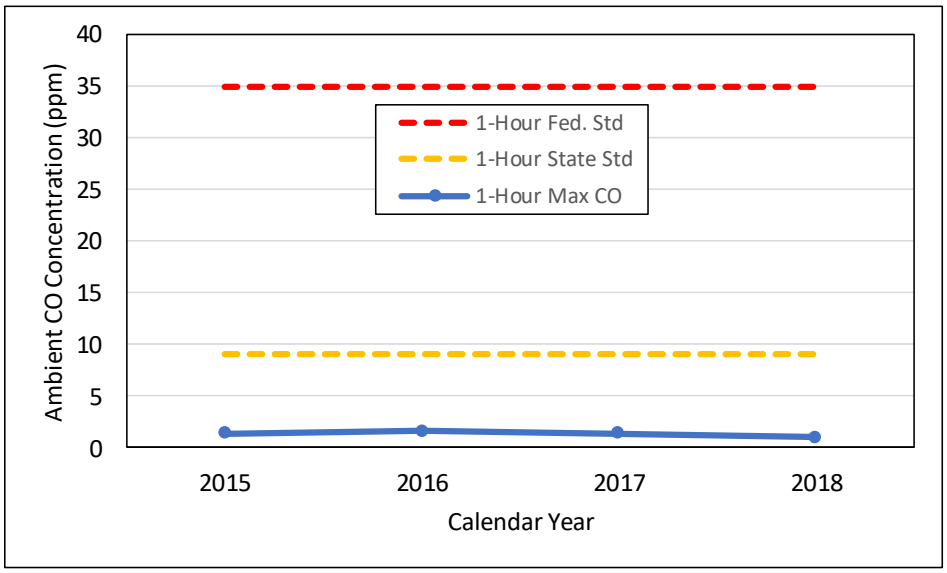
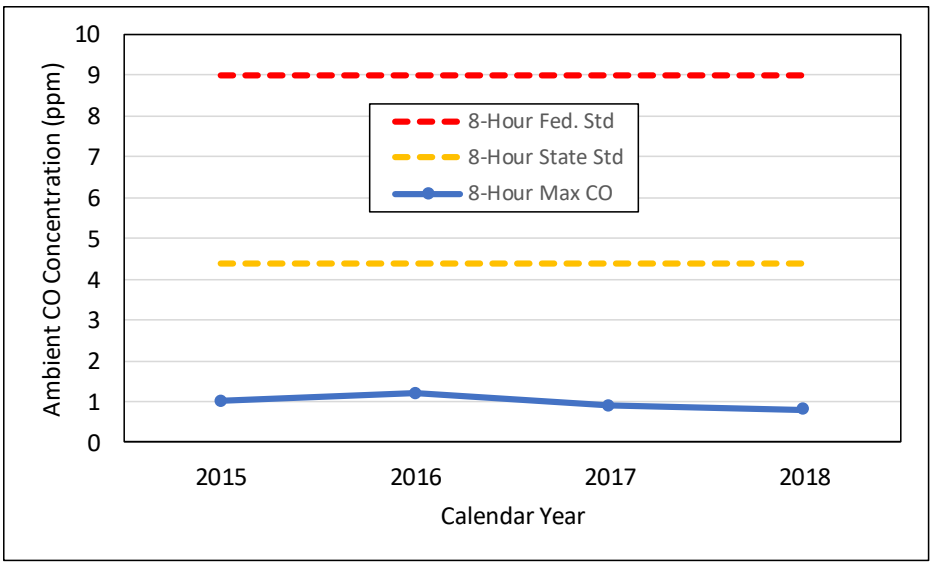


Figure 3-3. Peak Ambient 8-Hour CO Trends at Downtown Honolulu Monitor



As shown in both Figure 3-2 and Figure 3-3, maximum 1-hour and 8-hour average CO concentrations measured in downtown Honolulu over the most recent four years (2015-2018) are well below both the NAAQS (federal) and the state standards. Maximum 1-hour CO concentrations have been less than 5% and less than 18% of federal and state standards, respectively. Peak 8-hour CO concentrations over the last four years have been 13% or less of the federal standard and 27% or less of the state standard.

In accordance with EPA guidance, HDOH classifies the downtown Honolulu (1250 Punchbowl Street) monitor as a "Middle Scale" monitor for CO[6]. As defined for CO by EPA[7]:

> *Middle scale measurements are intended to represent areas with dimensions from 100 meters to 0.5 kilometer. In certain cases, middle scale measurements may apply to areas that have a total length of several kilometers, such as "line" emission source areas. This type of emission sources areas would include air quality along a commercially developed street or shopping plaza, freeway corridors, parking lots and feeder streets.* [emphasis added]

Based on this definition, it is reasonable to assume that monitored CO concentrations at the downtown monitor are representative of ambient concentrations at the Project site. To evaluate the spatial extent of the representativeness of the HDOH CO monitor, Figure 3-4 displays the location of both the proposed Project site and the downtown monitor (the nearest ambient CO monitor to the Project site) overlaid on a roadway system base map. Recalling that the dominant source of ambient CO is on-road motor vehicles (especially in high traffic areas such as downtown Honolulu), Figure 3-4 also identifies known existing daily traffic levels in the vicinity of the Project site and the ambient monitor. Traffic levels are shown alongside the roadway they represent. For example, average daily traffic (ADT) along Punchbowl Street near the HDOH monitor is 35,844 vehicles per day.

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[6] "State of Hawaii 2018 Air Monitoring Network Plan," submitted to U.S. EPA Region 9 by State of Hawaii Department of Health, Document No. HDOH – AMNP – 2018 - v01, July 1, 2018. Available at https://health.hawaii.gov/cab/files/2018/05/2018-Air-Monitoring-Network-Plan.pdf

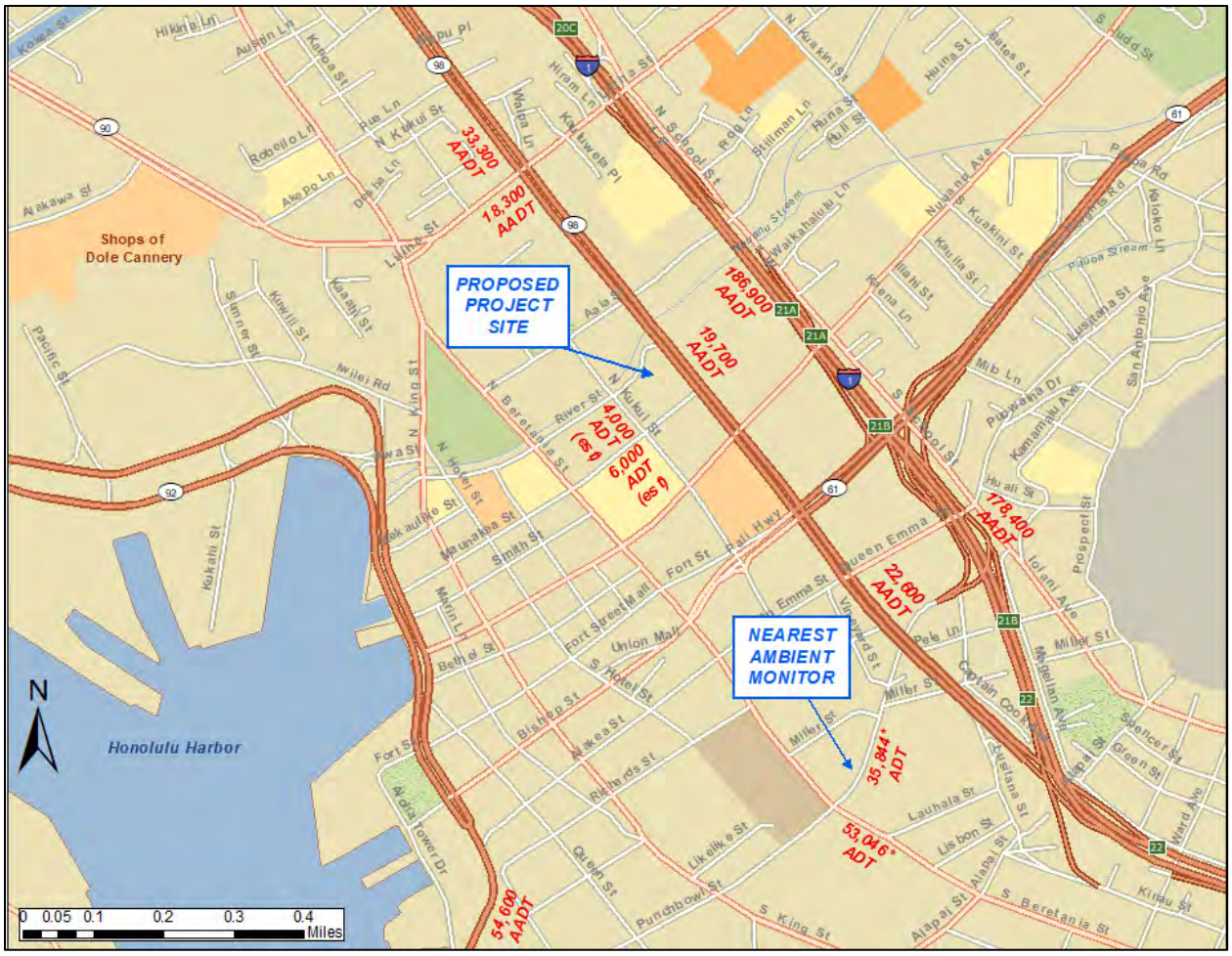
[7] https://epa.gov/ttnamti1/files/ambient/pm25/qa/vol2appe.doc

Traffic levels shown in Figure 3-4 were compiled from three sources:

1) the Focused Mobility Analysis Report (MAR)3 (roads in vicinity of Project site);
2) the 2018 Air Network Plan6 (roads in vicinity of the HDOH monitor); and
3) the Hawaii Department of Transportation GIS-based traffic data portal[8].

The MAR-based traffic levels were estimated from peak hour counts collected by Fehr & Peers and projected to daily levels using a factor of 10 (1/0.1) based on a typical "K-Factor" value[9]. Daily traffic from the 2018 Air Network Plan near the monitor were based on 2006 traffic levels developed by the Hawaii Department of Transportation. These traffic data are denoted with an asterisk (*) in Figure 3-4. Finally, the remaining traffic levels shown in Figure 3-4 are based on 2017 Annual Average Daily Traffic (AADT) levels compiled by the Hawaii Department of Transportation.

Figure 3-4. Project Site and Nearby Ambient Monitor Location with Traffic Levels



[8] https://histategis.maps.arcgis.com/apps/MapSeries/index.html?appid=39e4d804242740a89d3fd0bc76d8d7de

[9] https://www.webpages.uidaho.edu/niatt_labmanual/Chapters/roadwaydesign/theoryandconcepts/DesignControlsAndCriteria.htm

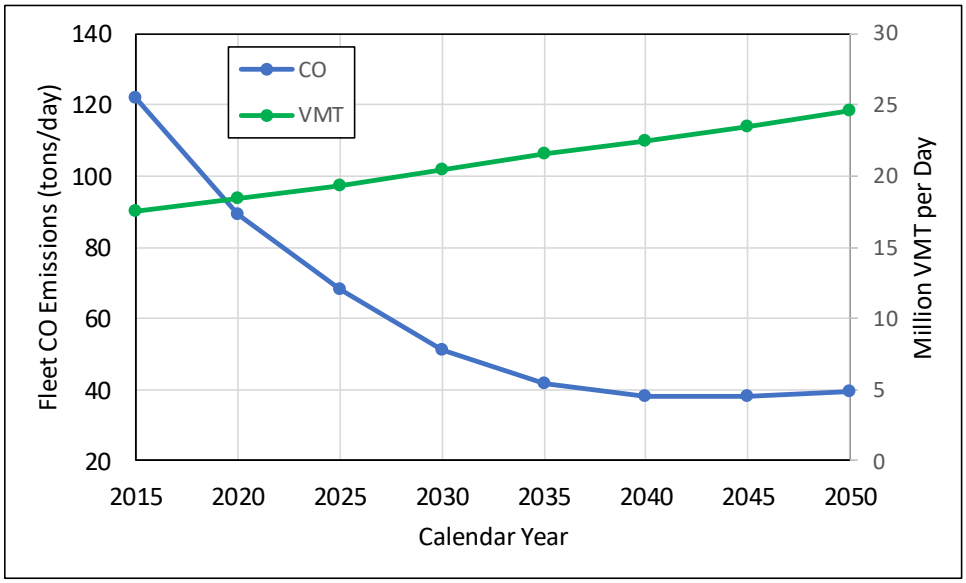
A comparison of the traffic levels plotted in Figure 3-4 on the roads in the vicinity of both the Project site and the ambient monitor indicates that traffic (and therefore vehicle emissions) in the immediate area of the Project site is lower than that in the vicinity of the monitor. Traffic levels on along the Vineyard Blvd arterial corridor (shown as Highway 98 in Figure 4-4) are slightly lower near the Project site (19,700 AADT) than further southeastward where it intersects Punchbowl Street (22,600 AADT). Moreover, neighborhood street traffic along N Kukui Street (4,000 ADT) and Maunakea Street (6,000 ADT) near the Project site is much lower than that along Punchbowl Street (35,844 ADT) and Beretania Street (53,046 ADT) near the ambient monitor.

This spatial comparison of vehicle traffic levels coupled with the CO monitoring data presented earlier in Figure 3-2 and Figure 3-3 clearly indicate that existing ambient concentrations at the Project site can be conservatively represented by the HDOH monitor data and are likely to be lower than those recorded at the HDOH site. According to the Fehr & Peers MAR, the proposed Project is estimated to add only 310 daily vehicle trips (and up to 11 peak hour trips). This nominal increase in vehicle traffic will still result in total (existing plus Project) traffic levels in the vicinity of the Project site that remain significantly lower than those in the vicinity of the nearby HDOH ambient monitor, where peak measured CO concentrations are well below all applicable federal and state standards.

Therefore, dispersion modeling was not needed to confirm that worst-case pollutant concentrations in downtown Honolulu will clearly not cause violations of all applicable ambient air quality standards if the Project is built.

Finally, to demonstrate that the risk of violating ambient standards also decreases over time after the Project is built, Figure 3-5 presents trends in CO emissions over time developed for the City and County of Honolulu using EPA's MOVES2014b vehicle emissions model. As seen in Figure 3-5, vehicle CO emissions are projected to drop significantly in future years; emissions in 2050 are forecast to be over 50% lower than current (2020) levels.

Figure 3-5. MOVES2014b-Projected City and County of Honolulu Vehicle Fleet CO Emission Trends



This decrease is the result of the on-going effects of the federal motor vehicle and fuel control programs and is projected to significantly reduce overall fleet emissions over time, even with growth in travel (plotted as VMT on the right axis in Figure 3-5) at roughly 1% per year.

3.3. PUBLIC HEALTH IMPACTS

This section discusses potential impacts and public exposure associated with airborne emissions of hazardous air pollutants (HAPs) from the construction and operation of the proposed Project.

3.3.1. Types of Risks

Cancer risk is the probability or chance of contracting cancer over a human life span (assumed to be 70 years). Carcinogens are assumed to have no threshold below which there would be no human health impact. Any exposure to a carcinogen is assumed to have some probability of causing cancer: the lower the exposure, the lower the cancer risk.

Non-cancer health effects can be either long-term (chronic) or short-term (acute). In determining potential non cancer health risks from air toxics, it is assumed there is a dose of the TAC below which there would be no impact on human health. The air concentration corresponding to this dose is called the Reference Exposure Level (REL). Chronic toxicity is defined as adverse health effects from prolonged chemical exposure, caused by chemicals accumulating in the body. Because chemical accumulation to toxic levels typically occurs slowly, symptoms of chronic effects usually do not appear until long after exposure commences. The lowest no-effect chronic exposure level for a non-carcinogenic air toxic is the chronic REL. Below this threshold, the body is capable of eliminating or detoxifying the chemical rapidly enough to prevent its accumulation. Chronic RELs have been established for 8-hour and 1-year exposure periods. Acute toxicity is defined as adverse health effects caused by a brief chemical exposure of no more than 24 hours. For most chemicals, the air concentration required to produce acute effects is higher than the level required to produce chronic effects because the duration of exposure is shorter.

3.3.2. Health Impacts from the Project

Emissions of HAPs during demolition and construction will consist of combustion emissions from diesel fuel in construction equipment (e.g., cranes, dozers, excavators, graders, front-end loaders, backhoes). The discussion of construction impacts in Section 1.7.1 indicates that emissions of all pollutants during construction are expected be minimal and to last for a short time. No significant public health effects are expected during construction. Strict construction practices that incorporate safety and compliance with applicable laws, regulations, ordinances and standards will be followed. In addition, mitigation measures to reduce air emissions from construction impacts will be implemented as described above.

4.1. GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE SETTING

Global climate change refers to change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms, lasting for decades or longer. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred by some scientists and policy makers to "global warming" because it helps convey the notion that in addition to rising temperatures, other changes in global climate may occur. Climate change may result from the following influences:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation); and/or
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, and desertification).

There is a general scientific consensus that global climate change is occurring, caused to some degree by increased emissions of greenhouse gases (GHGs) that keep the Earth's surface warm by trapping heat in the Earth's atmosphere. This trapped radiation warms the atmosphere, the oceans, and the earth's surface[10]. While many studies show evidence of warming over the last century and predict future global warming, the precise causes of such warming and its potential effects are far less certain[11]. In its "natural" condition, the greenhouse effect is responsible for maintaining a habitable climate on Earth, but human activity has caused increased concentrations of these gases in the atmosphere, thereby contributing to an increase in global temperatures.

As determined from worldwide meteorological measurements between 1990 and 2005, the primary observed effect of global climate change has been a rise in the average global tropospheric[12] temperature of 0.36 degrees Fahrenheit (°F) per decade. Climate change modeling shows that further warming could occur, which could induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of Hawaii could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns or more energetic aspects of extreme weather (e.g., droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical hurricanes).

4.1.1. Greenhouse Gases

Human activities, including fossil fuel combustion and land use changes, release CO_2 and other compounds cumulatively termed greenhouse gases. GHGs are effective at trapping radiation that would otherwise escape the atmosphere. Many scientists believe "most of the warming observed over the last 50 years is attributable to

[10] United States Global Change Research Program (USGCRP). 2014. Climate Change Impacts in the United States: The Third National Climate Assessment. Available at http://nca2014.globalchange.gov/.

[11] https://archive.epa.gov/epa/climate-change-science/future-climate-change.html

[12] The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

human activities."[13] The increased amount of CO_2 and other GHGs in the atmosphere is the alleged primary cause of human-induced warming.

The most important GHGs directly emitted by humans include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and several others. CO_2 is the primary greenhouse gas that is contributing to recent climate change. CO2 is absorbed and emitted naturally as part of the carbon cycle, through plant and animal respiration, volcanic eruptions, and ocean-atmosphere exchange. Human activities, such as the burning of fossil fuels and changes in land use, release large amounts of CO_2, causing concentrations in the atmosphere to rise. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane is produced through both natural and human activities. For example, natural wetlands, agricultural activities, and fossil fuel extraction and transport all emit CH_4. Nitrous oxide is produced through natural and human activities, mainly through agricultural activities and natural biological processes. Fuel burning and some other processes also create N_2O. Chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6), together called fluorinated gases, are often used in coolants, foaming agents, fire extinguishers, solvents, pesticides, and aerosol propellants. These fluorinated gases have a long atmospheric lifetime, and some of these emissions will affect the climate for many decades or centuries. GHGs vary considerably in terms of Global Warming Potential (GWP), the comparative ability of each GHG to trap heat in the atmosphere. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period.

4.1.2. Anthropogenic Greenhouse Gas Emissions

The effect each GHG has on climate change is measured as a combination of the quantity of its emissions and its global warming potential and is expressed in terms of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically expressed in terms of pounds or tons of CO_2 equivalents (CO_2e).

4.1.2.1. Global GHG Emissions

Worldwide emissions of GHGs in 2017 were 36.2 gigatonnes (Gt) of CO_2e per year (including emissions from industrial and agricultural sources but excluding emissions from land-use changes).[14]

4.1.2.2. US GHG Emissions

In 2017, sources in the United States emitted about 6.5 Gt of CO_2e, or approximately 25 tons per year (tpy) per person. Over 80 percent of these emissions were CO_2 and about 10% were methane[15]. Of the six major types of

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[13] Intergovernmental Panel on Climate Change (IPCC). 2017. Climate Change 2013: The Physical Science Basis. Available at http://www.ipcc.ch/report/ar5/wg1/.

[14] Intergovernmental Panel on Climate Change (IPCC). 2014. *Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, referenced by US EPA at https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data

[15] U.S. EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017," available at https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-chapter-executive-summary.pdf

sources nationwide (electric power industry, transportation, industry, agriculture, commercial, and residential), the electric power industry and transportation sectors combined account for approximately 62% of the GHG emissions. The majority of the electrical power industry and all of the transportation emissions are generated from direct fossil fuel combustion.

4.1.2.3. GHG Emissions in Hawaii

As of January 2015, the state of Hawaii reported statewide emissions from all sources of 20.2 million metric tons of CO_2e[16]. The majority of these emissions result from energy use, with transportation being the largest contributor. Oahu's 2016 inventory shows about 14.9 million metric tons of CO_2e[17].

4.1.3. Regulatory Programs

GHG emissions are regulated federally through several regulatory programs, including U.S. EPA's fuel economy standards for mobile sources and New Source Review permitting requirements and New Source Performance Standards, and mandatory GHG emissions reporting for certain types of stationary sources.

The state of Hawaii established a Hawaii GHG Program in 2007, with the goal of reducing emissions from stationary sources to 1990 levels by 2020. Hawaii's stationary source permitting program includes requirements for quantification, evaluation and reporting of GHG emissions from large sources of emissions.

The City and County of Honolulu is in the process of developing a Climate Action Plan, with the goals of combating climate change and eliminating fossil fuel emissions to achieve a carbon neutral economy and 100% renewable energy use by 2045.

4.2. GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE IMPACTS

4.2.1. Project Activities Producing GHG Emissions

Construction and operation of the proposed Project would generate GHG emissions. However, the Project's contribution to total GHG emissions in the City and County of Honolulu is expected to be insignificant, as discussed further below.

Overall, the following activities associated with a typical residential development could contribute to the generation of GHG emissions:

- **Removal of Vegetation**. The net removal of vegetation for construction results in a loss of the carbon sequestration in plants. However, the property on which the Project will be located is already developed, so the Project is expected to have minimal to no vegetation removal. In addition, HSR intends to plant additional vegetation which will result in additional carbon sequestration and lower the carbon footprint of the Project.

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[16] Hawaii State Department of Health, "Hawaii Greenhouse Gas Emissions Report for 2015," January 2019. Available at https://health.hawaii.gov/cab/files/2019/02/2015-Inventory_Final-Report_January-2019-004-1.pdf

[17] City and County of Honolulu, Office of Climate Change, Sustainability and Resiliency, 2016 Greenhouse Gas Emissions. Available at https://www.resilientoahu.org/2016-inventory

- **Construction Activities**. Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide, methane and nitrous oxide.

- **Gas, Electric and Water Use**. Natural gas use results in the emissions of two GHGs: methane (the major component of natural gas) and carbon dioxide from the combustion of natural gas. Methane is released prior to initiation of combustion of the natural gas (as before a flame on a stove is sparked), and from the small amount of methane that is not combusted in a natural gas flame. Although Honolulu is striving to achieve 100% renewable energy use by 2045, most of the island's electricity is still generated by burning fossil fuels. Potable water and wastewater also require energy for supply and treatment.

- **Motor Vehicle Use**. Transportation associated with the proposed Project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

4.2.2. Estimated GHG Emissions from the Proposed Project

This section evaluates the emissions of greenhouse gases that may result from implementation of the proposed Project.

- **Construction**. Construction would produce combustion emissions from various sources. During site preparation and construction of the Project, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. Using the methodology described in Section 1.7.1, it is estimated that the total Project construction emissions would be approximately 1,338 metric tons of CO2e. Details of the calculations are provided in Appendix A.

  Architectural coatings used in construction of the proposed Project may contain volatile organic compounds (VOCs) that are ozone precursors. However, there are no significant emissions of GHGs from architectural coatings.

- **Transportation**. Transportation associated with the Project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips. Transportation is the largest source of GHG emissions in Honolulu. For land use development projects, vehicle miles traveled (VMT) and vehicle trips are the most direct indicators of GHG emissions associated with the Project. As discussed in Section 1.7.2, the VMT generated by the proposed Project are expected to be minimal, resulting in an increase in approximately 4 tons per day of CO2e, or approximately 0.04% of total countywide CO2e from motor vehicles. Details of the calculations are provided in Appendix B.

- **Electricity and Natural Gas**. Buildings represent 39 percent of United States primary energy use and 70 percent of electricity consumption. However, residential energy use accounted for less than 10% of county-wide GHG emissions in 2016. The overall impact of the electricity and natural gas use in the proposed Project is expected to be insignificant.

- **Water and Wastewater**. Energy use and related GHG emissions are based on water supply and conveyance, water treatment, water distribution, and wastewater treatment. Each element of the water use cycle has unique energy intensities (kilowatt hours [kWh]/million gallons). Water usage and wastewater generation accounted for less than one percent of county-wide GHG emissions in Honolulu in 2016. The overall impact of the water and wastewater-related energy use for the proposed Project is expected to be insignificant.

- **Solid Waste Disposal**. Solid waste generated by the Project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH4 from the anaerobic decomposition of organic materials. CH4 is 25 times more potent a GHG than CO2. However, landfill CH4 can also be a source of energy. In the City and County of Honolulu, all the waste collected from residential and commercial locations is used as fuel in the City's waste-to-energy plant[18]. As a result, the amount of GHGs generated by the Project through solid waste disposal is expected to be minimal.

It is likely that as a result of moving to the Project, the senior residents of the Project will have shorter travel distances; require fewer vehicle trips; walk or use public transit more often, instead of driving; or use overall less energy by virtue of the Project's location in close proximity to groceries, shopping, restaurants, social, cultural, medical and other resources/amenities, and mass transit, including rail the future rail line. If these types of changes occur, overall vehicle miles traveled could be reduced as a result of the Project, and it could be argued that the Project would result in a potential net reduction in GHG emissions, locally and globally.

Finally, the Project has been designed to meet stringent LEED (Leadership in Energy and Environmental Design) standards and is currently in the certification process. LEED-certified buildings are recognized as saving energy, water, and resources and generating less waste than buildings that are not designed and built to LEED standards, and this design approach enhances the Project's sustainability. Overall, the proposed Project's cumulative greenhouse gas emissions contribution would not be significant.

[18] http://www.opala.org/solid_waste/archive/How_our_City_manages_our_waste.html

APPENDIX A: DEMOLITION AND CONSTRUCTION PHASE EMISSION CALCULATIONS

Emissions estimates for demolition and construction activities are made up of two parts: activity rates and emission factors. The activity rate is a measure of the activity that produces the emissions per unit of time, such as the number of miles driven in a month, the gallons of fuel combusted in an hour, or the hours of equipment operation in a year. The emission rate is a measure of the emissions produced by each unit of activity. Emission rates are developed in any number of ways. They may be directly measured or monitored, generated using mass balance or computer models, estimated based on measured data from similar sources or processes, or taken from published studies.

Activity Rates

There are three components of emissions estimates for demolition and construction emissions: off-road vehicle exhaust, on-road vehicle exhaust, and fugitive particulates. Activity rates for off-road and on-road vehicles[19] were estimated using California Emissions Estimator Model® (CalEEMod). CalEEMod is a land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. CalEEMod utilizes default construction equipment loading data that is not specific to California, which can be used when site-specific information is not available for a project. The model also uses California-specific emission factors that are appropriate for use in projects located within California. However, since this Project is not located in California, only the equipment loading portion of the model was used to produce activity rates for this study. Activity rates for off-road and on-road vehicles are shown in Tables A-1 and A-2 below.

Fugitive PM_{10} and $PM_{2.5}$ emissions occur from demolition activities (building demolition and debris loading), grading activities (grading dust, bulldozing, and truck loading), and road travel on unpaved and paved roads. The activity rates developed for on-road and off-road equipment activity were also used to estimate activity rates for use in calculating fugitive particulate emissions.

Emission Factors

Emission factors for off-road and on-road equipment exhaust were developed using Motor Vehicle Emissions Simulator (MOVES2014b). MOVES2014b produces estimates for total activity, total emissions, and equipment properties in Oahu County (based on the engine size, load factor, and number of pieces of each type of equipment as developed using CalEEMod). These estimates were used to estimate emission rates in terms of g/hp-hr. All off-road construction equipment was modeled as diesel except for welders, which were modeled as gasoline. The emission rates for off-road equipment are shown in Table A-3. These emission factors were used in conjunction with the estimated construction equipment and schedule (shown in Table A-1) to calculate the construction equipment emissions.

[19] Off-road vehicles include most construction equipment that is not designed to operate upon a public roadway, while on-road vehicles include conventional trucks (such as pickup trucks, delivery vans, cement mixer trucks and water trucks) that are primarily driven on public roads. Off-road vehicles are not required to meet the same stringent exhaust emission standards that apply to on-road vehicles, so emissions estimates for the two types of vehicles are developed separately.

Appendix Table A-1. Estimated Construction Equipment and Schedule

Phase	Equipment Type	Number of Units	Const. Days 2020	Const. Days 2021	Const. Days 2022	Hrs/Day
Demolition	Concrete/Industrial Saws	1	30	0	0	8
Demolition	Rubber Tired Dozers	1	30	0	0	8
Demolition	Tractors/Loaders/Backhoes	3	30	0	0	8
Site Preparation	Graders	1	2	0	0	8
Site Preparation	Rubber Tired Dozers	1	2	0	0	7
Site Preparation	Tractors/Loaders/Backhoes	1	2	0	0	8
Grading & Piers Install	Bore/Drill Rigs	1	30	0	0	8
Grading & Piers Install	Graders	1	30	0	0	6
Grading & Piers Install	Rubber Tired Dozers	1	30	0	0	6
Grading & Piers Install	Tractors/Loaders/Backhoes	1	30	0	0	7
Building Construction	Cranes	1	30	261	65	6
Building Construction	Forklifts	1	30	261	65	6
Building Construction	Generator Sets	1	30	261	65	8
Building Construction	Tractors/Loaders/Backhoes	1	30	261	65	6
Building Construction	Welders	3	30	261	65	8
Paving	Cement and Mortar Mixers	1	0	0	5	6
Paving	Pavers	1	0	0	5	6
Paving	Paving Equipment	1	0	0	5	8
Paving	Rollers	1	0	0	5	7
Paving	Tractors/Loaders/Backhoes	1	0	0	5	8
Architectural Coating	Air Compressors	1	0	0	52	6

Appendix Table A-2. Estimated On-Road Motor Vehicle Trips and Trip Distance

Vehicle Type*	Demolition trips/day	Site Prep trips/day	Grading trips/day	Building trips/day	Paving trips/day	Coating trips/day	Distance miles/trip
LD	13	8	8	121	13	24	12
HDT	6	6	10	20	0	0	10
HHDT	48	0	14	0	0	0	27

Note:
* LD – Light Duty Vehicles / HDT – Heavy Duty Trucks / HHDT – Heavy Heavy Duty Trucks

MOVES2014b was also used to estimate emission rates for construction-related on-road motor vehicle trips using estimated trip counts and distances. These estimates were used to estimate emission rates in terms of g/mile, as shown in Table A-4. The emission rates included off-network (start emissions) as well as running emissions. PM_{10} and $PM_{2.5}$ emissions from brake wear and tire wear were also calculated using MOVES2014b. The emission rates were used in conjunction with the estimated vehicle trips and distances (shown in Table A-2) to calculate the construction on-road motor vehicle trip emissions.

Building demolition and debris loading were calculated using the square footage of the buildings to be demolished with emission factors and equations from the *Midwest Research Institute – Gap Filling PM_{10} Emission*

Factors for Selected Open Area Dust Sources, 1988. Grading dust and bulldozing emissions were calculated using acres to be graded and bulldozer operating hours with emission factors and equations from *AP-42 Section 11.9*[20]. Truck loading emissions were calculated using the volume of soil to be exported with emission factors and equations from *AP-42 Section 13.2*. Paved and unpaved road travel fugitive emissions were calculated using vehicle miles traveled with emission factors and equations from *AP-42 Section 13.2.1 and 13.2.2*. Fugitive emissions will be mitigated by watering at least three times a day, which is expected to reduce fugitive dust emissions by at least sixty-one percent. Details of the fugitive emissions calculations are shown in Tables A-5, A-6 and A-7.

Appendix Table A-3. Emission Factors and Assumptions for Off-Road Construction and Demolition Equipment

Off-Road Equipment Type	Horsepower Rating	Load Factor	Emission Rates (g/hp-hr)						
			VOC/ROG	CO	NOx	SOx	CO_2	PM_{10}	$PM_{2.5}$
Air Compressors	78	0.48	0.31	2.14	4.86	0.01	1287.80	0.35	0.34
Bore/Drill Rigs	221	0.43	0.53	1.47	6.59	0.01	1157.63	0.30	0.29
Cement and Mortar Mixers	9	0.56	1.94	8.00	11.19	0.01	1283.06	1.04	1.01
Concrete/Industrial Saws	81	0.73	0.26	2.21	4.16	0.01	1300.53	0.33	0.32
Cranes	231	0.29	0.13	0.41	1.85	0.01	1158.78	0.08	0.08
Forklifts	89	0.2	0.05	0.64	2.33	0.01	1301.19	0.11	0.11
Generator Sets	84	0.74	0.87	4.25	8.61	0.01	1286.16	0.74	0.72
Graders	187	0.41	0.08	0.44	1.42	0.01	1171.55	0.08	0.08
Pavers	130	0.42	0.13	0.73	2.69	0.01	1171.42	0.17	0.17
Paving Equipment	132	0.36	0.18	0.83	2.61	0.01	1171.27	0.18	0.18
Rollers	80	0.38	0.18	1.96	3.94	0.01	1300.77	0.30	0.29
Rubber Tired Dozers	247	0.4	0.08	0.46	1.47	0.01	1171.54	0.08	0.08
Welders	46	0.45	1.80	35.71	3.02	0.01	1532.89	0.15	0.14

Notes:

a. MOVES2014b was run in the Nonroad scale to estimate emission rates for the construction equipment.

- MOVES produces estimates for total activity, total emissions, and equipment properties in the City and County of Honolulu (engine size, load factor, number of equipment).
- These results are used to estimate emission rates (shown in the Nonroad Emission Rates worksheet), in terms of g/hp-hr.
- Only the activity for the HP bin that included the engine size to be modeled was included.
- All Nonroad Equipment were Diesel except welders, which were modeled as gasoline. (Air compressors can be ignored if modeled as electric.)

b. The emissions for construction equipment are multiplied by the average engine size and the load factor to estimate g/hr emission rates.

[20] U.S. EPA, "AP-42, Fifth Edition: Compilation of Air Emissions Factors, Volume 1: Stationary Point and Area Sources." Available at https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors#5thed

Appendix Table A-4. Emission Factors for On-Road Vehicles Used in Project Construction and Demolition

On-Road Equipment Type	Emission Rate (g/mile)								
	Exhaust							Brakewear/Tirewear	
	VOC/ROG	CO	NOx	SOx	CO_2	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Light-Duty Vehicles	0.39	5.56	0.42	0.00	441.22	0.01	0.01	0.04	0.00
Heavy-Duty Trucks	0.36	5.58	0.44	0.00	448.71	0.01	0.01	0.04	0.00
Heavy-Heavy-Duty Trucks	0.40	3.46	3.43	0.01	1537.78	0.15	0.14	0.17	0.02

Notes:
a. MOVES2014b was run in the On-road scale to estimate emission rates for passenger trucks, light commercial trucks, and larger trucks.

- MOVES produces estimates for total activity (miles) and total emissions (g) in the City and County of Honolulu.
- These results are used to estimate emission rates (shown in the On-road Emission Rates worksheet), in terms of g/mile.
- They include off-network emissions (start emissions) as well as running emissions.
- Emissions from brakewear and tire wear (PM10 and PM2.5) are shown separately.

Appendix Table A-5. Demolition Phase Fugitive Emissions

Mechanical or Explosive Building Demolition

Assumptions:

Mean Wind Speed (U) =	10.6	mph (avg. wind speed for Honolulu, HI (WRCC))
PM_{10} Particulate Matter Size (k) =	0.35	
$PM_{2.5}$ Particulate Matter Size (k) =	0.053	
Material Moisture Content (M)=	2.00	%
$EF_{D\text{-}PM10}$ =	0.0030	lb PM_{10}/ton debris
$EF_{D\text{-}PM2.5}$ =	0.00045	lb $PM_{2.5}$/ton debris
1 ft^2 =	0.046	ton of waste debris
	10,256	ft^2 to be demolished
Building Waste (W)=	472	tons

$$EF_D = k \times (0.0032) \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

$$E_D = EF_D \times W$$

2020 Demo Emissions (tons)		
Source	PM10	PM2.5
Demolition	7.02E-04	1.06E-04

Debris Loading

Assumptions:

$EF_{L\text{-}TSP}$ =	0.058	lb PM_{TSP}/ton debris
PM_{10} Particulate Matter Size (k) =	0.35	
$PM_{2.5}$ Particulate Matter Size (k) =	0.053	
$EF_{L\text{-}PM10}$ =	0.020	lb PM_{10}/ton debris
$EF_{L\text{-}PM2.5}$ =	0.003	lb $PM_{2.5}$/ton debris
1 ft^2 =	0.046	ton of waste debris
	10,256	ft^2 to be demolished

$$EF_L = k \times EF_{L-TSP}$$

$$E_L = EF_L \times SF \times 0.046(ton/ft^2)$$

2020 Debris Loading Emissions (tons)		
Source	PM10	PM2.5
Debris Loading	4.79E-03	7.25E-04

Source: Midwest Research Institute. 1988. Gap Filling PM10 Emission Factors for Selected Open Area Dust Sources

Appendix Table A-6. Grading and Pier Installation Phase Fugitive Emissions

Grading Dust (Source: AP-42 Section 11.9)

Assumptions:

Mean Vehicle Speed (S) =	7.1	mph
$PM_{2.5}$ scaling Factor ($FPM_{2.5}$) =	0.031	
PM_{10} scaling Factor (F_{PM10}) =	0.6	
EF_{PM15} =	2.57	lb/VMT
EF_{TSP} =	5.37	lb/VMT
Acreage (As) =	1.83	acres (multiple passes)
Blade Width (Wb) =	12.00	feet
Watering 3x/day Mitigation =	61%	Reduction

$$EF_{PM15} = 0.051 \times (S)^{2.0}, \text{ and } EF_{PM10} = EF_{PM15} \times F_{PM10}$$

$$EF_{TSP} = 0.04 \times (S)^{2.5}, \text{ and } EF_{PM2.5} = EF_{TSP} \times F_{PM2.5}$$

$$E = EF \times VMT, \text{ and}$$

$$VMT = As / Wb \times 43{,}560(sqft/acre) / 5{,}280(ft/mile)$$

2020 Grading Emissions (tons)		
Source	PM10	PM2.5
Grading	3.78E-04	4.09E-05

Bulldozing (Source: AP-42 Section 11.9)

Assumptions:

$PM_{2.5}$ scaling Factor ($F_{PM2.5}$) =	0.105	
PM_{10} scaling Factor (F_{PM10}) =	0.75	
PM_{TSP} Arbitrary Coefficient (C_{TSP}) =	5.7	
PM_{15} Arbitrary Coefficient (C_{PM15}) =	1.0	
Material Moisture Content (M)=	7.90	% Default for overburden
Material Silt Content (s)=	6.90	% Default for overburden
EF_{TSP} =	3.94	lb/hr
EF_{PM15} =	1.00	lb/hr
EF_{PM10} =	0.75	lb/hr
$EF_{PM2.5}$ =	0.41	lb/hr
Dozer Operating Hours =	24	hrs
Watering 3x/day Mitigation =	61%	Reduction

$$EF_{TSP} = \frac{C_{TSP} \times s^{1.2}}{M^{1.3}}, \text{ and } EF_{PM2.5} = EF_{TSP} \times F_{PM2.5}$$

$$EF_{PM15} = \frac{C_{PM15} \times s^{1.5}}{M^{1.4}}, \text{ and } EF_{PM10} = EF_{PM15} \times F_{PM10}$$

Bulldozing Fugitive Emission Factors

Constant	Overburden
C_{TSP}	5.7
C_{PM15}	1.0
M	7.9%
s	6.9%
F_{PM10}	0.75
$F_{PM2.5}$	0.105

2020 Bulldozing Emissions (tons)		
Source	PM10	PM2.5
Bulldozing	3.52E-03	1.94E-03

Truck Loading (Source: AP-42 Section 13.2)

Assumptions:

Mean Wind Speed (U) =	10.6	mph (avg. wind speed for Honolulu, HI (WRCC))
PM_{10} Particulate Matter Size (k) =	0.35	
$PM_{2.5}$ Particulate Matter Size (k) =	0.053	
Material Moisture Content (M)=	12.00	% Default for Cover
$EF_{PM2.5}$ =	3.67E-05	lb/ton
EF_{PM10} =	2.42E-04	lb/ton
Weight to volume ratio =	1.26	tons/yd^3
Material =	399	yd^3 (53 micropiers: 0.83'x75', 125 micropiers: 0.83'x120', and 13 micropiers: 0.83'x60')
Throughput Material (TP) =	505	tons
Watering 3x/day Mitigation =	61%	Reduction

$$EF_D = k \times (0.0032) \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

$$E = EF \times TP$$

2020 Truck Loading Emissions (tons)		
Source	PM10	PM2.5
Bulldozing	2.38E-05	3.61E-06

Appendix Table A-7. Paved and Unpaved Road Travel Fugitive Emissions

Paved Roads

Assumptions:

PM_{10} Particulate Matter Size (k) =	0.0022	
$PM_{2.5}$ Particulate Matter Size (k) =	0.00054	
Road Surface Silt Loading (sL) =	0.03	g/m^2 (majority of traffic on roads with ADT >10,000)
Avg. Vehicle Weight (W) =	7.9	tons (avg weight of all Project vehicle trips)
Wet Days (P) =	95.00	From WRCC
Number of Days in Avg Period (N) =	365.00	
EF_{PM10} =	6.97E-04	lb/mi
$EF_{PM2.5}$ =	1.71E-04	lb/mi
2020 Paved Miles Traveled =	158,346	mi
2021 Paved Miles Traveled =	378,868	mi
2022 Paved Miles Traveled =	108,535	mi
Total Paved Miles Traveled =	645,749	mi

*LDT = 100% Paved Travel, HDT = 99.18% Paved Travel, HHDT = 99.78% Paved Travel

$$E_{ext} = [\, k\,(sL)^{0.91} \times (W)^{1.02}\,]\,(1 - P/4N)$$

Paved Road Travel Emissions (tons)		
Source	PM10	PM2.5
2020 Paved Road Travel	5.51E-02	1.35E-02
2021 Paved Road Travel	1.32E-01	3.24E-02
2022 Paved Road Travel	3.78E-02	9.28E-03
Total Paved Road Travel	2.25E-01	5.52E-02

Appendix Table A-7. Paved and Unpaved Road Travel Fugitive Emissions (cont.)

Unpaved Roads

Assumptions:

PM_{10} Particulate Matter Size (k) =	1.8000	
$PM_{2.5}$ Particulate Matter Size (k) =	0.18000	
Surface Material Silt Content (s) =	8.5	%
Avg. Vehicle Weight (W) =	25.6	tons (avg weight of all Project vehicle trips)
Moisture Content (M) =	0.5	%
Mean Vehicle Speed (S) =	5.0	mph
EF for 1980s vehicle Fleet (C_{PM10}) =	0.00047	
EF for 1980s vehicle Fleet ($C_{PM2.5}$) =	0.00036	
Wet Days (P) =	95.00	From WRCC
EF_{PM10} =	3.85E-01	lb/mi
$EF_{PM2.5}$ =	3.82E-02	lb/mi
2020 Paved Miles Traveled =	506	mi
2021 Paved Miles Traveled =	312	mi
2022 Paved Miles Traveled =	78	mi
Total Paved Miles Traveled =	896	mi
Watering 3x/day Mitigation =	61%	Reduction

*LDT = 0% Paved Travel, HDT = 0.0082% Unpaved Travel, HHDT = 0.0022% Unpaved Travel

$$E.F._{dust,i} = \left(\frac{k(s/12)^{1}(S/30)^{0.5}}{(M/0.5)^{0.2}} - C\right)\left(1 - \frac{P}{365}\right)$$

Paved Road Travel Emissions (tons)		
Source	PM10	PM2.5
2020 Paved Road Travel	3.80E-02	3.77E-03
2021 Paved Road Travel	2.34E-02	2.33E-03
2022 Paved Road Travel	5.84E-03	5.80E-04
Total Paved Road Travel	6.72E-02	6.68E-03

MOVES2014b-BASED CALENDAR YEAR 2020 VEHICLE FLEET GHG EMISSIONS AND COMPOSITE EMISSION FACTORS FOR HONOLULU COUNTY, HI (using model defaults)

		Vehicle Activity		Vehicle Emissions (tons/year)				Vehicle Emission Factors (grams/mile)			
RegClass	Source Type Name	Yearly VMT	Pop'n	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O
10	Motorcycles	40,050,700	18,283	17,451	17,346	1	0	395.28	392.92	0.03	0.005
20	Light Duty Vehicles	3,203,630,000	297,440	1,187,302	1,179,288	24	25	336.22	333.95	0.01	0.007
30	Light Duty Trucks	2,757,890,000	227,396	1,313,525	1,303,153	37	32	432.08	428.67	0.01	0.010
40	Class 2b Trucks with 2 Axles and 4 Tires (8,500 lbs < GVWR <= 10,000 lbs)	124,035,000	11,474	86,738	85,887	4	3	634.41	628.18	0.03	0.018
41	Class 2b Trucks with 2 Axles and at least 6 Tires or Class 3 Trucks (8,500 lbs < GVWR <= 14,000 lbs)	78,727,100	6,015	92,627	92,163	3	1	1067.37	1062.03	0.04	0.015
42	Class 4 and 5 Trucks (14,000 lbs < GVWR <= 19,500 lbs)	80,523,800	6,660	96,269	95,773	4	1	1084.58	1079.00	0.04	0.015
46	Class 6 and 7 Trucks (19,500 lbs < GVWR <= 33,000 lbs)	99,583,300	6,438	142,595	142,273	5	1	1299.03	1296.10	0.05	0.006
47	Class 8a and 8b Trucks (GVWR > 33,000 lbs)	353,658,000	7,580	698,229	697,164	31	1	1791.09	1788.36	0.08	0.002
48	Urban Bus (see CFR Sec 86.091_2)	7,508,590	164	12,051	11,867	6	0	1455.97	1433.84	0.74	0.013
LDV Composite (Reg Class <=30)		6,001,570,700	543,119	2,518,277	2,499,787	62	57	380.66	377.87	0.01	0.009
LDV/MDV Composite (Reg Class <=41)		6,204,332,800	560,608	2,697,642	2,677,837	70	61	**394.45**	391.55	0.01	0.009
Fleet Totals		6,745,606,490	581,450	3,646,785	3,624,915	116	64	490.45	487.51	0.02	0.009

CALCULATION OF INCREMENTAL GHG EMISSIONS FROM ON-ROAD VEHICLE PROJECT TRAFFIC (tons/day)

Average Project Trip Length (miles): 30 Daily Project Trips: 310

Pollutant	Project	County	Project%
CO2e	**4.04**	**9991.19**	**0.04%**
CO2	4.01	9931.27	0.04%
CH4	0.00	0.32	0.03%
N2O	0.00	0.17	0.05%

Appendix D

Odor and Other Nuisance Impact Assessment Trinity Consultants March 2020

ODOR & OTHER NUISANCE IMPACTS ASSESSMENT

Halewai'olu Senior Development, LLC
Honolulu, Hawaii

Prepared For:

Halewai'olu Senior Development, LLC
by Halewai'olu-Michaels, LLC
737 Bishop Street, Suite 1520
Honolulu, HI 96813

Prepared By:

TRINITY CONSULTANTS
Matthew T. Daniel, Senior Consultant
Ronald W. Hunter, Managing Principal Consultant
5500 Ming Avenue, Suite 140
Bakersfield, CA 93309
661-282-2200

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(Revised March 2020)

Trinity Consultants

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1. BACKGROUND

Halewai'olu Senior Development, LLC ("HSR") is proposing to construct and operate a 17-story, 156-unit senior rental housing facility in the Chinatown area of Honolulu ("Project"). The new 17-story building will replace an existing two-story building.

Immediately south of the proposed Project is the Borthwick Mortuary, which includes a crematorium with two double-chambered incinerators. Pursuant to Hawaii Administrative Rules (HAR), Chapter 11-60.1, "Air Pollution Control", the Hawaii Department of Health (HDOH), Clean Air Branch requires that crematories in the state obtain an Air Pollution Control Permit, for which the Borthwick Mortuary complies (Air Pollution Control - Noncovered Source Permit No. 0422-01-N). The HDOH has reportedly received complaints about crematorium nuisances such as occasional odors, ash and smoke from occupants of nearby buildings in the past, however, with crematorium's two chamber incinerator process there should be no nuisance level odors, ash or smoke from the crematorium stacks if operating in compliance with its HDOH permit conditions. If a nuisance level odor, ash or smoke is present, the incineration process is not working correctly and should be addressed by the crematorium to bring the incineration process back into compliance. Based on public records available for review, the crematorium has apparently not received any violations for their cremation process and stack emissions. It is expected that the crematorium will continue to operate within their permitted levels and should not be a source of nuisance level odor, ash or smoke.

Comments received from nearby community members have raised concerns about what effects the proposed building may have on their sites as well as on potential future residents of the Project site. In order to address these concerns, an assessment was conducted to determine whether the construction of the Project would be likely to alter wind flow in the Project area in a manner that would increase pollutant concentrations and result in potentially increased odors, ash or smoke at nearby sensitive receptors and on the Project site.

2. RESULTS

Potential emission concentration impacts were assessed at the Project site and six potential historic locations adjacent to the Project area: Lum Sai Ho Tong, Mun Lun School, Chinese Cultural Plaza, Izumo Taishakyo Mission, Kuan Yin Temple, and Foster Botanical Garden.

Section 3 of this assessment details the technical methodology used to determine the impacts construction of the proposed 17-story building would pose on wind patterns in the immediate area and how these impacts might increase or change the concentration of emissions from the crematorium at receptor points near and on the Project site.

The assessment found that with the Project fully constructed, potential emission concentration impacts from the crematorium stacks to nearby communities were *reduced* at four of the locations and were *unaffected* at two of the locations. Based on these results, it may be concluded that odor, ash and smoke at nearby communities would be reduced or remain the same with the Project fully built. As such, it could be concluded that the construction of the proposed Project would pose no change to current conditions at nearby receptors and may even *improve* conditions at as many as four of the locations modeled.

Some post-project elevated residential receptors at the Project site would have potentially increased emission concentrations when compared to pre-project ground level receptors, but this would occur only if the crematorium were not operating within HDOH permit parameters. Only 18 of the 156 proposed units would have an increase potential of at least 1.5 times the pre-project ground level concentrations, with a maximum increase of a unit at 4.27 times higher. However, these concentrations are based on being outside; these units will not have balconies and will have filtered air-conditioning units installed which would enable residents to close their windows during warmer temperatures.

Finally, and as stated in Section 1 above, the crematorium is required to operate according to their permitted conditions which are designed to prevent nuisance-level odors, ash and smoke from reaching off-site receptors. Therefore, it can be concluded that construction and operation of the proposed Project will have a less than significant impact on the Project site as well as on nearby receptors based on potential nuisances from the nearby crematorium stack emissions. Future occupants of the Project site should not be adversely affected by the crematorium's operation, provided that the Borthwick facility is operated as permitted by the HDOH.

3. STUDY METHOD

Potential nuisance impacts associated with the Project were assessed by modeling pollutant concentrations from incinerator emissions at the nearby Borthwick Mortuary crematorium. The Project site and six locations adjacent to the Project area were modeled to determine how the crematorium's emissions are currently dispersed (without the Project building present) and how they would be dispersed with the Project building constructed. The dispersion model was run twice: once in the pre-Project configuration and once in the post-Project configuration. The resulting change in modeled concentrations was used to determine if the Project building would be expected to cause or contribute to an increase in emissions concentrations that would impact reported nuisance experienced at the specific study locations.

The modeling was performed using the most recent version of the U.S. Environmental Protection Agency's (EPA's) AMS/EPA Regulatory Model – AERMOD (recompiled for Lakes ISC-AERMOD View 9.6.5 (interface). The AERMOD dispersion model is used throughout the United States for ambient air quality impact and health risk assessments to predict the areas where various airborne constituents may be dispersed from a given source. The analysis employed all of the regulatory default AERMOD model keyword parameters, including elevated terrain options.

The goal of this analysis was to determine how the presence of the Project building would be expected to impact emission concentrations in the adjacent area. Therefore, specific pollutant emissions rates were not necessary and unit emission rates were used to determine the effects of the new structure on localized concentrations. A unit emission rate of 1 gram per second was used for both incinerators at the nearby mortuary.

Both models consisted of two point sources representing the mortuary's two incinerators, each with 8.78-meter stack height, 0.5-meter stack diameters, 900 degrees Kelvin exhaust temperature, and exit velocities of 5.6 meters per second.[1] These values represent the operating parameters as permitted by the HDOH. Both models included the two buildings located on the Borthwick property and a building representing the Lum Sai Ho Tong, all of which have the ability to affect the dispersion of emissions from the incinerators. The pre-Project model (Figure 3-1) included the existing 2-story building on the Project site, while in the post-Project model (Figure 3-2) the existing 2-story building was replaced by the new Project structure. All of these buildings have the potential to affect the dispersion of emissions from the incinerators.

[1] Borthwick Mortuary Permit Application - Modification to Existing Permit #P-475-1501 dated 5-19-98.

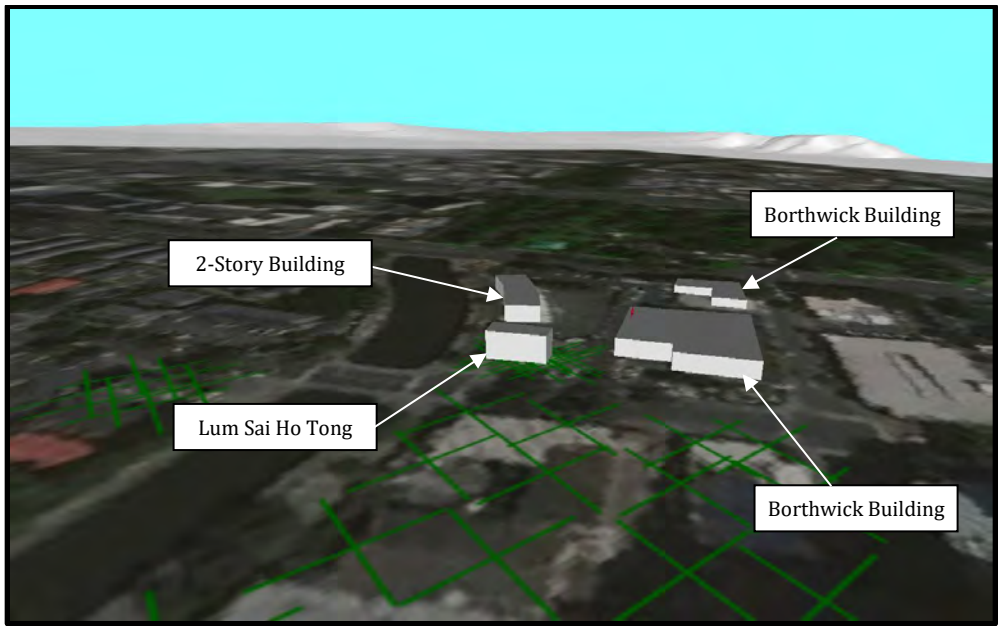

Figure 3-1: Pre-Project Model 3-D Rendering

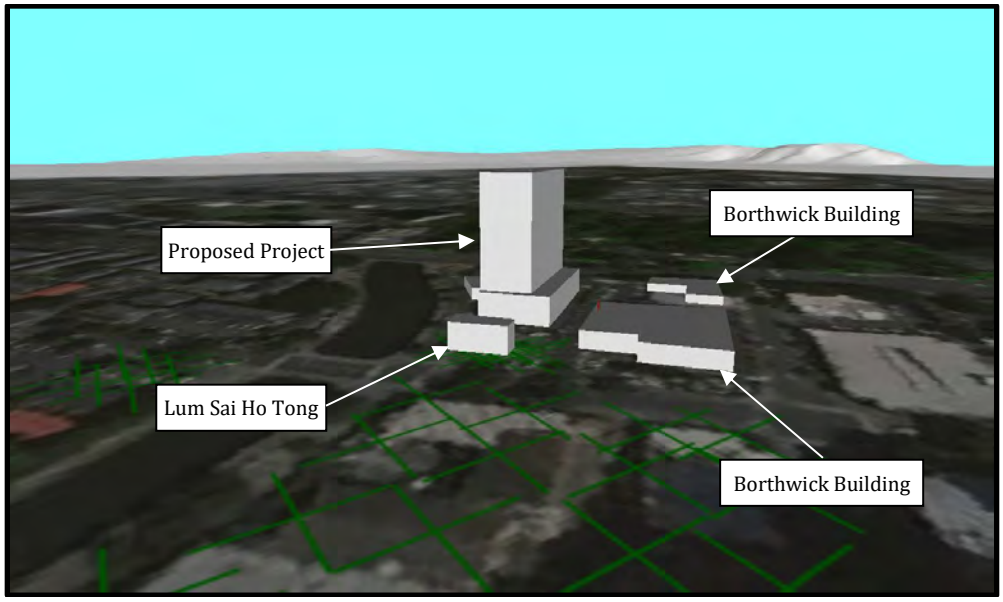

Figure 3-2: Post-Project Model 3-D Rendering

A five-year meteorological dataset for the Honolulu Airport monitoring station, representing calendar years 2012 through 2016, was processed using AERMET with the U-Star option and used with AERMOD. Figure 3-3 is a wind rose that displays the distribution of wind directions and speeds in the meteorological dataset. The wind rose shows that the prevailing winds in the project area are trade winds, which are predominantly from the northeast.

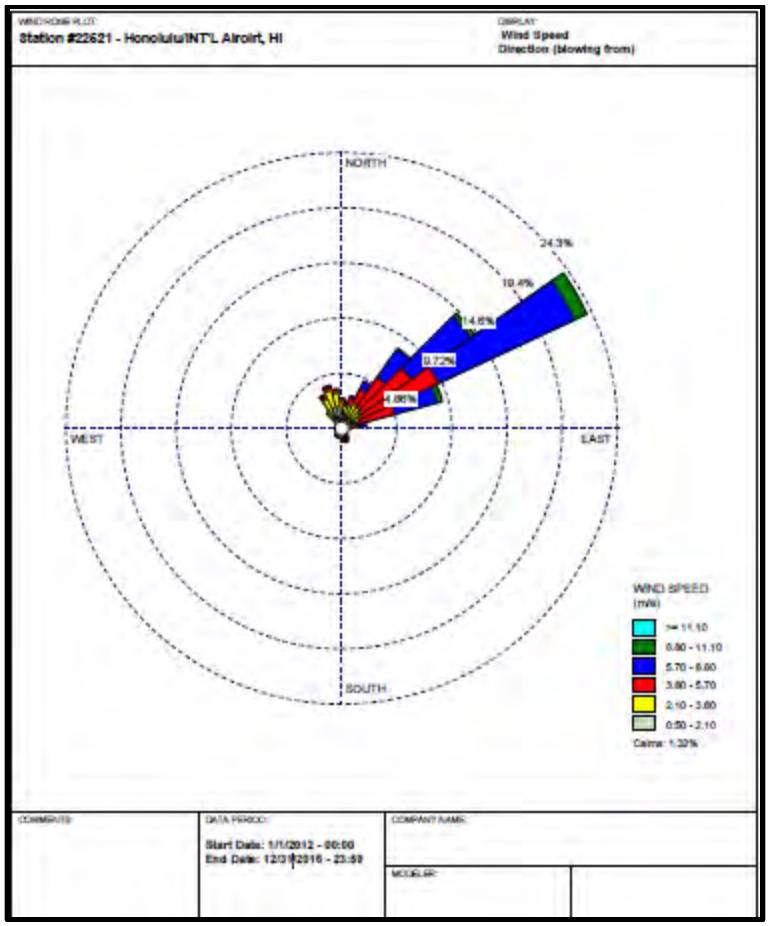

Figure 3-3: Five Year (2012-2016) Met Data Set Wind Rose

Seventy-six (76) discrete receptors were modeled at six potential historic locations adjacent to the Project area: Lum Sai Ho Tong, Mun Lun School, Chinese Cultural Plaza, Izumo Taishakyo Mission, Kuan Yin Temple, and Foster Botanical Garden (Figure 3-4). The pre-project configuration modeled twenty (20) ground level receptors and the post-Project configuration modeled 176 elevated and ground level receptors at the Project site.



Figure 3-4: Discrete Receptors

For each receptor a 1-hour average concentration was modeled and converted into a 10-minute concentration using a 1.65 factor based on the Duffee, O'Brien and Ostojic (1991) stability dependent formula ($C_1 = C_0 \times (t_0/t_1)^n$) to convert modelled values to alternative averaging times and using an average stability class exponent of 0.28.[2] The pre- and post-Project concentrations at each of the six locations are compared in **Table 3-1**.

As demonstrated in **Table 3-1**, each of the nearby locations is either not affected or experiences reduced concentrations as a result of the presence of the Project's building. Therefore, it can be concluded that the Project can be expected to have an overall net benefit to nuisance impacts in the local area.

Table 3-1: **Maximum Modeled Concentrations**

Location	Pre-Project Concentrations 10-min (µg/m³)	Post-Project Concentrations 10-min (µg/m³)	Project Impact 10-min (µg/m³)
Lum Sai Ho Tong	1,934	1,411	-523
Mun Lun School	1,195	939	-256
Chinese Cultural Plaza	1,020	1,020	0
Izumo Taishakyo Mission	750	680	-70
Kuan Yin Temple	693	575	-118
Foster Botanical Garden	1,005	1,005	0
Project Site	1,186	5,068	3,882

[2] Ten-minute concentrations were conservatively evaluated in this odor analyses since Honolulu does not currently have an odor significance threshold. Odor significance thresholds are typically evaluated on time interval concentrations ranges anywhere from 2-minutes to 1-hour.

APPENDIX A: ODOR AERMOD MODELING FILES (ELECTRONIC)

Download Raw Data File:
https://www.dropbox.com/s/wv4u0gisf5ori7x/Appendix%20A%20-%20Modeling.zip?dl=0

Appendix E

Focused Mobility Analysis Report
Fehr & Peers
August 6, 2019

Focused Mobility Analysis Report (MAR)

for the

Proposed Halewai`olu Senior Residences

Honolulu, HI

Prepared for:
Halewai`olu Senior
Development, LLC

August 6, 2019

SD19-0302

FEHR PEERS

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Executive Summary

The proposed project is a 17-story senior (age-restricted), affordable apartment tower located in the Chinatown neighborhood of Downtown Honolulu, on River Street, between N Vineyard Boulevard and N Kukui Street. The building will consist of 13 residential floors above a four-story parking podium containing a first floor with a lobby, social activities center (SAC), small commercial space, second and third floors of parking, and a fourth floor recreation deck. The residential component will include 155 age-restricted dwelling units and one resident manager unit. 26 of the units will be two-bedrooms. The new residential use will replace an existing primarily vacant two-story building which leased to office, retail, and restaurant space.

The project site plan illustrates the main project driveway on River Street. As River Street is a one-way roadway, vehicles entering the site will utilize N Kukui Street, and vehicles exiting the site will utilize Diamond Head-bound N. Vineyard Boulevard to access other local and regional roadways.

This focused mobility analysis report analyzed the existing operations of two intersections, estimated project trip generation, reviewed site access, and considered the project's potential impacts on pedestrian, bicycle, and transit modes.

This analysis studied two intersections in the project area: Kukui Street/Maunakea Street and Kukui Street/River Street. The existing conditions at both intersections were analyzed using standard traffic engineering methodologies described in the Highway Capacity Manual (HCM). Both intersections function at LOS C or better during the AM and PM peak hours. Both the City and County of Honolulu (C&CH) and the Hawaii Department of Transportation strive for LOS D or better roadway operations where feasible.

The project is estimated to generate 310 net new daily vehicle trips, 5 net new AM peak hour trips (0 inbound/5 outbound), and 11 net new PM peak hour trips (3 inbound/8 outbound). Due to the very low peak hour trip generation, the impact of the addition of project traffic on the surrounding roadway network was not analyzed since any change in traffic operations would be negligible.

The project will not result in any significant impacts to existing or planned pedestrian, bicycle, or transit modes.

1. Introduction

This focused mobility analysis presents the results of the study conducted by Fehr & Peers for the proposed Halewaiolu Senior Residences in the Chinatown neighborhood of the City and County of Honolulu (C&CH) on the island of Oahu. The project site is located on the Diamond Head side of River Street mauka of N Kukui Street and makai of N Vineyard Boulevard. The adjacent roadways are under the jurisdiction of the Highways Division of HDOT (N. Vineyard Boulevard) and the C&CH. This analysis was conducted in accordance with the guidelines and standards of both the C&CH Department of Planning & Permitting (DPP) Traffic Review Branch (TRB) and Department of Transportation Services (DTS), as well as the State of Hawaii Department of Transportation – Highways Division (HDOT). The analysis addresses potential project impacts to all travel modes.

1.1 Project Description

The proposed project is a 17-story senior (age-restricted), affordable apartment tower located in the Chinatown neighborhood of Downtown Honolulu, on River Street, between N Vineyard Boulevard and N Kukui Street. The building will consist of 13 residential floors above a four-story parking podium containing a first floor with a lobby, SAC, and small commercial space on the first floor, second and third floors of parking, and a fourth floor recreation deck. The residential component will include 155 age-restricted units and one resident manager unit. 26 of the units are two-bedrooms. The new residential use will replace an existing primarily vacant two-story building which was leased to office, retail, and restaurant space.

26 of which are two-bedroom units. The new residential use will replace an existing building that includes office, retail, and restaurant uses, most of which are vacant.

The project location is shown on **Figure 1**. The project site plan is illustrated on **Figure 2**.

The project site plan illustrates the main project driveway on River Street. As River Street is a one-way roadway, vehicles entering the site will utilize N Kukui Street and vehicles exiting the site will utilize N. Vineyard Boulevard to access other local and regional roadways.



Study Intersection

Study Driveway

Project Site

Figure 3

Study Intersections and Driveways

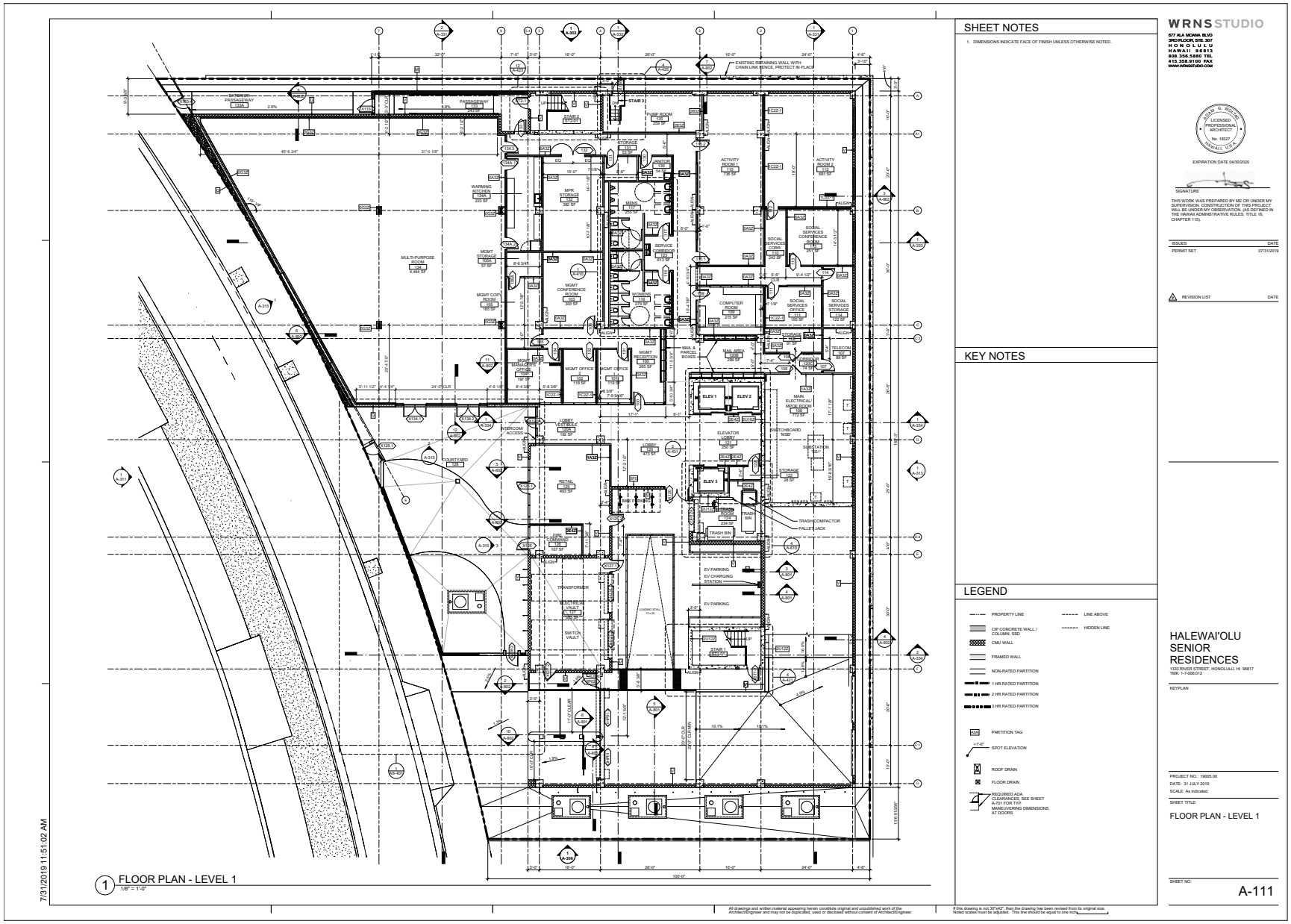


Figure 2

Project Site Plan - Ground Floor

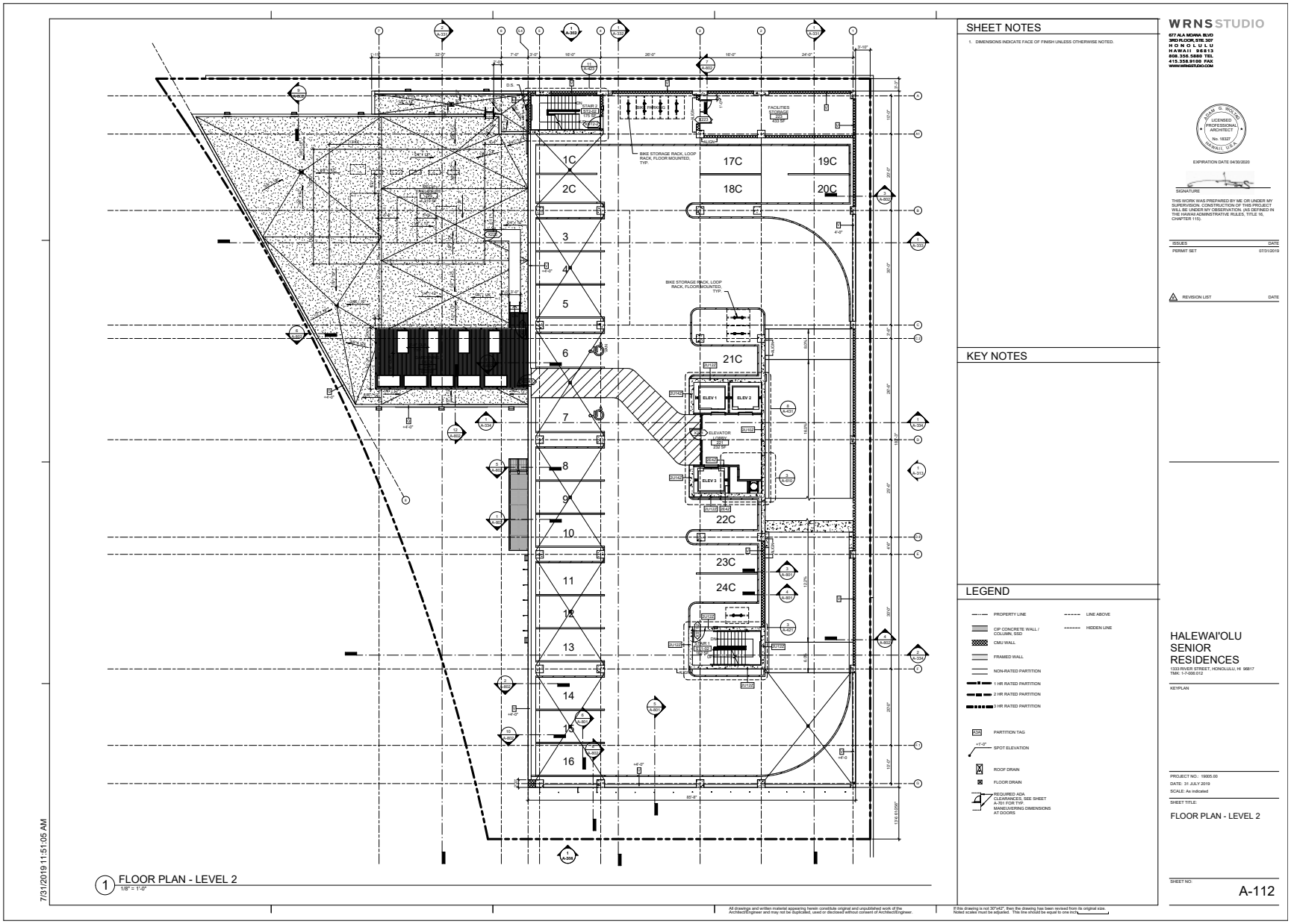


Figure 2

Project Site Plan - Second Floor

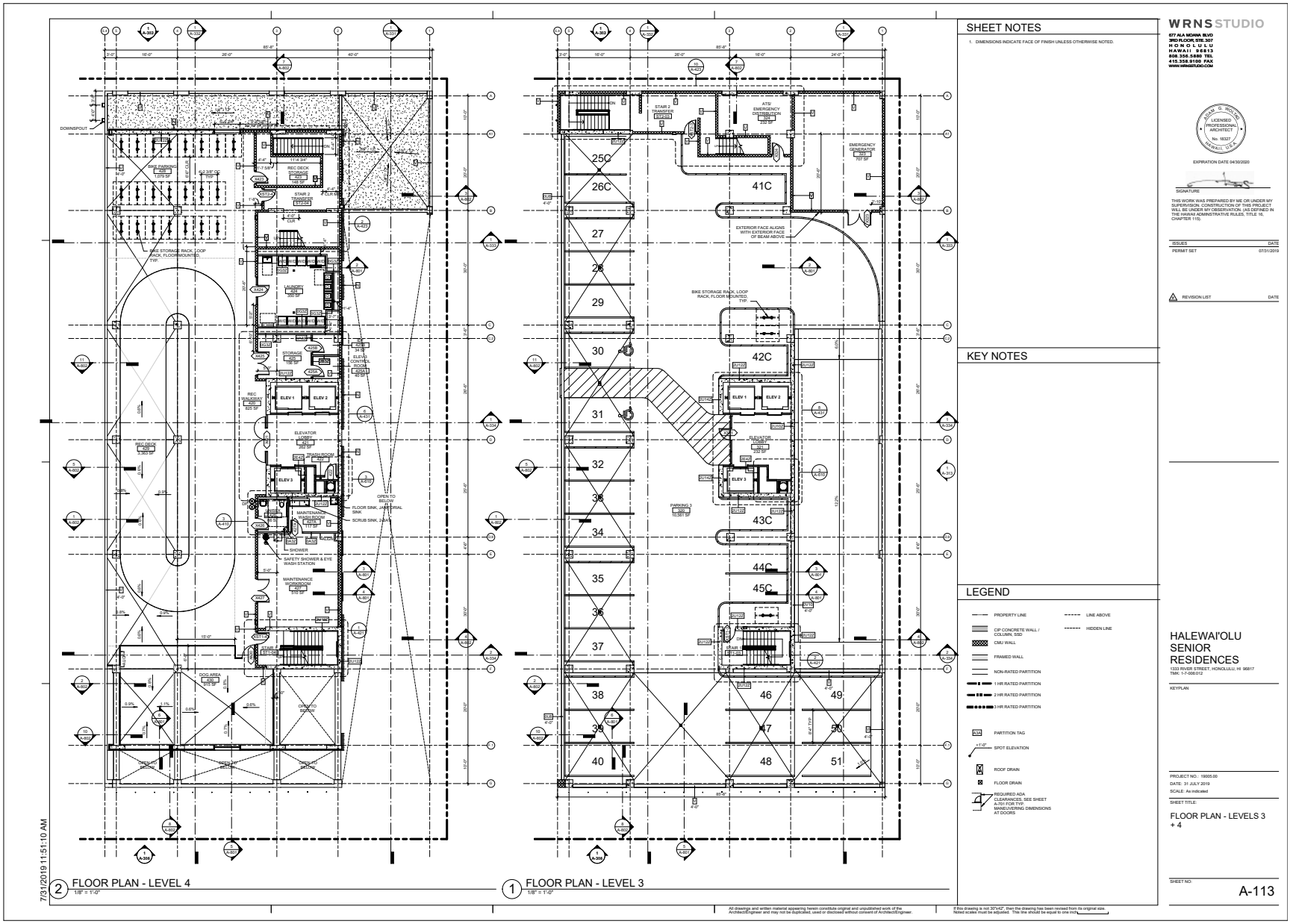


Figure 2

Project Site Plan - Third Floor

1.2 Project Study Area

Inbound vehicle access to the project site is provided via Kukui Street and River Street. Vehicle egress from the project site is provided via River Street and a stop-controlled right turn movement onto N Vineyard Boulevard. This analysis evaluated the operations at two (2) existing intersections in the vicinity of the proposed project that are listed below.

1. Maunakea Street/N Kukui Street
2. N Kukui Street/River Street

The study intersections and project site are shown on **Figure 1**.

1.3 Study Scenarios

The operation of the study intersections were evaluated during the weekday AM and PM peak hours for the following scenarios:

- **Existing Conditions** – The analysis of existing traffic conditions was based on 2018 counts collected during the typical weekday peak commute hours and existing roadway and intersection configurations. The existing conditions evaluation also includes an overview of current pedestrian, bicycle, and transit facilities and services near the site.

Analysis of the study intersections under future scenarios were not analyzed due to the low project trip generation discussed in **Section 3.1**.

1.4 Traffic Analysis Methodology

The analysis of traffic operations performed for this study is based on procedures presented in the *Highway Capacity Manual* (HCM), published by the Transportation Research Board in 2016 *(HCM 6th Edition)*. The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, with the least congested operating conditions, to LOS F, with the most congested operating conditions. LOS E represents "at-capacity" operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions. The methodologies for signalized and unsignalized intersections are described below.

1.4.1 Signalized Intersections

The method described in Chapter 18 of the *HCM 6th Edition* was used to prepare the LOS calculations for the signalized study intersections of N Kukui Street/Maunakea Street. This LOS method analyzes a signalized intersection's operation based on average control delay per vehicle. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections is calculated using Synchro 10.0 analysis software and is correlated to a LOS designation as shown in **Table 1**.

Table 1: Signalized Intersection LOS Definitions

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of desirable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered undesirable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2016.

1.4.2 Unsignalized Intersections

The operations of the unsignalized intersection of N Kukui Street/River Street were evaluated using the method contained in Chapter 19: Two-Way Stop-Controlled Intersections of the *HCM 6th Edition*. LOS ratings for stop-sign-controlled intersections are based on the average control delay expressed in seconds per vehicle. At all-way stop-controlled (AWSC) intersections the overall intersection delay and LOS is reported, and the LOS is characterized solely on control delay. At side-street (SSSC) or two-way stop controlled (TWSC) intersections, the average control delay is calculated for each minor-street stopped movement and

the major-street left turns, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. For approaches with multiple lanes, the control delay is computed for each movement; the movement with the worst (i.e., longest) delay is presented for TWSC. The average control delay for unsignalized intersections is calculated using Synchro 10.0 analysis software and is correlated to a LOS designation as shown in **Table 2**.

Table 2: Unsignalized Intersection LOS Definitions

Level of Service	Description	Delay in Seconds
A	Little or no delay.	≤ 10.0
B	Short traffic delay.	> 10.0 to 15.0
C	Average traffic delays.	> 15.0 to 25.0
D	Long traffic delays.	> 25.0 to 35.0
E	Very long traffic delays.	> 35.0 to 50.0
F	Extreme traffic delays with capacity exceeded.	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2016.
Notes: [1] For approach-based and intersection-wide assessments, such as that used for AWSC intersections, LOS is defined solely by control delay.

2. Existing Conditions

This chapter describes the existing mobility network and includes a discussion of the current bicycle, pedestrian, and transit facilities located in the project study area. This chapter also includes a discussion of the existing intersection operational analysis and related results.

2.1 Existing Site

The project site is located on the Diamond Head side of River Street, mauka of N Kukui Street; makai of N Vineyard Boulevard in the Chinatown neighborhood of Honolulu. The site is bounded by: River Street on the Ewa side; the Borthwick Mortuary property Diamond Head and mauka of the site; and the Lum Sai Ho Tong temple property makai of the site. The existing, primarily vacant office, restaurant, and retail building will be demolished with construction of the proposed project.

2.2 Existing Transportation Facilities

New traffic count data was collected as part of this analysis to identify existing transportation conditions in the vicinity of the proposed project. The existing conditions analysis included an inventory of the street system, and assessment of traffic volumes, and determination of operating conditions at the study intersections. Existing pedestrian, bicycle, and public transit service are also described in this section.

2.2.1 Existing Roadway System

The key roadways in the study area are described below.

River Street is a local street that traverses in a mauka-makai direction and provides direct access to the project site. River Street is a one-way, one-lane street under the jurisdiction of C&CH from N Kukui Street to N Vineyard Boulevard. Makai of N Kukui Street, River Street becomes a pedestrian promenade and continues as a vehicular roadway makai of N Beretania Street. The posted speed limit is 25 miles per hour (mph). One-hour parallel parking is permitted along the Diamond Head side of the street from 7:00 AM to 6:00 PM. Congestion was not observed during field observations at the study intersections and queuing at the intersection with N Vineyard Boulevard was extremely limited, with a maximum observed delay of 10 seconds for any one vehicle.

Pedestrian Facilities: Sidewalks are provided along both sides of River Street, with an attached sidewalk on the Diamond Head side fronting the project site and a pedestrian pathway (separated by a landscaped buffer) on the ewa side of the street adjacent to Nuuanu Stream. Marked crosswalks are provided at River

Street's intersections with N. Kukui Street providing access from the site to the River Street promenade. At the intersection with N Vineyard Boulevard a pedestrian signal is present providing a controlled crossing of this six-lane roadway. The *Downtown Neighborhood TOD Plan* proposed pedestrian intersection improvements at both study intersections.

Bike Facilities: Separate or designated bicycle facilities are not currently provided on River Street. Bicyclists are required to share the roadway with vehicles, although some cyclists choose to ride on the pedestrian path on the ewa side of the street. Based on Downtown Neighborhood Transit-Oriented Development (TOD) Plan 2017, published by City and County of Honolulu, a designated bike path will be provided in the future. Further, the *Oahu Bike Plan Update* (2018 Draft) identifies a future bicycle path on the ewa side of the street following the alignment of the existing pedestrian pathway.

N Vineyard Boulevard is a major arterial road within the vicinity of the project site. It is a six-lane arterial that extends between Palama Street and Lunalilo and is under the jurisdiction of HDOT. The posted speed limit is 30 mph. The intersection of N. Vineyard Boulevard at Maunakea Street is signalized. Parking on the mauka side of N Vineyard Boulevard is time-restricted and the parking lane is converted to a travel lane during the AM and PM peak hours. During the PM peak hour, Diamond Head-bound vehicles queue back from the Maunakea Street signal, which intermittently but temporarily impedes the ability for a vehicle to turn right onto N Vineyard Boulevard from River Street.

Pedestrian Facilities: Sidewalks are provided on both sides of the road. Crosswalks and pedestrian countdown signals are provided on the Diamond Head and makai legs of the intersection at Maunakea Street. As mentioned above, a pedestrian signal is provided at the intersection with River Street to provide a protected crossing of N Vineyard Boulevard.

Bike Facilities: Separate or designated bicycle facilities are not provided on Vineyard Boulevard in the vicinity of the project. Bicyclists are required to share the roadway with vehicles. The *Oahu Bike Plan Update* identifies future bicycle lanes on this street near the project site.

Kukui Street traverses an Ewa-Diamond Head direction between Aala Street and Pali Highway. Kukui Street is a two-way, two-lane local street under the jurisdiction of DTS. The posted speed limit of Kukui Street is 25 mph.

Pedestrian Facilities: Sidewalks are provided on both sides of Kukui Street. Crosswalks are provided across all roadway legs of the River Street intersection. Crosswalks and pedestrian countdown signals are also provided on all four legs of the Maunakea Street intersection.

Bike Facilities: Separate or designated bicycle facilities are not provided on Kukui Street. Bicyclists must share the roadway with vehicles. The *Oahu Bike Plan Update* identifies future bicycle lanes on this street near the project site.

Maunakea Street is a two-lane local street that is aligned in a mauka-makai direction. It is located on the Diamond Head side of the project site and connects N Vineyard Boulevard and Kukui Street. The posted speed limit is 25 mph. Maunakea Street is under the jurisdiction of DTS.

Pedestrian Facilities: Sidewalks are provided on both sides of the road. Crosswalks and pedestrian countdown signals are provided at the intersections with Kukui Street and Vineyard Boulevard.

Bike Facilities: Separate or designated bicycle facilities are not provided on Maunakea Street. Bicyclists must share the roadway with vehicles.

2.2.2 Existing Bicycle Activity

Based on the peak period counts conducted, a total of six (6) bicyclists were observed traveling through the N Kukui Street/River Street intersection during the AM peak hour, and five (5) bicyclists were observed in the PM peak hour. At the N Kukui Street/Maunakea intersection, a total of 12 bicyclists were observed traveling through this intersection during the AM peak hour, and seven (7) bicyclists were observed during the PM peak hour.

2.2.3 Existing Pedestrian Activity

Pedestrian counts collected during the peak periods at the two study intersections showed that the highest volumes of pedestrians crossing at a study intersection occurred during the PM peak hour, with 203 people crossing at the N Kukui Street/Maunakea Street intersection. Most pedestrians crossed Maunakea Street on the Diamond Head side of the intersection.

2.2.4 Existing Transit Facilities and Services

TheBus is the main public transportation service on the Island of Oahu, where it served over 63 million riders in the fiscal year of 2017-2018. The bus fleet transports an average of approximately 197,000 riders daily

(weekdays) via fixed-route, express, and paratransit service[1]. The closest bus stops are located 0.1 miles away (or roughly a four-minute walk) from the project site on N Beretania Street at River Street (Stop ID: 439) and Nuuanu Avenue at N. Vineyard Boulevard (Stop ID: 389). These bus stops serve about 25 different routes, which provide transit users good access to most destinations in and around Downtown Honolulu.

2.3 Existing Traffic Volumes and Lane Configurations

Existing lane configurations and traffic signal controls were obtained through field observations. The operations of the existing intersections were evaluated during weekday AM and PM peak periods (6:00 AM – 9:00 AM and 3:00 PM – 6:00 PM). Traffic counts were collected during the weekday AM and PM peak periods at the study intersections in March 2019 under normal traffic and weather conditions. The weekday AM peak hour of traffic for the study intersections occurred between the hours of 7:15 AM and 8:15 AM. During the weekday afternoon, the PM peak hour of traffic occurred between the hours of 5:00 PM and 6:00 PM at the N Kukui Street/River Street intersection, and between 4:45 PM and 5:45 PM at N Kukui Street and Maunakea Street.

Figure 3 presents the existing AM and PM peak hour turning movement volumes, corresponding lane configurations, and traffic control devices. Peak hour intersection count data are provided in **Appendix A**.

2.4 Existing Intersection Levels of Service

Peak hour intersection LOS analysis was performed for the existing study intersections using the methodology described previously and traffic count data collected for this study. **Table 3** shows the results for Existing Conditions LOS. Detailed LOS Worksheets are provided in **Appendix B**.

Table 3: Existing (2019) Intersection Levels of Service (LOS)

Intersection	Traffic Control	Peak Hour	Delay (sec/veh)[1]	LOS[2]
1. N Kukui Street / River Street	Unsignalized	AM	7.6	A
		PM	7.5	A
	Signalized	AM	21.3	C

[1] TheBus.org (http://www.thebus.org/Performance/Bus/Fixed%20Route%20-%20%20%20%2010-2018%20Performance.pdf)

2. N Kukui Street / Maunakea Street		PM	23.5	C

Source: Fehr & Peers, 2019

Notes:

[1] Whole intersection weighted average stopped delay expressed in seconds per vehicle for signalized intersections.
2 LOS calculations performed using the Highway Capacity Manual (HCM), 6th Edition method.

As shown in **Table 3**, both study intersections currently operate at LOS C or better during the AM and PM peak hours.

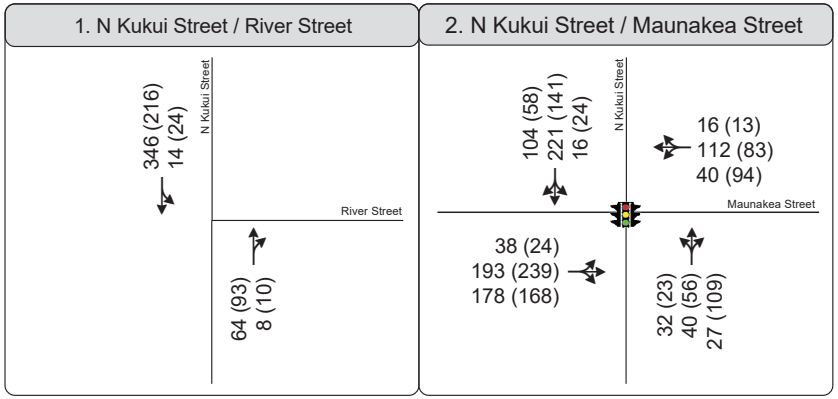
2.5 Field Observations

During field observations in March 2019, queuing was observed along N Vineyard Boulevard in the PM peak hour to the extent that it affected the ability of right-turning vehicles from River Street to execute the turn onto N Vineyard Boulevard. However, low volumes of vehicles were observed completing the affected movement, and observed delays did not exceed approximately 10 seconds for any one vehicle. Excessive queuing was not observed at either study intersection on N. Kukui Street.

Sight distance at the study intersection and the intersection of River Street/N Vineyard Boulevard were reviewed, and no visual impediments were identified during field observations.

The pedestrian pathways between the project site and the two nearest bus stops were reviewed and were found to provide adequate access in terms of pavement quality and limited conflicts with vehicles.





LEGEND

AM (PM)	Traffic Volume
	Lane Configuration
	Signalized

Figure 4

Existing (2019) Traffic Volumes and Lane Configurations

3. Project Traffic Estimates

This section describes the anticipated number of vehicle trips and directionality of those trips that would result from implementation of the proposed project. Future traffic added to the roadway system by the project is estimated using a three-step process: (1) project trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of project-generated traffic that would be added to the roadway network. The second step estimates the direction of travel to and from the project site. The new trips are assigned to specific street segments and intersection turning movements during the third step. This process is described in more detail in the following sections.

3.1 Project Trip Generation Estimates

Trip rates presented in the *Trip Generation Manual* (10th Edition, Institute of Transportation Engineers (ITE), 2017) were used to estimate the number of trips forecasted to be generated by the proposed land use. The project's trip generation estimates were developed using MainStreet, a web application developed by Fehr & Peers that uses a Mixed-Use (MXD) Trip Generation Model. The MXD model was developed by Fehr & Peers and the Environmental Protection Agency (EPA), and is based on statistically superior data compared to the methodology used by ITE. The model recognizes that traffic generation for a given land use is significantly affected by the density, diversity, design, destination, accessibility, travel proximity, and scale of development. The MXD model estimates the proportion of daily and peak hour trips that will remain on the project site (due to internal capture), as well as reductions for external trips made via transit, walking, and bicycling. Based on this approach, the trip generation includes the forecasted volume of peak hour and daily trips to be generated by the site, as well as trip reductions associated with the location of the site in a relatively dense environment with multiple destinations located within a reasonable walking, bicycling, and transit travel distances of the project site. Lastly, existing traffic volumes generated by the few active uses on the site were deducted from the project's vehicle trip generation to determine the number of net new trips expected to be added to the adjacent street system.

The estimated project trips are summarized in **Table 4** and the trip rates applied to this project are provided in **Appendix C**.

Table 4: Project Trip Generation Estimates

Project Component	Size	Units[1]	Daily Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Senior Adult Housing - Attached	156	DU	577	11	20	31	22	19	41
REDUCTIONS									
Transit/Walk/Bike Trip Reduction[2]			267	-7	-13	-20	-12	-11	-23
Existing Trip Reduction[3]			--	-4	-2	-6	-7	0	-7
TOTAL			**310**	**0**	**5**	**5**	**3**	**8**	**11**

Source: Fehr & Peers, 2019

Notes: [1]DU=Dwelling Units

[2]Internal capture and active/transit trip reductions calculated using MainStreet web app (see text for details).

[3]Existing trip reduction based on project site driveway counts conducted in March 2019.

A daily driveway count was not completed, and a corresponding daily existing trip reduction was not applied. Therefore, the expected volume of 310 net new daily trips is higher than what would actually be generated after project implementation and is a conservative estimation.

Ultimately, as shown in **Table 4**, the project is forecasted to generate 310 net new daily vehicle trips, five (5) net new AM peak hour trips (0 inbound/5 outbound), and 11 net new PM peak hour trips (3 inbound/8 outbound).

3.2 Project Trip Distribution and Assignment

The distribution of traffic generated by the project onto the roadway system was based on access to H-1, existing traffic volumes, and expected traffic flows to destinations in the Ewa, Diamond Head, makai, and mauka directions. Based on these factors, the vehicle trip distribution of the project-generated traffic is estimated to be:

- 35% to/from N Kukui Street Diamond Head of Maunakea Street
- 30% to/from Maunakea Street makai of N Kukui Street
- 20% to/from N Vineyard Boulevard Ewa of River Street
- 5% to/from S Vineyard Boulevard Diamond Head of Nuuanu Avenue
- 5% to/from Nuuanu Avenue mauka of N Vineyard Boulevard
- 5% to/from Aala Street makai of N Kukui Street

The project trip distribution is shown on **Figure 4**.

As described in Section 1.1, access to the proposed project will be provided by a single two-way driveway on River Street. All inbound trips will arrive via N. Kukui Street, and all trips leaving the project site will utilize River Street to access N Vineyard Boulevard and travel in the Diamond Head direction.

Using the estimated trip generation and the distribution patterns discussed, the traffic generated by the proposed project was assigned to the study intersections and individual turning movements. **Figure 5** shows the assignment of trips generated by the project for AM and PM peak hours.

Given the very low volume of traffic added to any one turning movement at any intersection, the change in traffic operations at any street intersection would be negligible and would not be perceived by most drivers. Accordingly, no operations analysis of future traffic operations was conducted.



Study Intersection

Study Driveway

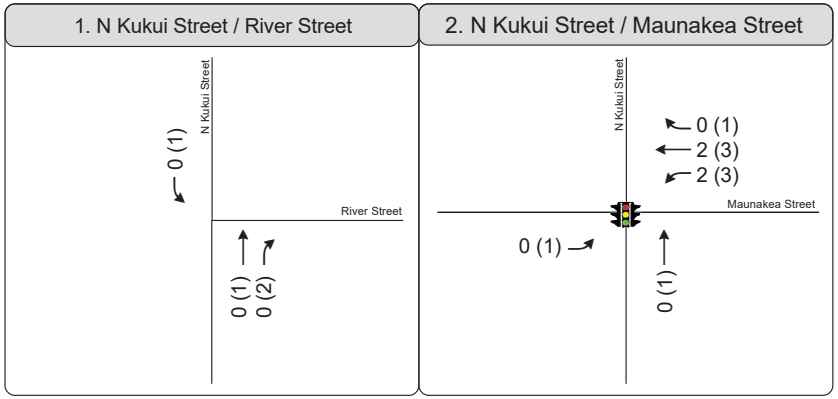
Project Site

Figure 3

Project Trip Distribution



* All Outbound Project Trips will right turn from River Street to N Vineyard Boulevard.



LEGEND

AM (PM)	Trip Assignment Volume
	Trip Assignment Movement
	Signalized

Figure 4

Project Trip Assignment

4. Site Access and On-Site Circulation

This chapter includes a review of the site access, on-site circulation for vehicles, bicyclists, and pedestrians, and on-site parking. An evaluation of off-site active and transit travel modes is presented in **Chapter 5.**

4.1 Site Access and On-Site Vehicle Circulation

Vehicular site access will be provided by a single in and out driveway on River Street at the makai end of the site. This driveway provides access to the project's parking area provided on the second and third stories of the building. In addition, the driveway provides access to a loading area on the first floor that can accommodate one van or single-unit truck for deliveries or passenger loading, as well as two future electric vehicle charging stations. The ramp is designed with a 90-degree turn beyond the loading area before ramping up to the second floor.

To minimize conflicts between vehicles backing into or leaving the loading area and vehicles traveling down the ramp from the parking area, a mirror (or mirrors) should be installed on the makai wall of the ramp. Use of the device(s) would increase visibility of the loading area to drivers traveling down the garage ramp.

Due to the design of the project access driveway and building wall locations, the driveway opening is set back from the sidewalk fronting the site. However, appropriate visual and audible warning devices should be installed to alert pedestrians to vehicles exiting the project driveway.

4.2 Parking

An on-site shared parking area is provided on the second and third floors of the building. Access to the parking area is provided from the project's access driveway. The parking area will be available for residents, guests, and SAC users. Parking spaces in the shared parking area will not be marked or reserved and will be available on a first-come first-shared basis.

The City and County of Honolulu Land Use Ordinance Section 21-5.610A requires special needs housing for the elderly to provide at least one parking stall per four dwelling units, one guest parking stall per 10 dwelling units, and two off-street loading spaces. The project's location in a transit-oriented development area and its proximity to existing transit and the future Chinatown HART station may further reduce the demand for parking in the building. This project applied for a County-level exclusion (201-H) to reduce the number of required parking and loading stalls for the project.

As currently proposed, the two parking levels will provide approximately 51 parking spaces, approximately 10 of which are tandem and will be managed appropriately. Additionally, one space for off-street loading will be provided on the ground floor level as shown on the site plan in **Figure 2**.

4.3 On-Site Pedestrian and Bicycle Circulation

Pedestrian circulation will be provided via the sidewalk fronting the site along River Street, as well as access located on the mauka side of the building providing access to a stairwell. All pedestrian access within the building is provided by stairs or elevators.

Bicycles will need to be dismounted on site. A sufficient number of bicycle parking stalls pursuant to HRS 201H exemption, will be provided on levels 1-4.

5. Multimodal Assessment

The potential impact of the proposed project on the off-site pedestrian, bicycle, and transit facilities and services is addressed in this chapter.

5.1 Transit Facilities and Access

Existing transit facilities and services appear to be sufficient to serve the development. Multiple bus stops are located within a reasonable walking distance of the site, with the two closest bus stops located within a four-minute walk. Pedestrian access to these stops appears to be accessible for a disabled person utilizing a wheelchair or a walking aid. The project is within 800 feet of the proposed HART rail Chinatown station. This station is scheduled to provide rail transit access toward Ala Moana Center and toward East Kapolei by 2025. This service will enhance transit access and further reduce the need for Halewaiolu residents to use a car regularly, or even own one.

5.2 Bicycle Facilities

The Oahu Bike Plan (2012) provides guidance on desired bike facilities across the island of Oahu. This plan is currently being updated. *The Oahu Bike Plan Update (2018 Draft)* identifies a proposed bicycle path on the ewa side of River Street, and proposed bicycle lanes on both sides of N Vineyard Boulevard and N Kukui Street.

The project will not conflict with the installation of these bicycle facilities. As mentioned in **Section 4.3**, on-site bicycle racks and secure bicycle storage should be provided for residents, employees, and visitors.

5.3 Pedestrian Facilities

The *Downtown Neighborhood Transit-Oriented Development (TOD) Plan (2017)* identifies pedestrian intersection improvements that are to be made at River Street's intersections with Kukui Street and N Vineyard Boulevard. A pedestrian signal was recently installed at River Street's intersection with N Vineyard Boulevard.

The project will not conflict with these improvements or significantly affect the existing sidewalk provided along its frontage.

6. Recommendations

Overall, the Halewaiolu Senior Residences project will generate few vehicular trips and is expected to have a negligible impact on traffic operations. Therefore, no roadway improvements are proposed as a part of this development.

Appendix A

Peak Hour Intersection and Driveway Count Data

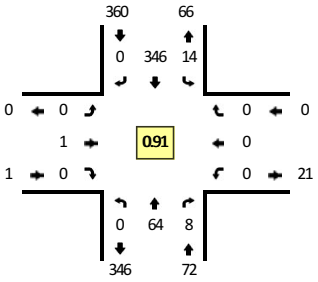
Type of peak hour being reported: Intersection Peak

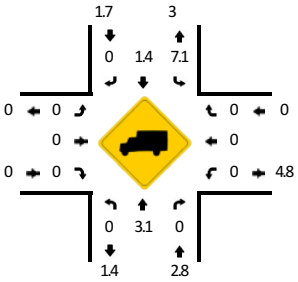
Method for determining peak hour: Total Entering Volume

LOCATION: N Kukui St -- River St
CITY/STATE: Urban Honolulu, HI

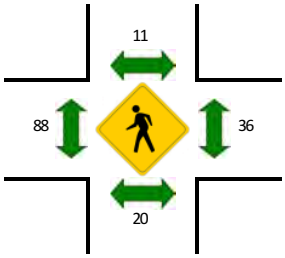
QC JOB #: 14922101
DATE: Thu, Mar 7 2019

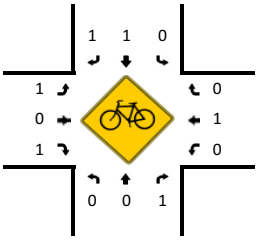
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

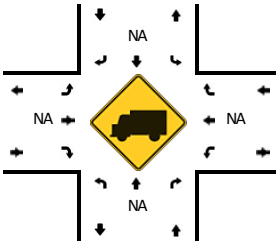


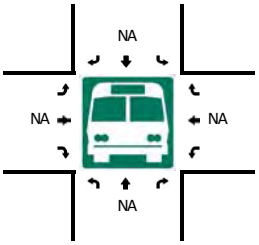


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	N Kukui St (Northbound)				N Kukui St (Southbound)				River St (Eastbound)				River St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	1	20	3	0	0	14	0	0	0	0	0	0	0	0	0	0	38	
6:15 AM	0	16	1	1	1	30	0	0	1	0	0	0	0	0	1	0	51	
6:30 AM	0	17	2	0	5	17	0	0	0	0	0	0	0	0	0	0	41	
6:45 AM	1	13	2	0	2	25	0	0	0	0	0	0	0	0	2	0	45	175
7:00 AM	0	17	0	0	1	51	0	0	0	0	0	0	0	0	0	0	69	206
7:15 AM	0	19	1	0	3	89	0	0	0	1	0	0	0	0	0	0	113	268
7:30 AM	0	14	0	0	3	89	0	1	0	0	0	0	0	0	0	0	107	334
7:45 AM	0	18	1	0	3	97	0	0	0	0	0	0	0	0	0	0	119	408
8:00 AM	0	13	6	0	3	71	0	1	0	0	0	0	0	0	0	0	94	433
8:15 AM	0	20	2	0	5	55	0	0	0	0	0	0	0	0	0	0	82	402
8:30 AM	0	26	1	0	3	50	0	1	0	0	0	0	0	0	0	0	81	376
8:45 AM	0	26	5	0	5	79	0	1	0	0	0	0	0	0	0	0	116	373

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	72	4	0	12	388	0	0	0	0	0	0	0	0	0	0	476
Heavy Trucks	0	0	0		4	8	0		0	0	0		0	0	0		12
Pedestrians		28				4				64				48			144
Bicycles	0	0	0		0	0	1		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/13/2019 4:29 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kukui St -- River St
CITY/STATE: Urban Honolulu, HI

QC JOB #: 14922102
DATE: Thu, Mar 7 2019

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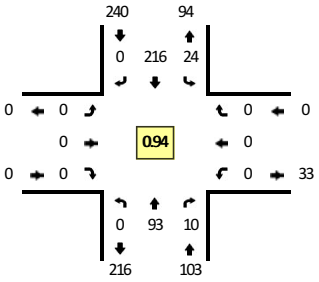
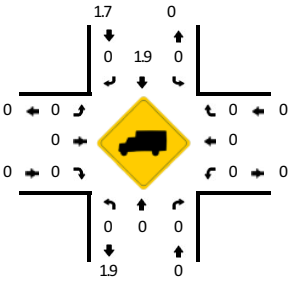
Peak 15-Min: 5:00 PM -- 5:15 PM





Quality Counts
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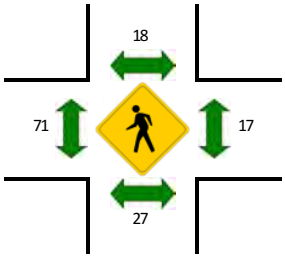

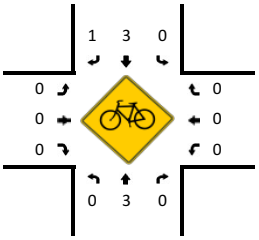

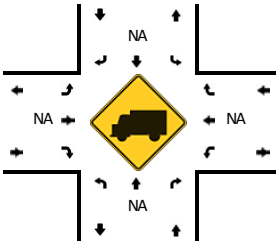

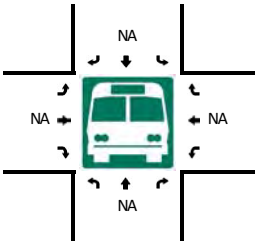

15-Min Count Period Beginning At	N Kukui St (Northbound)				N Kukui St (Southbound)				River St (Eastbound)				River St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	27	1	0	5	53	0	0	0	0	0	0	0	0	1	0	87	
3:15 PM	0	28	3	0	1	59	0	0	0	0	0	0	0	0	0	0	91	
3:30 PM	0	15	1	0	1	51	0	0	0	0	0	0	0	0	0	0	68	
3:45 PM	0	31	0	0	2	44	0	0	0	0	0	0	0	0	0	0	77	323
4:00 PM	0	23	2	0	5	42	0	1	0	0	0	0	0	0	1	0	74	310
4:15 PM	0	24	2	0	3	55	1	1	0	0	0	0	0	0	0	0	86	305
4:30 PM	0	20	1	1	4	57	0	1	0	0	0	0	0	0	0	0	84	321
4:45 PM	0	17	0	0	1	62	0	0	0	0	0	0	0	0	0	0	80	324
5:00 PM	0	28	4	0	5	54	0	0	0	0	0	0	0	0	0	0	91	341
5:15 PM	0	19	2	0	7	49	0	0	0	0	0	0	0	0	0	0	77	332
5:30 PM	0	25	1	0	7	57	0	1	0	0	0	0	0	0	0	0	91	339
5:45 PM	0	21	3	0	4	56	0	0	0	0	0	0	0	0	0	0	84	343

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	112	16	0	20	216	0	0	0	0	0	0	0	0	0	0	364
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	0		4
Pedestrians		28				12				136				16			192
Bicycles	0	2	0		0	1	0		0	0	0		0	0	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/13/2019 4:29 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: N Kukui St -- Maunakea St | **QC JOB #:** 14922103
CITY/STATE: Urban Honolulu, HI | **DATE:** Thu, Mar 7 2019

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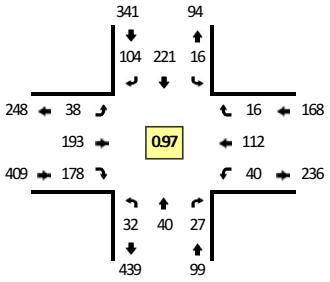
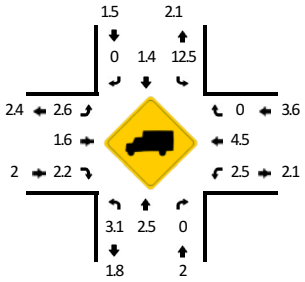
Peak 15-Min: 7:30 AM -- 7:45 AM





Quality Counts
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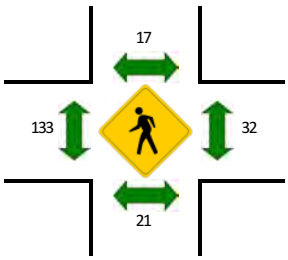



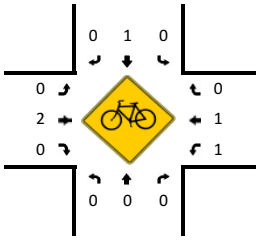

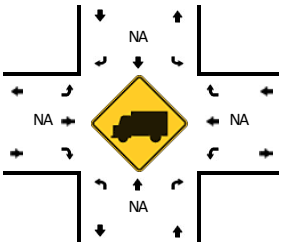



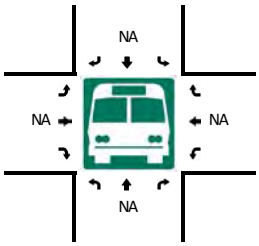

15-Min Count Period Beginning At	N Kukui St (Northbound)				N Kukui St (Southbound)				Maunakea St (Eastbound)				Maunakea St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	3	16	5	0	1	10	2	0	3	12	7	0	6	8	6	0	79	
6:15 AM	2	15	6	0	2	17	10	0	1	9	13	0	11	16	2	0	104	
6:30 AM	1	17	6	0	5	10	1	0	2	24	18	0	10	8	1	0	103	
6:45 AM	5	10	4	0	3	17	6	0	0	23	21	0	4	21	6	0	120	406
7:00 AM	8	14	5	0	1	33	14	0	9	31	37	0	7	18	2	0	179	506
7:15 AM	5	9	10	0	10	53	22	0	9	41	47	0	12	26	5	0	249	651
7:30 AM	7	6	9	0	3	55	27	0	8	57	57	0	7	25	2	0	263	811
7:45 AM	9	11	6	0	1	70	26	0	9	42	41	0	11	25	3	0	254	945
8:00 AM	11	14	2	0	2	43	29	0	12	53	33	0	10	36	6	0	251	1017
8:15 AM	13	17	6	0	4	26	26	0	10	54	30	0	10	25	3	0	224	992
8:30 AM	8	15	4	0	5	30	19	0	12	43	20	0	6	23	7	0	192	921
8:45 AM	15	22	7	0	10	36	27	0	7	50	23	0	6	23	6	0	232	899

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	24	36	0	12	220	108	0	32	228	228	0	28	100	8	0	1052
Heavy Trucks	0	0	0		0	0	0		4	0	12		0	4	0		20
Pedestrians		8				8				200				16			232
Bicycles	0	0	0		0	0	0		0	0	0		1	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/13/2019 4:29 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Kukui St -- Maunakea St
CITY/STATE: Urban Honolulu, HI

QC JOB #: 14922104
DATE: Thu, Mar 7 2019

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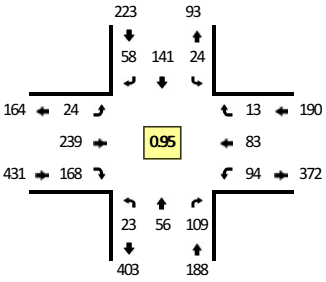
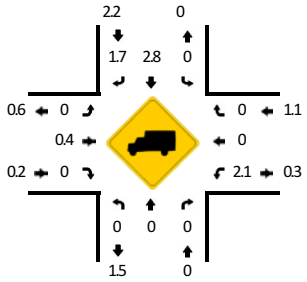
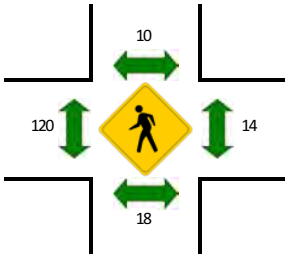
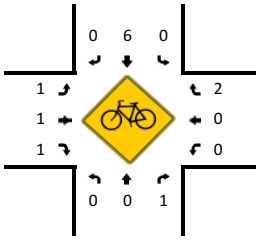
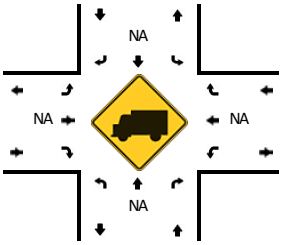
Peak 15-Min: 5:00 PM -- 5:15 PM

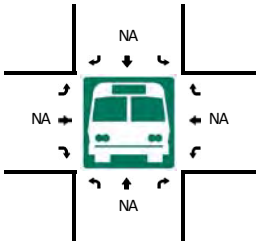












15-Min Count Period Beginning At	N Kukui St (Northbound)				N Kukui St (Southbound)				Maunakea St (Eastbound)				Maunakea St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	13	22	9	0	5	35	13	0	9	51	27	0	3	20	2	0	209	
3:15 PM	4	18	8	0	9	35	21	0	7	63	28	0	4	15	2	0	214	
3:30 PM	5	14	15	0	4	29	18	0	5	74	25	0	1	20	2	0	212	
3:45 PM	9	18	20	0	4	22	17	0	8	56	24	0	1	10	2	0	191	826
4:00 PM	8	14	14	0	4	33	5	0	12	73	28	0	3	15	2	0	211	828
4:15 PM	11	16	16	0	7	37	19	0	7	79	25	0	9	14	2	0	242	856
4:30 PM	7	12	22	0	9	40	11	0	4	67	37	0	19	20	3	0	251	895
4:45 PM	7	13	21	0	1	41	15	0	5	66	37	0	18	20	4	0	248	952
5:00 PM	8	17	33	0	11	38	14	0	6	62	41	0	19	21	2	0	272	1013
5:15 PM	4	9	30	0	6	27	17	0	6	58	41	0	28	24	5	0	255	1026
5:30 PM	4	17	25	0	6	35	12	0	7	53	49	0	29	18	2	0	257	1032
5:45 PM	1	11	19	0	3	35	12	0	5	45	26	0	18	22	1	0	198	982

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	68	132	0	44	152	56	0	24	248	164	0	76	84	8	0	1088
Heavy Trucks	0	0	0		0	4	0		0	4	0		0	0	0		8
Pedestrians		32				28				284				0			344
Bicycles	0	0	0		0	4	0		1	1	0		0	0	1		7
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/13/2019 4:29 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

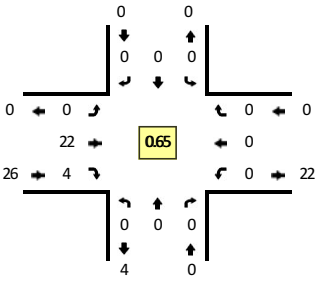
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

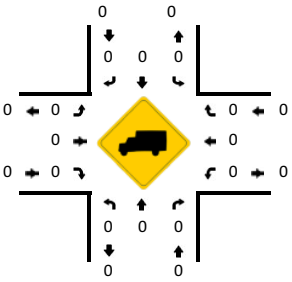
LOCATION: Driveway A -- River St
CITY/STATE: Urban Honolulu, HI

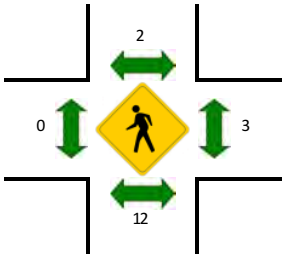
QC JOB #: 14922105
DATE: Thu, Mar 7 2019

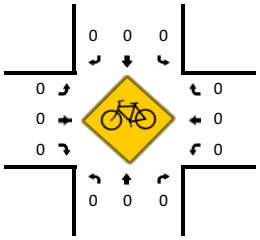
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

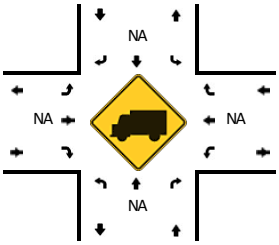


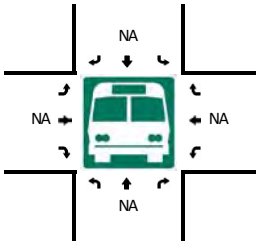
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	Driveway A (Northbound)				Driveway A (Southbound)				River St (Eastbound)				River St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	
6:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	
6:30 AM	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	7	
6:45 AM	1	0	0	0	0	0	0	0	0	4	1	0	0	1	0	0	7	19
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	18
7:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	20
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	15
7:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	11
8:00 AM	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3	12
8:15 AM	0	0	0	0	0	0	0	0	0	6	3	0	0	0	0	0	9	17
8:30 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	19
8:45 AM	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	10	26

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	40
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		12				0				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

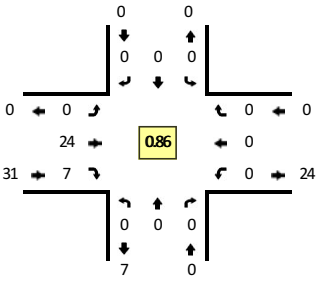
Report generated on 3/13/2019 4:29 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

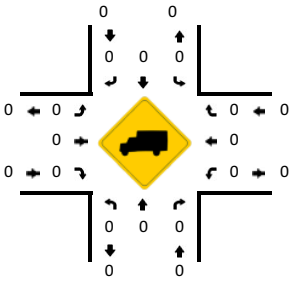
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

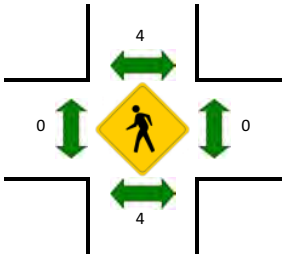
LOCATION: Driveway A -- River St | **QC JOB #:** 14922106
CITY/STATE: Urban Honolulu, HI | **DATE:** Thu, Mar 7 2019

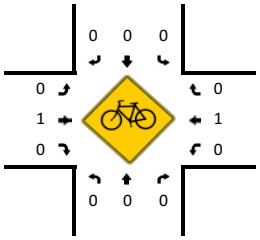
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

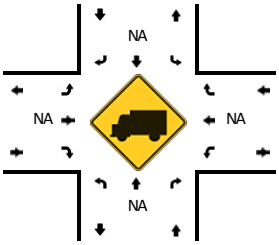


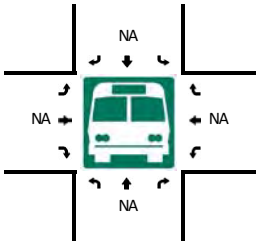
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	Driveway A (Northbound)				Driveway A (Southbound)				River St (Eastbound)				River St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	5	
3:15 PM	0	0	0	0	0	0	0	0	0	5	3	0	0	0	0	0	8	
3:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	
3:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	17
4:00 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	17
4:15 PM	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	6	15
4:30 PM	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	17
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	16
5:00 PM	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	7	18
5:15 PM	0	0	0	0	0	0	0	0	0	6	2	0	0	0	0	0	8	20
5:30 PM	0	0	0	0	0	0	0	0	0	5	4	0	0	0	0	0	9	25
5:45 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	7	31

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	20	16	0	0	0	0	0	36
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	1	0		0	1	0		2
Railroad																	
Stopped Buses																	

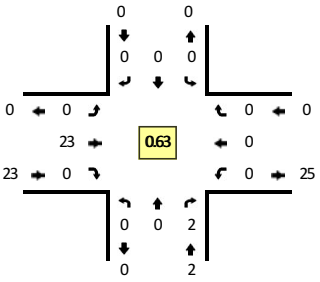
Comments:

Report generated on 3/13/2019 4:29 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

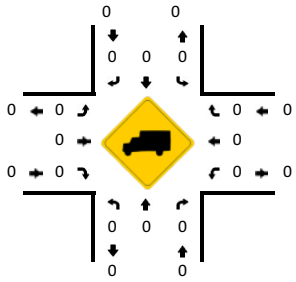
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

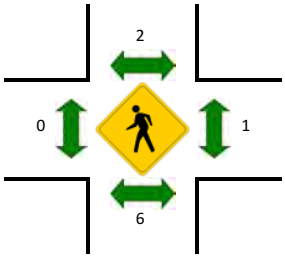
LOCATION: Driveway B -- River St | **QC JOB #:** 14922107
CITY/STATE: Urban Honolulu, HI | **DATE:** Thu, Mar 7 2019

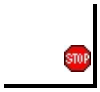
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM



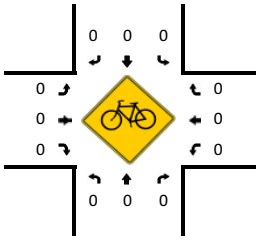
Quality Counts
DATA THAT DRIVES COMMUNITIES

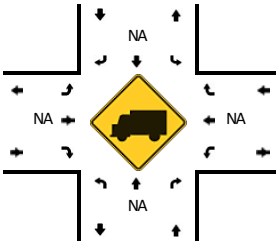


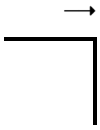


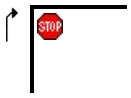


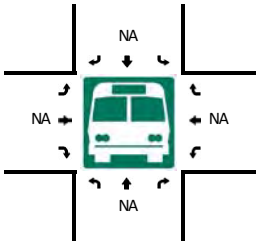












15-Min Count Period Beginning At	Driveway B (Northbound)				Driveway B (Southbound)				River St (Eastbound)				River St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	
6:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	
6:30 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	
6:45 AM	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	4	15
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	15
7:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	15
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	12
7:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	10
8:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	11
8:15 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	13
8:30 AM	0	0	2	0	0	0	0	0	0	4	0	0	0	0	0	0	6	17
8:45 AM	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	10	25

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	40
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		4				0				0				4			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/13/2019 4:29 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

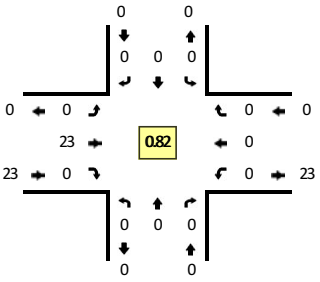
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

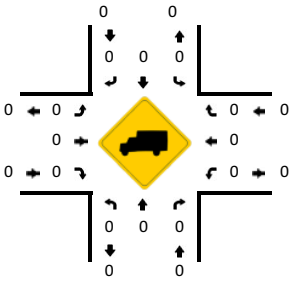
LOCATION: Driveway B -- River St
CITY/STATE: Urban Honolulu, HI

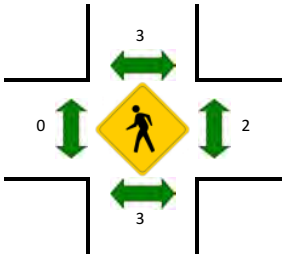
QC JOB #: 14922108
DATE: Thu, Mar 7 2019

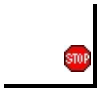
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM



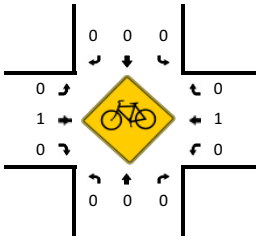
Quality Counts
DATA THAT DRIVES COMMUNITIES

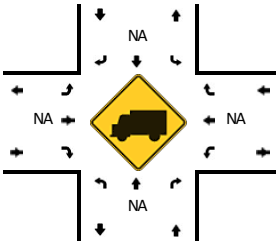


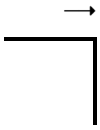


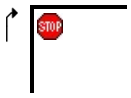


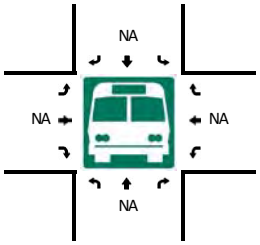












15-Min Count Period Beginning At	Driveway B (Northbound)				Driveway B (Southbound)				River St (Eastbound)				River St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	6	
3:15 PM	0	0	1	0	0	0	0	0	0	5	0	0	0	0	0	0	6	
3:30 PM	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	4	
3:45 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	20
4:00 PM	0	0	1	0	0	0	0	0	0	5	0	0	0	0	0	0	6	20
4:15 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	19
4:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	18
4:45 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2	16
5:00 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	15
5:15 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	16
5:30 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	18
5:45 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	7	23

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	28	0	0	0	0	0	0	28
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		8				4				0				8			20
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 3/13/2019 4:29 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B

Detailed LOS Worksheets

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	64	8	14	346	0
Future Vol, veh/h	0	0	0	0	0	0	0	64	8	14	346	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	56	47	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	91	92	91	92	91	91	91	91	92
Heavy Vehicles, %	2	2	2	2	2	2	2	3	0	7	1	2
Mvmt Flow	0	0	0	0	0	0	0	70	9	15	380	0

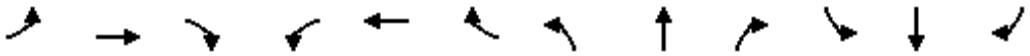
Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	-	545	-	-	0	0	135	0	0
Stage 1	-	410	-	-	-	-	-	-	-
Stage 2	-	135	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	-	-	4.17	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	-	-	2.263	-	-
Pot Cap-1 Maneuver	0	446	0	0	-	-	1419	-	0
Stage 1	0	595	0	0	-	-	-	-	0
Stage 2	0	785	0	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	-	0	-	-	-	-	1419	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1419	-
HCM Lane V/C Ratio	-	-	-	0.011	-
HCM Control Delay (s)	-	-	0	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

HCM 6th Signalized Intersection Summary
2: Kukui Street & Maunakea St

04/02/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	193	178	40	112	16	32	40	27	16	221	104
Future Volume (veh/h)	38	193	178	40	112	16	32	40	27	16	221	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.94	1.00		0.94	0.96		0.89	0.91		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	39	199	144	41	115	11	33	41	15	16	228	92
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	4	4	4	2	2	2	1	1	1
Cap, veh/h	74	251	170	114	291	25	360	434	150	66	753	293
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.63	0.63	0.63	0.63	0.63	0.63
Sat Flow, veh/h	108	922	624	235	1072	92	485	692	239	38	1199	466
Grp Volume(v), veh/h	382	0	0	167	0	0	89	0	0	336	0	0
Grp Sat Flow(s),veh/h/ln	1655	0	0	1399	0	0	1416	0	0	1703	0	0
Q Serve(g_s), s	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	19.6	0.0	0.0	7.1	0.0	0.0	1.8	0.0	0.0	8.1	0.0	0.0
Prop In Lane	0.10		0.38	0.25		0.07	0.37		0.17	0.05		0.27
Lane Grp Cap(c), veh/h	494	0	0	430	0	0	944	0	0	1112	0	0
V/C Ratio(X)	0.77	0.00	0.00	0.39	0.00	0.00	0.09	0.00	0.00	0.30	0.00	0.00
Avail Cap(c_a), veh/h	1001	0	0	902	0	0	944	0	0	1112	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.9	0.0	0.0	26.3	0.0	0.0	6.6	0.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	0.0	0.0	2.9	0.0	0.0	0.7	0.0	0.0	3.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	0.0	0.0	26.9	0.0	0.0	6.8	0.0	0.0	8.4	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		382			167			89			336	
Approach Delay, s/veh		33.5			26.9			6.8			8.4	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		61.0		29.0		61.0		29.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		28.5		52.5		28.5		52.5				
Max Q Clear Time (g_c+I1), s		3.8		21.6		10.1		9.1				
Green Ext Time (p_c), s		0.5		2.9		2.1		1.2				

Intersection Summary												
HCM 6th Ctrl Delay			21.3									
HCM 6th LOS			C									

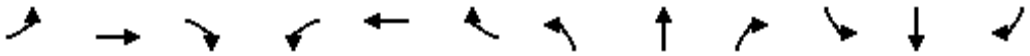
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	93	10	24	216	0
Future Vol, veh/h	0	0	0	0	0	0	0	93	10	24	216	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	44	35	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16983	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	94	92	94	92	94	94	94	94	92
Heavy Vehicles, %	2	2	2	2	2	2	0	0	0	0	2	0
Mvmt Flow	0	0	0	0	0	0	0	99	11	26	230	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	-	436	-	-	0	0	154	0	0
Stage 1	-	282	-	-	-	-	-	-	-
Stage 2	-	154	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	-	-	4.1	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	514	0	0	-	-	1439	-	0
Stage 1	0	678	0	0	-	-	-	-	0
Stage 2	0	770	0	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	-	0	-	-	-	-	1439	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1439	-
HCM Lane V/C Ratio	-	-	-	0.018	-
HCM Control Delay (s)	-	-	0	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	24	239	168	94	83	13	23	56	109	24	141	58
Future Volume (veh/h)	24	239	168	94	83	13	23	56	109	24	141	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97	0.94		0.90	0.93		0.88
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1856	1856	1856
Adj Flow Rate, veh/h	25	252	139	99	87	10	24	59	57	25	148	46
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	3	3	3
Cap, veh/h	59	311	164	168	133	13	183	441	396	130	732	217
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	59	1122	593	389	482	47	218	707	635	136	1174	349
Grp Volume(v), veh/h	416	0	0	196	0	0	140	0	0	219	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	0	917	0	0	1560	0	0	1659	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	19.7	0.0	0.0	20.2	0.0	0.0	3.1	0.0	0.0	4.9	0.0	0.0
Prop In Lane	0.06		0.33	0.51		0.05	0.17		0.41	0.11		0.21
Lane Grp Cap(c), veh/h	534	0	0	314	0	0	1019	0	0	1078	0	0
V/C Ratio(X)	0.78	0.00	0.00	0.62	0.00	0.00	0.14	0.00	0.00	0.20	0.00	0.00
Avail Cap(c_a), veh/h	1097	0	0	742	0	0	1019	0	0	1078	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.8	0.0	0.0	29.8	0.0	0.0	7.0	0.0	0.0	7.3	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	2.0	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	0.0	4.1	0.0	0.0	1.1	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	0.0	0.0	31.8	0.0	0.0	7.3	0.0	0.0	7.7	0.0	0.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		416			196			140			219	
Approach Delay, s/veh		33.3			31.8			7.3			7.7	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		60.6		29.4		60.6		29.4				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		26.5		54.5		26.5		54.5				
Max Q Clear Time (g_c+I1), s		5.1		21.7		6.9		22.2				
Green Ext Time (p_c), s		0.8		3.2		1.3		1.5				

Intersection Summary												
HCM 6th Ctrl Delay			23.5									
HCM 6th LOS			C									

Appendix C

Project Trip Generation Rates

HALEWAIOLU SENIOR RESIDENCES TRIP GENERATION FORECAST

Trip Generation Rates

Land Use [ITE Land Use and Code]		Units[1]	Daily Rate	AM Peak Hour			PM Peak Hour		
				Inbound	Outbound	Total	Inbound	Outbound	Total
Senior Adult Housing - Attached [252]		DU	3.70	0.07	0.13	0.20	0.14	0.12	0.26

Forecast Trip Generation

Land Use	Size	Units[1]	Daily Trips	AM Peak Hour			PM Peak Hour		
				Inbound	Outbound	Total	Inbound	Outbound	Total
Senior Adult Housing - Attached [252]	156	DU	577	11	20	31	22	19	41
Subtotal Project Trips			**577**	**11**	**20**	**31**	**22**	**19**	**41**
Transit Trips[2]			87	3	6	9	6	5	11
Walk/Bike Trips[2]			180	4	7	11	6	6	12
Subtotal Main Street Reductions			-267	-7	-13	-20	-12	-11	-23
Existing Trips			--	-4	-2	-6	-7	0	-7
Total Net New Project Trips			**310**	**0**	**5**	**5**	**3**	**8**	**11**

[1]DU = Dwelling Units

[5]Internal capture and active/transit trip reductions calculated using MainStreet web app (see text for details).

Appendix F

Preliminary Geotechnical Engineering Exploration
Geolabs, Inc.
June 14, 2019

GEOTECHNICAL ENGINEERING EXPLORATION

HALEWAI`OLU SENIOR RESIDENCES

1331 - 1347 RIVER STREET

HONOLULU, OAHU, HAWAII

W.O. 7414-10 JUNE 14, 2019

Prepared for

HALEWAI`OLU SENIOR DEVELOPMENT, LLC

GEOLABS, INC.
Geotechnical Engineering and Drilling Services

GEOTECHNICAL ENGINEERING EXPLORATION
HALEWAI`OLU SENIOR RESIDENCES
1331 - 1347 RIVER STREET
HONOLULU, OAHU, HAWAII

W.O. 7414-10 JUNE 14, 2019

Prepared for

HALEWAI`OLU SENIOR DEVELOPMENT, LLC

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

SIGNATURE

4-30-20
EXPIRATION DATE
OF THE LICENSE

GEOLABS, INC.
Geotechnical Engineering and Drilling Services
2006 Kalihi Street • Honolulu, HI 96819

Hawaii • California

GEOLABS, INC.
Geotechnical Engineering and Drilling Services

June 14, 2019
W.O. 7414-10

Ms. Karen Seddon
Halewai`olu Senior Development, LLC
Pacific Guardian Center, Mauka Tower
737 Bishop Street, Suite 1520
Honolulu, HI 96813

Dear **Ms. Seddon:**

Geolabs, Inc. is pleased to submit our report entitled "Geotechnical Engineering Exploration, Halewai`olu Senior Residences, 1331 - 1347 River Street, Honolulu, Oahu, Hawaii" prepared in support of the detailed design of the proposed senior residential project.

Our work was performed in general accordance with the scope of services outlined in our fee proposal dated February 8, 2019.

Please note that the soil and rock samples recovered during our field exploration (remaining after testing) will be stored for a period of two months from the date of this report. The samples will be discarded after that date unless arrangements are made for a longer sample storage period. Please contact our office for alternative sample storage requirements, if appropriate.

Detailed discussion and preliminary recommendations are contained in the body of the report. If there is any point that is not clear, please contact our office.

Very truly yours,

GEOLABS, INC.

Robin M. Lim, P.E.
President

RML:TK:mj

2006 Kalihi Street • Honolulu, Hawaii 96819
Phone: (808) 841-5064 • Facsimile: (808) 847-1749 • E-mail: hawaii@geolabs.net

Hawaii • California

GEOTECHNICAL ENGINEERING EXPLORATION

HALEWAI`OLU SENIOR RESIDENCES

1331 - 1347 RIVER STREET

HONOLULU, OAHU, HAWAII

W.O. 7414-10 JUNE 14, 2019

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GEOTECHNICAL ENGINEERING EXPLORATION

HALEWAI`OLU SENIOR RESIDENCES

1331 - 1347 RIVER STREET

HONOLULU, OAHU, HAWAII

W.O. 7414-10 JUNE 14, 2019

SUMMARY OF FINDINGS AND RECOMMENDATIONS

Our field explorations suggest that the original alignment of Nuuanu Stream may have traversed the southern portion of the project site. Boring Nos. 1, 101, and 103 drilled toward the southern portion of the project site encountered a thin layer of surface fills overlying a highly compressible layer of recent alluvium and lagoonal deposits extending to depths of about 25 to 38 feet below the existing pavement surface. Stiff to very stiff alluvial deposits interbedded with dense cobbly boulders were then encountered and extended to the maximum depth explored of about 152.5 feet below the existing pavement surface.

Toward the northern portion of the project site, Boring Nos. 2, 102, and 104 generally encountered a highly compressible layer of recent alluvium and lagoonal deposits between depths of about 1 and 19 feet below the existing pavement surface. Below the compressible deposits, dense cinder sands and very stiff alluvial clays interbedded with basalt formation were encountered to a depth of about 98 feet below the ground surface. Hard to very hard basalt formation was encountered between depths of about 48 and 86 feet below the existing pavement surface.

Based on the subsurface conditions encountered in the borings and the structural load demands on the new high-rise building foundations, we recommend supporting the new high-rise building on a deep foundation system consisting of micropiles with a diameter of 7.625 inches. We recommend casing the upper 30 feet of the micropiles (permanent casing) below the bottom of the foundation cap elevations. The permanent casing should have an OD of at least 7.625 inches (same as the grout bulb size), and the permanent casing should extend 3 feet into the alluvial clay deposits. The micropiles would derive vertical support primarily from skin friction between the foundation element and surrounding supporting geo-materials. In order to achieve an allowable compressive load capacity of 250 kips, the cased micropiles would need to extend to about 75 and 120 feet below the bottom of the foundation cap elevations (assumed at about +2 feet MSL for ease of reference) at the northern and southern portions of the building, respectively.

The text of this report should be referred to for detailed discussion and our design recommendations.

END OF SUMMARY OF FINDINGS AND RECOMMENDATIONS

SECTION 1. GENERAL

This report presents the findings from our geotechnical engineering exploration conducted in support of the detailed design of the Halewai`olu Senior Residences located at 1331 - 1347 River Street in the Chinatown area of Honolulu on the Island of Oahu, Hawaii. The project location and general vicinity are shown on the Project Location Map, Plate 1.

This report summarizes the findings and presents our geotechnical recommendations based on our field exploration, laboratory testing, and engineering analyses. The recommendations presented herein are intended for the design of foundations, slabs-on-grade, retaining structures, site grading, pavements, and underground utility lines only. In addition, general discussions on the excavation and dewatering requirements are included in this report for information purposes. The findings and recommendations presented herein are subject to the limitations noted at the end of this report.

1.1 Project Considerations

The project site is at 1331 - 1347 River Street in the Chinatown area of Honolulu on the Island of Oahu, Hawaii. The parcel (designated as TMK: 1-7-006: 012) is approximately trapezoidal in shape and encompasses approximately 26,925 square feet in land area. A preliminary geotechnical engineering report entitled “Preliminary Geotechnical Engineering Exploration, Halewai`olu Senior Residences, 1333 River Street, Honolulu, Oahu, Hawaii” dated January 17, 2017 was prepared by our office for the proposed housing development. The recommendations contained in this geotechnical engineering report supersede the preliminary geotechnical recommendations contained in the previous report dated January 17, 2017.

Based on the information provided, we understand it is desired to proceed with the detailed design of the affordable senior rental housing project. We anticipate the proposed housing development will consist of an 18-story high-rise building providing a total of approximately 150 living units with some retail space on the ground floor.

Our preliminary field exploration suggests that the site generally is underlain by a highly compressible layer of recent alluvium and lagoonal deposits extending to depths of approximately 14 and 38 feet below the existing ground surface in the two borings drilled toward the northern and southern portions of the site, respectively.

Because of the potentially weak subsurface conditions anticipated at the site, shear wave velocity profiling was conducted during the preliminary field exploration in an effort to more closely analyze the site for seismic design considerations.

We anticipate several minor below-grade structures, such as the elevator pits, likely will be required. Due to the presence of soft lagoonal deposits and shallow groundwater, we anticipate excavation shoring and dewatering operations likely will be required for the deeper excavations during construction.

As part of the field exploration program, four infiltration tests were performed in accessible areas across the project site to evaluate the infiltration characteristics of the subsurface materials for design of the storm water runoff disposal system in order to meet the drainage requirements for Low Impact Development (LID).

1.2 Purpose and Scope

The purpose of our field exploration was to obtain an overview of the surface and subsurface conditions to develop a generalized subsurface data set to formulate geotechnical recommendations for design of foundations, slabs-on-grade, retaining structures, site grading, pavements, and underground utility lines only. The scope of work for this exploration included the following tasks and work efforts:

1. Coordination of boring stakeout and underground utility toning by various utility companies and government agencies.

2. Mobilization and demobilization of a truck-mounted drill rig and two operators to the project site and back.

3. Drilling and sampling of four additional borings extending to depths of about 79 to 152.5 feet below the existing pavement surface. In addition, four shallow borings were drilled to a depth of about 5 feet below the existing pavement surface for infiltration testing.

4. Coordination of the field exploration and logging of the borings by our geologist.

5. Performance of four field infiltration tests to evaluate the hydraulic characteristics of the subsurface materials to provide information in support of the design of the storm water runoff disposal system.

6. Laboratory testing of selected soil samples and rock cores obtained during the field exploration as an aid in classifying the materials and evaluating their engineering properties.

7. Analyses of the field and laboratory data to formulate preliminary geotechnical recommendations for the detailed design of the proposed project.

8. Preparation of this geotechnical engineering report summarizing our work on the project and presenting our findings and geotechnical recommendations in support of the detailed design of the proposed development.

9. Coordination of our overall work on the project by our senior engineer.

10. Quality assurance of our work and client/design team consultation by our principal engineer.

11. Miscellaneous work efforts such as drafting, word processing, and clerical support.

Detailed descriptions of our field exploration methodology and the Logs of Borings are presented in Appendix A. Results of the seismic shear wave velocity testing conducted during the preliminary field exploration is presented in Appendix B. Laboratory test results of selected soil and core samples obtained from the current field exploration are presented in Appendix C. Results of the infiltration tests performed at selected locations are presented in Appendix D. Photographs of the core samples are presented in Appendix D. The pertinent geotechnical data from the preliminary field exploration, including logs of borings, laboratory test results, and photographs of the core samples, are presented in Appendix F.

END OF GENERAL

SECTION 2. SITE CHARACTERIZATION

The Island of Oahu was built by the extrusion of basaltic lavas from the Waianae and Koolau Shield Volcanoes. The older Waianae Volcano is estimated to be middle to late Pliocene in age and forms the bulk of the western one-third of the island. The younger Koolau Volcano is estimated to be late Pliocene to early Pleistocene (Ice Age) in age and forms the majority of the eastern two-thirds of the island. The Koolau Volcano reached the end of its main shield-building phase about 2 million years ago.

The project site is situated next to the southern bank of Nuuanu Stream on the Honolulu Coastal Plain. This plain is composed of interbedded marine, terrestrial, and volcanic deposits on the southwest side of the former Koolau Volcano.

The base member encountered in our exploration consists of basaltic lava flow from the Honolulu Volcanic Series. This basalt was deeply scoured by stream erosion at a time when the sea level was as much as 300 feet below its present elevation. As the great continental glaciers of the Ice Age melted and the sea level rose, erosion of the basalt ceased and extended periods of deposition followed. The deposits generally consisted of alluvium and ash transported from Nuuanu Valley upstream of the site.

Subsequently, the alluvium was covered by sandy beach deposits and coralline reef formation, which developed when the sea level rose to an elevation higher than its present level. As the continental glaciers formed again, the sea level dropped, the reef and alluvial deposits were eroded. When the sea level rose again to its present level, the stream channel was filled with fine-grained organic soils deposited in a quiet lagoonal environment. More recent alluvial deposits continued to accumulate over the lagoonal sediments. Finally, in the past century, the area was filled for development.

2.1 Site Description

The proposed senior residential development is located at 1331 - 1347 River Street in the Chinatown area of Honolulu on the Island of Oahu, Hawaii. The parcel (designated as TMK: 1-7-006: 012) is approximately trapezoidal in shape and encompasses approximately 26,925 square feet in land area.

The project site is currently occupied by a two-story structure of Concrete Masonry Unit (CMU) construction alongside River Street. The remaining areas consist of an open parking lot paved with asphaltic concrete. Based on our field reconnaissance and topographic survey map provided, the existing topography across the project site is relatively flat with existing ground surface elevations between about +8 and +10 feet Mean Sea Level (MSL).

2.2 Subsurface Conditions

To obtain an overview of the subsurface conditions at the subject parcel, we conducted a preliminary geotechnical exploration program consisting of two borings, designated as Boring Nos. 1 and 2, extending to depths of about 86 and 121.2 feet below the existing pavement surface. Our current field exploration program in support of the detailed design consisted of drilling and sampling four additional test borings, designated as Boring Nos. 101 through 104, extending to depths ranging from about 79 to 152.5 feet below the existing pavement surface. The approximate locations of the current drilled borings are shown on the Site Plan (Plate 2). The boring locations from the 2017 preliminary field exploration also are shown on the same plan for reference purposes.

Based on the results obtained from our preliminary (2017) and current (2019) field explorations, the original alignment of Nuuanu Stream appears to have traversed the southern portion of the project site. Boring Nos. 1, 101, and 103 drilled toward the southern portion of the project site encountered a thin layer of surface fills overlying a highly compressible layer of recent alluvium and lagoonal deposits extending to depths of about 25 to 38 feet below the existing pavement surface. Stiff to very stiff alluvial deposits interbedded with very dense cobbly boulders were then encountered and extended to the maximum depth explored of about 152.5 feet below the existing pavement surface.

Toward the northern portion of the project site, Boring Nos. 2, 102, and 104 generally encountered a highly compressible layer of recent alluvium and lagoonal deposits between depths of about 1 and 19 feet below the existing pavement surface. Below the compressible deposits, dense cinder sands and very stiff alluvial clays interbedded with basalt formation were encountered to a depth of about 98 feet below

the ground surface. Hard to very hard basalt formation was encountered between depths of about 48 and 86 feet below the existing pavement surface.

For illustration purposes only, two Generalized Geologic Cross Sections depicting the interpreted subsurface conditions at the project site are provided on Plates 3.1 and 3.2. The approximate surface projections of the subsurface profiles prepared for this report are shown on the Site Plan, Plate 2.

We encountered groundwater at depths of about 7.2 to 8 feet below the existing pavement surface at the time of our field explorations. The groundwater levels encountered generally correspond to about Elevations +1.1 to +2.5 feet MSL at the time of our field exploration. It should be noted that groundwater levels can fluctuate depending on surface water runoff and seasonal precipitation (due to the proximity of the project site to Nuuanu Stream), groundwater withdrawal and/or injection, and other factors.

Detailed descriptions of the field exploration methodology are presented in Appendix A. Descriptions and graphic representations of the materials encountered and water levels observed in the borings are presented on the Logs of Borings in Appendix A. Results of the shear wave velocity profiling conducted within one of the borings are presented in Appendix B. Laboratory tests were performed on selected soil samples and rock cores, and the test results are presented in Appendix C. Results of the infiltration tests performed at selected locations are presented in Appendix D. Photographs of the rock cores are provided in Appendix E.

2.3 Seismic Design Considerations

Based on the International Building Code, 2006 Edition (IBC 2006), the project site may be subject to seismic activity and seismic design considerations will need to be addressed. The following sections provide discussions on the seismicity, the potential for liquefaction at the project site, and the soil profile for seismic design.

2.3.1 Earthquakes and Seismicity

In general, earthquakes that occur throughout the world are caused solely by shifts in the tectonic plates. In contrast, earthquake activity in Hawaii is linked primarily to volcanic activity. Therefore, earthquake activity in Hawaii generally

occurs before or during volcanic eruptions. In addition, earthquakes may result from the underground movement of magma that comes close to the surface but does not erupt. The Island of Hawaii experiences thousands of earthquakes each year, but most of the earthquakes are so small that they can only be detected by sensitive instruments. However, some of the earthquakes are strong enough to be felt, and a few cause minor to moderate damage.

In general, earthquakes (associated with volcanic activity) are most common on the Island of Hawaii. Earthquakes that are directly associated with the movement of magma are concentrated beneath the active Kilauea and Mauna Loa Volcanoes on the Island of Hawaii. Because the majority of the earthquakes in Hawaii (over 90 percent of earthquakes) are related to volcanic activity, the risk of high seismic activity and degree of ground shaking diminishes with increased distance from the Island of Hawaii. The Island of Hawaii has experienced numerous earthquakes greater than Magnitude 5 (M5+); however, earthquakes are not confined only to the Island of Hawaii.

To a lesser degree, the Island of Maui has experienced numerous earthquakes greater than Magnitude 5. Therefore, moderate to strong earthquakes have occurred in the County of Maui. The effects of earthquakes occurring on the Islands of Hawaii and Maui may be felt on the Island of Oahu. For example, several small landslides occurred on the Island of Oahu as a result of the Maui Earthquake of 1938 (M6.8). In addition, some houses on the Island of Oahu were reportedly damaged as a result of the Lanai Earthquake of 1871 (M7+).

Due to the relatively short period of documented earthquake monitoring in the State of Hawaii, information pertaining to earthquakes that were felt on the Island of Oahu may not be complete. In general, over the last 150 years of recorded history, we are not aware of reported earthquakes greater than Magnitude 6 occurring on the Island of Oahu. Based on available information, we understand that an earthquake of about Magnitude 5.6 occurred on June 28, 1948 in the vicinity of the Island of Oahu, possibly along the hypothesized and controversial Diamond Head Fault feature.

The Diamond Head Fault feature is believed to extend northeasterly away from the southeastern tip of the Island of Oahu. The Diamond Head Fault feature may be related to the widely documented Molokai Fracture Zone located on the sea floor in the vicinity of the Hawaiian Islands. Despite only the moderate tremor intensity, the resulting damage was reportedly widespread and included broken windows, ruptured masonry building walls, and a broken underground water main. In addition, some areas on the Island of Oahu, including the Tantalus, Iwilei, and Tripler areas, reported more intense ground shaking, severe enough to have cracked reinforced concrete.

2.3.2 Soil Profile

Because of the variable subsurface conditions anticipated across the site as discussed above, it was desired to perform seismic shear wave velocity profiling in an effort to more closely analyze the subsurface conditions for seismic design considerations. Shear wave velocity profiling was performed in Boring No. 1 using seismic cone penetration testing (SCPT) equipment. Based on the subsurface conditions encountered in Boring No. 1, the weighted average shear wave velocity for the materials within the upper 100 feet of the soil profile within the alluvial stream channel is on the order of about 657 feet per second. A small lense of loose granular soils was encountered; however, the subsurface profile encountered did not encounter extensive zones of loose granular soils that would be considered susceptible to soil liquefaction.

Based on the subsurface materials encountered at the project and the shear wave velocity profiling performed, we believe the project site may be classified from a seismic analysis standpoint as being a “Stiff Soil Profile” corresponding to a Site Class D soil profile type based on the International Building Code (Table No. 1613.5.2), 2006 Edition. Based on a Site Class D soil profile, the following seismic design parameters were estimated and may be used for the seismic analysis of the building planned for the project.

SEISMIC DESIGN PARAMETERS INTERNATIONAL BUILDING CODE 2006 EDITION	
Parameter	**Value**
Peak Bedrock Acceleration, PBA (Site Class B)	0.266
Spectral Response Acceleration (Site Class B), S_S	0.614
Spectral Response Acceleration (Site Class B), S_1	0.178
Site Class	"D"
Site Coefficient, F_a	1.308
Site Coefficient, F_v	2.087
Design Peak Ground Acceleration, PGA (Site Class D)	0.214
Design Spectral Response Acceleration, S_{DS}	0.536
Design Spectral Response Acceleration, S_{D1}	0.248

2.3.3 Liquefaction Potential

Based on the 2006 International Building Code IBC 2006 (code adopted by the City and County of Honolulu), the project site may be subjected to seismic activity and the potential for soil liquefaction at the project site will need to be evaluated.

Soil liquefaction is a condition where saturated cohesionless soils located near the ground surface undergo a substantial loss of strength due to the build-up of excess pore water pressures resulting from cyclic stress applications induced by earthquakes. In this process, when the loose saturated sand deposit is subjected to vibration (such as during an earthquake), the soil tends to densify and decrease in volume causing an increase in pore water pressure. If drainage is unable to occur rapidly enough to dissipate the build-up of pore water pressure, the effective stress (internal strength) of the soil is reduced. Under sustained vibrations, the pore water pressure build-up could equal the overburden pressure, essentially reducing the soil shear strength to zero and causing it to behave as a viscous fluid. During liquefaction, the soil acquires sufficient mobility to permit both horizontal and vertical movements, and if not confined, will result in significant deformations.

Soils most susceptible to liquefaction are loose, uniformly graded, fine-grained sands and loose silts with little cohesion. The major factors affecting the liquefaction characteristics of a soil deposit are as follows:

FACTORS	LIQUEFACTION SUSCEPTIBILITY
Grain Size Distribution	Fine and uniform sands and silts are more susceptible to liquefaction than coarse or well-graded sands.
Initial Relative Density	Loose sands and silts are most susceptible to liquefaction. Liquefaction potential is inversely proportional to relative density.
Magnitude and Duration of Vibration	Liquefaction potential is directly proportional to the magnitude and duration of the earthquake.

As mentioned above, the subsurface profile encountered did not encounter extensive zones of loose granular soils that would be considered susceptible to soil liquefaction. Therefore, the potential for soil liquefaction is not a design consideration for this project.

END OF SITE CHARACTERIZATION

SECTION 3. DISCUSSION AND RECOMMENDATIONS

Our field explorations suggest that the original alignment of Nuuanu Stream may have traversed the southern portion of the project site. Boring Nos. 1, 101, and 103 drilled toward the southern portion of the project site encountered a thin layer of surface fills overlying a highly compressible layer of recent alluvium and lagoonal deposits extending to depths of about 25 to 38 feet below the existing pavement surface. Stiff to very stiff alluvial deposits interbedded with very dense cobbly boulders were then encountered and extended to the maximum depth explored of about 152.5 feet below the existing pavement surface.

Toward the northern portion of the project site, Boring Nos. 2, 102, and 104 generally encountered a highly compressible layer of recent alluvium and lagoonal deposits between depths of about 1 and 19 feet below the existing pavement surface. Below the compressible deposits, dense cinder sands and very stiff alluvial clays interbedded with basalt formation were encountered to a depth of about 98 feet below the ground surface. Hard to very hard basalt formation was encountered between depths of about 48 and 86 feet below the existing pavement surface.

Based on the subsurface conditions encountered in the borings and the structural load demands on the new high-rise building foundations, we recommend supporting the new high-rise building on a deep foundation system consisting of micropiles with a diameter of 7.625 inches. We recommend casing the upper 30 feet of the micropiles (permanent casing) below the bottom of the foundation cap elevations. The permanent casing should have an OD of at least 7.625 inches (same as the grout bulb size), and the permanent casing should extend 3 feet into the alluvial clay deposits. The micropiles would derive vertical support primarily from skin friction between the foundation element and surrounding supporting geo-materials. In order to achieve an allowable compressive load capacity of 250 kips, the cased micropiles would need to extend to about 75 and 120 feet below the bottom of the foundation cap elevations (assumed at about +2 feet MSL for ease of reference) at the northern and southern portions of the building, respectively. The text of this report should be referred to for detailed discussion and geotechnical recommendations for the proposed project.

3.1 Micropile Foundations

Based on the subsurface conditions encountered in the borings and the structural load demands on the new high-rise building foundations, we recommend supporting the new high-rise building on a deep foundation system consisting of cased micropiles. The load supporting capacity of the micropile foundation would derive primarily from skin friction between the micropile bonded zone and the alluvial clays with cobbles and boulders and/or hard to very hard basalt formation anticipated across the project site.

A micropile consists of a small diameter (usually less than 12 inches) drilled and grouted pile with a center reinforcing steel bar. The micropile foundation typically is constructed by drilling a borehole, placing reinforcing steel in the hole, and grouting the borehole. Micropiles are desirable because they can be installed readily in access restrictive environments and in numerous soil types and ground conditions. In addition, installation of the micropiles generally causes minimal disturbance to adjacent structures, the adjacent soils, and the environment.

We envision a micropile system with a minimum OD (outside diameter) of 7.625 inches should be used. We recommend designing each micropile based on an allowable compressive load capacity of 250 kips per pile with an allowable tensile load 175 kips. The allowable compressive and tensile load capacities of the micropiles may be increased by up to one-third (⅓) when designing for short-term loads, such as demands due to seismic or wind reactions.

Lateral load resistance contribution from the micropile should be discounted due to the relatively small diameter of the foundation element. Passive earth pressure acting against the near-vertical faces of the foundation caps and/or grade beams may be estimated using an equivalent fluid pressure of 300 and 150 pounds per square foot per foot of depth (pcf) for above and below groundwater conditions, respectively. The static groundwater level at the project site may be assumed to be at about Elevation +3 feet MSL for design purposes.

Based on the anticipated subsurface conditions at the site, we recommend extending the micropiles through the soft and/or loose lagoonal deposits and derive load bearing support from the alluvial deposits and/or basalt formation encountered across

the project site. To achieve the allowable compressive load capacity with a factor of safety of 2, we believe each micropile would need to extend a depth of about 45 and 90 feet into the competent materials, or approximately 75 and 120 feet below the bottom of pile cap elevation, for the northern and southern portions of the project site, respectively. We also recommend providing a permanent steel casing for the upper 30 feet of the micropiles. The permanent steel casing should have an OD of at least 7.625 inches (same as the grout bulb size), and the permanent steel casing should extend 3 feet into the alluvial clay deposits. The center reinforcing steel bar should consist of a Grade 80 No. 20 reinforcing bar with a cross sectional area of 4.91 square inches. The following table provides a summary of the micropile recommendations for ease of reference.

CASED MICROPILE SYSTEM RECOMMENDATIONS	
Micropile Outside Diameter of Casing	7.625 inches minimum
Micropile Casing Thickness	0.375 inches minimum
Micropile Casing Tip Elevation	See Table Below
Diameter of Micropile Bonded Length	7.625 inches minimum
Micropile Bonded Length	See Table Below
Micropile Total Length	See Table Below
Center Reinforcing Bar (Full Depth)	No. 20 (ASTM A615 Grade 80)
Grout Minimum Compressive Strength	6,500 psi (water-cement ratio of 0.40 or less)

SUMMARY OF MICROPILE FOUNDATIONS			
Location	**Cased Length** (feet)	**Bonded Length** (feet)	**Total Length** (feet)
Northern Portion	30	45	75
Southern Portion	30	90	120
Note: All lengths provided above are measured from the bottom of the pile cap elevations assumed at +2 feet MSL or lower.			

To facilitate the micropile drilling and ensure the quality of the grouting, we recommend advancing the steel casing to the bottom of the micropile during the drilling

operation. The steel casing may be withdrawn during the grouting operation while a minimum of 10 feet grout head is maintained above the bottom of the casing at all times. The casing should be withdrawn above the design casing depth (minimum 3 feet) and plunged back to the design casing depth (3 feet into the alluvial deposits). In general, the micropiles should have a minimum center-to-center spacing of about 24 inches to avoid reduction in vertical load capacity due to group action and to facilitate drilling of the micropiles. Micropiles within 5 feet of a recently completed micropile should not be drilled or grouted until the grout in the recently completed micropile has been allowed to cure for at least 24 hours to avoid disturbing or compromising the recently completed micropile.

It should be noted that the bond stress between the grout bulb and the soil is highly dependent on the drilling procedures and the grouting methods employed by the contractor to install the micropile. Therefore, the bond stress between the grout bulb and the soil may vary considerably between different contractors and micropile foundation systems. In order to determine whether the contractor's methods of micropile installation are adequate and to determine the ultimate compressive load capacity, we recommend performing two pre-production compressive load tests on sacrificial micropiles. In general, the purpose of the pre-production load test on a micropile is to fulfill the following objectives:

1. To examine the adequacy of the methods and equipment proposed by the contractor to install the micropiles to the depths required.

2. To confirm or modify the estimated minimum depth of the micropiles by determining the ultimate grout-to-soil bond stress.

3. To assess the contractor's method of drilling and grouting.

In general, the pre-production load tests should be performed in accordance with ASTM D1143, as modified herein. Based on experience, we believe the load test should be conducted no earlier than seven days after completion of the micropile installation to allow the grout adequate time to cure. Two additional micropiles may be used for reaction during the compressive load testing of the pre-production load test micropile.

The reaction micropiles may be installed to depths as deep as the load test micropile to provide adequate reaction in uplift (to be determined by the contractor).

The load test micropile should be loaded gradually to at least 200 percent of the allowable design load in compression. We recommend holding the maximum test load (200 percent of the design load) for a minimum of 4 hours (up to a maximum of 8 hours) depending on the recorded movements of the load test micropile. The pre-production load test is an integral part of the design of the micropile foundation system. Therefore, we recommend a Geolabs representative observe the pre-production load test.

In addition to the pre-production load test, we also recommend performing pullout tests (proof tests) on selected micropiles during construction to confirm the load carrying capacity of the installed micropiles. We recommend testing a minimum 5 percent of the total number of micropiles for pullout. The pullout tests should consist of subjecting the micropile to at least 125 percent of the design load. The micropile should be loaded in 12.5% design load increments, and each load should be held for at least 5 minutes. The maximum test load should be held for a minimum of 10 or 60 minutes. Pullout test on the selected micropiles is an integral part of the design of the micropile foundation system. Therefore, we recommend conducting the pullout tests under the observation of a Geolabs representative.

A specialty contractor experienced in the construction of a micropile foundation system (minimum five projects) should perform the installation of the micropiles. Due to the specialized nature of the micropile foundation construction, observation and testing of the micropile foundation system should be designated as a “Special Inspection” item. Therefore, a Geolabs representative (Special Inspector) should be present to observe the geotechnical aspects of the micropile foundation installation and testing.

Settlements of the micropiles will result primarily from elastic compression of the micropile member and subgrade response. We estimate the total settlement of the micropile-supported foundations to be 0.5 inches or less with differential settlements between micropiles not exceeding about one-half of the total settlement. We believe these settlements are essentially elastic and should occur as the loads are applied.

3.2 Shallow Foundations

In general, we believe shallow spread and/or continuous strip footings may be used to support minor structures planned at the project site. It should be noted that where these minor structures (supported on a shallow foundation system) abut the new building structure (supported on a deep foundation system), differential movement between the two structures should be expected and accepted. Therefore, structural connections should not be provided where differential movement between the two structures supported on different foundation systems is expected. Otherwise, shallow foundations should not be used for the minor structures. Based on our evaluation, we recommend supporting the one-story retail spaces located on the north side of the project site on micropile foundations similar to the high-rise tower structure.

An allowable bearing pressure of up to 2,000 pounds per square foot (psf) may be used for the design of footings bearing on the recompacted on-site materials or compacted fill. This bearing value is for dead-plus-live loads and may be increased by one-third (⅓) for transient loads, such as those caused by wind or seismic forces. In general, the bottom of foundations should be embedded a minimum of 18 inches below the lowest adjacent finished grade. Footings constructed near tops of slopes or on sloping ground should be embedded deep enough to provide a minimum horizontal setback distance of 6 feet measured from the outside edge of the footings to the face of the slope.

Foundations next to other foundations, utility trenches, or easements should be embedded below a 45-degree imaginary plane extending upward from the bottom edge of the utility trench, or the footings should extend to a depth as deep as the inverts of the utility lines. This requirement is necessary to avoid surcharging adjacent below-grade structures with additional structural loads and to reduce the potential for appreciable foundation settlement.

If soft and/or loose materials are encountered at the bottom of footing excavations, the soft and/or loose materials should be over-excavated until dense and/or stiff materials are exposed in the footing excavations. The over-excavation should be backfilled with select granular fill materials moisture-conditioned to above the

optimum moisture content and compacted to a minimum of 90 percent relative compaction. Alternatively, the bottom of footing may be extended down to bear directly on the underlying competent materials.

If the foundations for the new structures are designed and constructed in strict accordance with our recommendations, total settlement of foundations is estimated to be on the order of 1.5 inches with differential settlements on the order of about 0.75 inches.

Lateral loads acting on the structure may be resisted by friction between the base of the foundation and the bearing materials and by passive earth pressure developed against the near-vertical faces of the embedded portion of foundations. A coefficient of friction of 0.30 may be used for foundations bearing on the recompacted on-site materials or compacted fill. Resistance to lateral loads due to passive earth pressure may be calculated using an equivalent fluid pressure of 300 pounds per foot per foot of depth (pcf) for foundations embedded in the on-site materials and/or compacted structural fill materials. These values assume the soils around the foundations are well compacted. Unless covered by pavements or slabs, the passive pressure resistance in the upper 12 inches below the finished grade should be neglected.

3.3 Slabs-On-Grade

We anticipate the ground floor slabs for the new building construction will consist of concrete slabs-on-grade. Surface fills consisting of clayey silts are present at the ground surface at the project site. The near-surface clayey fills encountered may exhibit a slight to moderate expansion potential when subjected to moisture fluctuations. To reduce the potential of structural distress to the lightly loaded slabs, we recommend over-excavating the clayey subgrade soils and providing 12 inches of select granular fill below the ground floor slabs. The over-excavation and replacement with 12 inches of select granular fill should extend a minimum of 2 feet laterally beyond the edge of the slab.

The subgrades for concrete slabs-on-grades (not subjected to vehicular traffic) should be scarified to a depth of at least 8 inches, moisture-conditioned to at least 2 percent above the optimum moisture, and compacted to no less than 90 percent

relative compaction. The compaction requirement for subgrades of slabs-on-grades subjected to vehicular traffic, such as the ground floor level parking (if provided), should be increased to a minimum of 95 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same soil determined in accordance with ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density.

Select granular fills should consist of imported granular materials such as crushed coral, basaltic gravel, or cinder sands. The materials should be well graded from coarse to fine with particles no larger than 3 inches in largest dimension. The materials should have a laboratory California Bearing Ratio (CBR) value of 20 or higher, and a swell potential of 1 percent or less when tested in accordance with ASTM D1883. The material also should contain between 10 and 30 percent particles passing the No. 200 sieve. The select granular fill materials should be moisture-conditioned to above the optimum moisture content and compacted to at least 90 percent relative compaction. The slab subgrade should be kept moist until covered by the select granular fill.

For the interior building slabs (not subjected to vehicular traffic), we recommend placing a minimum 4-inch thick layer of cushion fill consisting of open-graded gravel (ASTM C33, No. 67 gradation) directly below the slabs. The open-graded gravel cushion fill would serve as a capillary moisture break and would provide for the uniform support of the slabs. To reduce the potential for future moisture infiltration through the slab and subsequent damage to floor coverings, an impervious moisture barrier is recommended on top of the open-graded gravel cushion layer. We also recommend designing interior walls to incorporate some flexibility to accommodate a small amount of possible ground movements.

Where the slabs will be subjected to vehicular traffic, such as the parking garage slabs, we recommend placing a 6-inch layer of aggregate subbase below the slabs in lieu of the 4-inch thick gravel cushion layer. The aggregate subbase should consist of crushed basaltic aggregates compacted to a minimum of 95 percent relative

compaction. Where slabs are intended to function as rigid pavements for trucks, a minimum slab thickness of 6 inches may be used for preliminary design purposes. In addition, provisions should be made for proper load transfer across the slab joints that will be subjected to vehicular traffic. For the design of structural slabs supported on 6 inches of aggregate subbase, a modulus of subgrade reaction of about 200 pounds per square inch per inch of deflection (pci) may be used for the slab resting on the compacted aggregate subbase.

Exterior concrete slabs, such as walkways and patios, also may be required for the project. In general, we recommend providing a minimum 6-inch thick cushion fill layer consisting of select borrow subbase below exterior concrete slabs that will not be subjected to vehicular traffic. The select borrow subbase should be moisture-conditioned to above the optimum moisture and compacted to at least 90 percent relative compaction. The select borrow subbase should be increased to a minimum of 12 inches if expansive clayey soils are encountered at the slab subgrade level. To reduce the potential for significant slab cracking due to concrete shrinkage, crack control joints should be provided at intervals equal to the width of the walkways with expansion joints at right-angle intersections.

The thickened edges of slabs adjacent to unpaved areas should be embedded at least 12 inches below the lowest adjacent grade. It should be emphasized that the areas adjacent to the slabs should be backfilled tightly against the edges of the slabs with relatively impervious soils (well-graded on-site granular soils). These areas also should be graded to divert water away from the slabs and to reduce the potential for water ponding around the slab edges.

3.4 Retaining Structures

Based on the information provided, we understand that retaining structures, such as elevator pits, with a retained height of up to 8 feet will be required for the project. The following general guidelines are provided for design of the retaining structures as described herein.

3.4.1 Retaining Structure Foundations

Parameters for design of foundations for retaining structures that are structurally connected to (or abutting) the high-rise building should be designed in accordance with the "Micropile Foundations" section herein.

For site retaining walls and other retaining structures that are not structurally connected to (or abutting) the new structures, retaining structure foundations may be designed in accordance with the "Shallow Foundations" section herein. Wall footings should have a minimum width of 24 inches. In addition, the bottom of wall footings on relatively flat areas should be embedded a minimum depth of 24 inches below the lowest adjacent finished grade. The bottom of footing elevations also should be limited to Elevation +3 feet MSL or higher to reduce the potential for encountering soft soils at the footing subgrade levels.

In the event that soft subgrade conditions are encountered at the bottom of footing elevations, Geolabs should be contacted to review the exposed conditions and provide supplemental recommendations for treatment of the soft subgrade soils below footings supported on grade.

3.4.2 Static Lateral Earth Pressures

Retaining structures should be designed to resist the lateral earth pressures due to the adjacent soils and surcharge effects. The recommended lateral earth pressures for design of retaining structures expressed in equivalent fluid pressures of pounds per square foot per foot of depth (pcf), are presented below.

LATERAL EARTH PRESSURES FOR DESIGN OF RETAINING STRUCTURES			
Backfill Condition	**Earth Pressure Component**	**Active** (pcf)	**At-Rest** (pcf)
Level Backfill (Above Groundwater)	Horizontal	40	60
	Vertical	None	None
Level Backfill (Below Groundwater)	Horizontal	80	90
	Vertical	None	None

It is assumed that the on-site soils with a maximum particle size of 3 inches or less or select granular fill materials will be used to backfill behind the walls. It is assumed that the backfill behind retaining structures will be compacted to between 90 and 95 percent relative compaction. Over-compaction of the retaining structure backfill should be avoided.

In general, an active condition may be used for gravity retaining walls and walls that are free to deflect by as much as 0.5 percent of the wall height. If the tops of the walls are not free to deflect beyond this degree, or are restrained, the walls should be designed for the at-rest condition. The lateral earth pressures presented do not include hydrostatic pressures that might be caused by groundwater trapped behind the walls.

Surcharge stresses due to areal surcharges, line loads, and point loads within a horizontal distance equal to the depth of the wall should be considered in the design. For uniform surcharge stresses imposed on the loaded side of the wall, a rectangular distribution with a uniform pressure equal to 36 percent of the vertical surcharge pressure acting over the entire height of the wall, which is free to deflect (cantilever), may be used in design. For walls that are restrained, a rectangular distribution equal to 53 percent of the vertical surcharge pressure acting over the entire height of the wall may be used for design. Additional analyses during design may be needed to evaluate the surcharge effects of point loads and line loads.

3.4.3 Drainage

In general, retaining structures should be well drained to reduce the potential for build-up of hydrostatic pressures, especially due to seepage water and/or perched groundwater. A typical drainage system for retaining walls would consist of a minimum 12-inch wide zone of permeable material, such as open-graded gravel (ASTM C33, No. 67 gradation), placed immediately around a perforated pipe (perforations facing down) at the base of the retaining wall. The perforated pipe should discharge to an appropriate outlet.

As an alternative to the use of permeable material, a prefabricated drainage product, such as MiraDrain 6200, may be used instead of the permeable drainage material. The prefabricated drainage product also should be hydraulically connected to a perforated pipe at the base of the retaining wall. The perforated pipe should discharge to an appropriate outlet. Unless covered by concrete or asphaltic concrete, the upper 12 inches of backfill (above the permeable drainage material and/or prefabricated drainage product) should consist of relatively impervious materials, such as the on-site silty and clayey soils, to reduce the potential for significant water infiltration behind the walls.

For site retaining walls, the typical drainage system may consist of 1 to 2 cubic foot of permeable material, such as open-graded gravel (ASTM C33, No. 67 gradation), wrapped with non-woven filter fabric (Mirafi 180N or equivalent) placed at each of the weep hole locations. The weep holes should be spaced not more than 6 feet apart. The backfill from the bottom of the wall to the bottom of the weep hole should consist of relatively impervious material to reduce the potential for significant water infiltration into the subsurface. In addition, the upper 12 inches of the retaining wall backfill should consist of relatively impervious material to reduce the potential for significant water infiltration behind the retaining structure unless covered by concrete slabs at the surface.

3.5 Site Grading

Based on the existing topography, we anticipate minimal site grading work will be required for the project construction. In general, foundation excavations and subsequent backfills of up to about 12 feet deep may be required for construction of the building foundations and elevator pits. It should be noted that placement of new fills at this site likely will induce some consolidation of the soft and/or loose lagoonal deposits underlying the site. Therefore, it is important to place the new fills as soon as practical to allow the ground settlements to occur first prior to construction of improvements, such as the slab-on-grade construction, to reduce the potential for adverse effects resulting from ground settlements. The following site grading items are addressed in the succeeding subsections:

1. Site Preparation
2. Fills and Backfills
3. Fill Placement and Compaction Requirements

A Geolabs representative should monitor the grading operations to observe whether undesirable materials are encountered during the excavation and scarification process, and to confirm whether the exposed soil conditions are similar to those encountered in our field exploration.

3.5.1 Site Preparation

At the on-set of earthwork, areas within the contract grading limits should be cleared and grubbed thoroughly. Vegetation, debris, deleterious materials, existing structures to be demolished, and other unsuitable materials, should be removed and disposed of properly off-site to reduce the potential for contaminating the excavated materials.

Soft and yielding areas encountered during clearing and grubbing below areas designated to receive fill and/or future improvements should be over-excavated to expose firm natural material, and the resulting excavation should be backfilled with well-compacted fill. The excavated soft soils should not be re-used as fill materials and should be properly disposed of off-site.

In general, the over-excavated subgrades and areas designated to receive fills should be scarified to a depth of about 8 inches, moisture-conditioned to above the optimum moisture content, and recompacted to a minimum of 90 percent relative compaction. The compaction requirement of the finished subgrades for areas subjected to vehicular traffic should be increased to a minimum of 95 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density as determined by ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density.

3.5.2 Fills and Backfills

In general, the near-surface clayey silt soils encountered during our field exploration should be suitable for use as general fill materials, provided that the

maximum particle size is less than 3 inches in largest dimension. The on-site materials generated from the excavations may be used as a source of general fill or backfill materials provided that they are free of vegetation and deleterious materials and screened of the over-sized materials and/or processed to meet the above gradation requirements (less than 3 inches in largest dimension).

Imported materials to be used as select granular fill should be non-expansive granular material, such as crushed coral or basalt. The select granular fill should be well graded from coarse to fine with particles no larger than 3 inches in largest dimension. The material should have a California Bearing Ratio (CBR) value of 20 or higher, and a swell potential of 1 percent or less when tested in accordance with ASTM D1883. The material also should contain between 10 and 30 percent particles passing the No. 200 sieve. Imported fill materials should be tested for conformance with these recommendations prior to delivery to the project site for the intended use.

Where groundwater is encountered (within the excavations), backfill materials should consist of free-draining granular materials, such as No. 3B Fine gravel (ASTM C33, No. 67 gradation), wrapped on all sides with non-woven filter fabric. The free-draining granular materials should be used up to a level of about 12 inches above the groundwater level to facilitate compaction of the fill materials.

Aggregate base and subbase courses required for the project should consist of crushed basaltic aggregates and should meet the requirements of Sections 31 and 30 of the City and County Standard Specifications (September 1986). Imported fill materials should be tested for conformance with these recommendations prior to delivery to the project site for the intended use.

3.5.3 Fill Placement and Compaction Requirements

In general, fills and backfills should be moisture-conditioned to above the optimum moisture content, placed in level lifts not exceeding 8 inches in loose thickness and compacted to at least 90 percent relative compaction. The compaction requirement for the last lift of fill (finished subgrade) below areas

subjected to vehicular traffic should be increased to at least 95 percent relative compaction.

Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density as determined by ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density. Compaction should be accomplished by sheepsfoot rollers, vibratory rollers, or other types of acceptable compaction equipment. Water tamping, jetting, or ponding should not be allowed to compact the fills.

3.6 Excavation

As mentioned above, we anticipate excavations on the order of up to about 13 feet below the ground surface may be required for construction of the building foundations and elevator pits. Based on the subsurface conditions encountered and the limited working space, we envision temporary shoring of some of the deeper excavations may be required.

The field exploration encountered a surface fill layer underlain by soft and/or loose lagoonal deposits near the existing ground surface. Therefore, we envision that conventional excavation techniques using a backhoe excavator may be used for the planned excavations. In general, we believe interlocking steel sheet piling may be used for temporary shoring purposes, especially where dewatering of the excavations will be necessary. However, it should be noted that use of a vibratory hammer to install the interlocking steel sheet piles should be avoided to reduce the potential for inducing a liquefaction condition in the underlying very soft and/or loose lagoonal deposits, which would cause some settlements of the ground adjacent to the sheet pile shoring.

We also recommend the contractor develop and implement a monitoring program to detect ground movement and/or subsidence adjacent to the excavations, which may result in damage to nearby structures and pavements. It should be noted that minor settlements of the adjacent ground may occur during and after installation of the interlocking steel sheet piles. Therefore, we recommend the contractor retain a qualified geotechnical engineer to design and evaluate the shoring system planned.

In general, the contractor should determine the method and equipment to be used for excavations, subject to practical limits and safety considerations. Based on the field exploration, the surface fill materials and underlying soft and/or loose lagoonal deposits encountered in the borings may be excavated with conventional earthmoving equipment. However, some localized areas of hard materials and/or obstructions may be encountered at the site. Therefore, the contractor may encounter difficult excavation conditions at localized areas, which should be expected considering the urban nature of the project site.

3.7 Dewatering

Dewatering of excavations will be necessary where the existing groundwater level is above the bottom of the proposed excavation. We encountered groundwater in our drilled borings at depths of about 7.2 to 8.0 feet below the ground surface at the time of our field exploration. The groundwater levels encountered generally correspond to about Elevations +1.1 to +2.5 feet MSL.

Based on the groundwater levels anticipated and the generally permeable nature of some of the silty sand soils below the surface fills to be encountered within the excavations, dewatering will be required at the planned excavations of the project construction. Therefore, dewatering provisions will need to be included in the contract documents for the proposed construction. Because the excavation may involve discharge of groundwater, a National Pollutant Discharge Elimination System (NPDES) permit may be required for this discharge. The contractor should consult their independent consultant for the latest regulations and information pertaining to the permit application.

Because of the granular nature of some of the subsurface soils, we anticipate the granular soils encountered below the surface fills are relatively permeable. Therefore, dewatering of the excavation may involve moderate volumes of water. Because of the presence of loose and/or soft soils, we do not recommend dewatering by means of a well point system along the outside of the excavations. The resultant areal depression of the natural groundwater table could induce consolidation of the compressible subsurface soils resulting in potential ground settlements, which could affect the

adjacent existing structures. The potential impact of the dewatering system selected on depressing the natural groundwater table must be carefully evaluated by the contractor prior to dewatering.

It is our opinion that a cut-off wall system, such as interlocking steel sheet piles, should be considered to aid in dewatering the excavation. However, sumps will be needed to collect water that percolates up into the base of the excavation or infiltrates through the sheet piles. The sheet piles should be driven to a sufficient depth to reduce the potential for areal ground subsidence and to reduce the amount of dewatering needed within the excavations in areas underlain by granular subsurface soils with moderate permeability. Use of an interlocking sheet pile shoring support system with jet-grouted soils (or tremie concrete plug) is relatively watertight, which should allow the groundwater levels outside the excavations to be maintained close to the original pre-construction levels. Therefore, some type of groundwater control requirement should be specified in the contract documents.

It should be noted that installation of the sheet pile shoring to the desired depths at the site may require predrilling of the sheet pile locations. The presence of these predrilled holes directly adjacent to the sheet pile shoring may serve as conduits for groundwater to infiltrate the sheet pile shored excavation. This condition could result in large volumes of seepage water to infiltrate the shored excavation requiring additional dewatering efforts and disposal of the dewatered effluent. Therefore, the contractor should take precautionary measures to avoid these conditions, which could contribute significantly to the dewatering requirements for the project.

The contractor is responsible for dewatering for construction and disposal of the dewatered effluent. The selection of equipment and methods of dewatering should be left up to the contractor, and he/she should be aware that modifications to the dewatering system may be required during construction depending on the conditions encountered. The dewatering method selected should have minimal impact on the groundwater level surrounding the proposed excavation. The dewatering operations should be coordinated with the shoring support such that the stability of the excavations

is not jeopardized. The operations should be carried-out without softening the bottom of the excavations.

It is our opinion that the definition of "Dewatering" in the contract documents should be written to include works or systems required to lower the natural groundwater table and/or to exclude water from the excavations to allow construction of the proposed structures under safe and dry conditions. These works or systems may include, but are not limited to, pumping, cut-off walls, tremie concrete plugs, etc.

3.7.1 Subsurface Soil Permeability

Based on our borings, the near-surface clayey silt fill soils were underlain by lagoonal deposits consisting of relatively thin layer of loose silty sands overlying a thick deposit of soft organic silts. The permeability of the subsoils at the site may be considered moderately permeable based on the materials encountered. Therefore, the contractor should pay attention to the site-specific dewatering plan for the proposed excavations.

3.7.2 Dewatering Considerations

We suggest considering the following three basic criteria in selection of a suitable method of dewatering:

a. The dewatering method should result in the least disturbance or damage to existing buildings, roads, and environment.

b. The dewatering method should maintain stability of, and also provide safe and dry working conditions in, the excavation.

c. The dewatering method should be sufficiently flexible to allow modifications to accommodate various ground conditions.

3.7.3 Dewatering Precaution and Monitoring

The contractor must carefully evaluate the potential impact of the dewatering system selected on depressing the natural groundwater table prior to dewatering. The contractor should retain a qualified geotechnical engineer to design and evaluate the dewatering system used.

The contractor should be solely responsible for the impact and safety of the dewatering operations. His/her qualified representative, who should be continuously present on-site during dewatering activities, will have the best opportunity to promptly observe the effects of dewatering during construction and to implement, as soon as possible, necessary precautionary or remedial measures including, but not limited to, slowing down or stopping the dewatering operations.

Where encountered at the bottom of excavations, permeable granular soils may be susceptible to piping and “quick” conditions. The dewatering operations should be carried-out without creating a “quick” condition or softening at the excavation bottoms. Therefore, the project dewatering operations should be performed without pumping out soil fines (pumping clear water only) and should be coordinated with the shoring installation such that the excavation stability is not adversely affected. Excessive pumping, which removes soil fines, may result in “blowing” or heaving of the excavation bottom or sides.

Groundwater drawdown outside the excavation will cause additional settlement resulting from consolidation of the soft and/or loose compressible soils. Therefore, the use of a deep well system outside the excavations to draw down the groundwater level should not be allowed.

Special caution also should be taken to avoid dewatering utility trenches connected to the excavations. If this occurs, the granular bedding and/or backfill in the utility trenches could act as subdrains and cause significant areal groundwater drawdown. Significant areal groundwater drawdown would result in appreciable ground settlements and potential damage to utility lines and/or other adjacent existing structures.

3.8 Underground Detention/Infiltration System

In accordance with the City’s storm water requirements, infiltration tests and test pits/borings are required to support the on-site disposal design. To provide information for the design of the detention/filtration system, we advanced four boreholes to a depth of about 5 feet below the pavement surface and installed temporary casing in the

boreholes. The infiltration tests were conducted through the bottom of the cased boreholes in general accordance with the procedures described in the Maryland Storm Water Management manual.

Each boring was pre-soaked with water for approximately two hours prior to testing. Water was introduced into the boring to a depth of about 2 feet above the bottom of the boring; and, the drop of the water level in the boring was measured with respect to time for a falling head test consisting of four individual one hour trials per test. The water level was refilled, as necessary, for each trial.

The tests were carried out in several increments until achieving a steady-state with a relatively constant water infiltration rate. Results of the final infiltration rates are presented in the following table. Detailed testing data and results are presented on Plates D-1 through D-4.

SUMMARY OF BOREHOLE INFILTRATION TESTING		
Boring No.	**Depth** (feet)	**Final Infiltration Rate** (inches/hour)
I-1	5	2.75
I-2	5	0
I-3	5	4.25
I-4	5	0

The percolation test results indicated that the infiltration rates at the site may vary from 0 to 4.25 inches per hour. It should be noted that each percolation test was conducted through a 4-inch borehole, which may not represent the actual infiltration condition within a typical infiltration chamber footprint or an open basin. It should be further noted that these tests were conducted on a preliminary basis and their locations were based on the information provided by the project Civil Engineer and site accessibility.

3.9 Pavement Design

We envision that entry driveways and parking areas will be constructed for the new development. In general, we anticipate the vehicle loading for the new pavements

would consist of primarily passenger vehicles and light trucks with occasional heavy trucks. Therefore, we assumed generally light to medium traffic loading conditions for pavement design purposes. We have made our preliminary pavement design assuming the pavement subgrade soil will consist of the medium stiff clayey silt soils encountered in the borings during our field exploration. On this basis, we recommend utilizing the following pavement design for this project.

Flexible Pavement for Parking Areas

2.0-Inch Asphaltic Concrete
6.0-Inch Aggregate Base Course (95 Percent Relative Compaction)
6.0-Inch Aggregate Subbase Course (95 Percent Relative Compaction)
14.0-Inch Total Pavement Thickness on a Moist Compacted Subgrade

Flexible Pavement for Entry Driveways and Loading Zones

3.0-Inch Asphaltic Concrete
6.0-Inch Aggregate Base Course (95 Percent Relative Compaction)
6.0-Inch Aggregate Subbase Course (95 Percent Relative Compaction)
15.0-Inch Total Pavement Thickness on a Moist Compacted Subgrade

Rigid Pavement for Loading Zones

6.0-Inch Portland Cement Concrete
12.0-Inch Aggregate Subbase (95 Percent Relative Compaction)
18.0-Inch Total Pavement Thickness on a Moist Compacted Subgrade

Pavement restoration for River Street should follow the “Flexible Pavement for Entry Driveways and Loading Zones” presented above or match the existing pavement section, whichever is greater.

The subgrade soils under the pavement areas should be scarified to a minimum depth of 8 inches, moisture-conditioned to above the optimum moisture, and compacted to at least 95 percent relative compaction. If the pavement subgrade soils are pumping during the compaction operation, a layer of woven geotextile fabric, such as Mirafi 500X or equivalent, should be provided between the aggregate subbase and the underlying subgrade soils. CBR tests and/or field observations should be performed on the actual subgrade soils during construction to confirm that the above design sections are adequate. The aggregate base and subbase courses should consist of crushed basaltic aggregates compacted to a minimum of 95 percent relative compaction.

In addition, paved areas should be sloped, and drainage gradients should be maintained to carry the surface water off the site. Surface water ponding should not be allowed on-site during or after construction. Concrete curbs used to isolate landscaping in or adjacent to the pavement areas should extend a minimum of 2 inches into the soils below the aggregate base course layer to reduce the potential for migration of excessive landscape water into the pavement section. Alternatively, a subdrain system could be constructed to collect the excess water from landscaping irrigation. For long-term performance, we recommend constructing a subdrain system adjacent to the paved/landscaped areas.

3.10 Underground Utility Lines

We envision new on-site utility lines (i.e., water, sewer, and drain lines) and utility line connections adjacent to the project site may be required for the development. We anticipate most of the utility line trenches will be excavated in the fills and/or soft/loose lagoonal deposits. In general, we recommend using granular bedding consisting of 6 inches of free-draining granular materials (ASTM C33, No. 67 gradation) below the pipes for uniform support. Free-draining granular materials, such as No. 3B Fine gravel (ASTM C33, No. 67 gradation), also should be used for the initial trench backfill up to about 12 inches above the pipes.

It is critical to use this free-draining material to reduce the potential for formation of voids below the haunches of the pipes and to provide adequate support for the sides of the pipes. Improper backfill material around the pipes and improper placement of the backfill could result in backfill settlement and pipe damage. Where groundwater is encountered, the bedding should be wrapped on all sides by non-woven filter fabric (Mirafi 180N or equivalent).

We envision soft and/or loose lagoonal deposits will be encountered at or near the invert elevations along some of the on-site utility lines planned. Therefore, we recommend providing a subgrade stabilization layer consisting of 24 inches of No. 2 Rock (ASTM C33, No. 4 gradation) wrapped in a non-woven filter fabric (Mirafi 180N or equivalent) below the bedding layer for uniform support. The stabilization layer should extend beyond the sides of the pipe a minimum width of

one-fourth the outside diameter of the pipe or 12 inches, whichever is greater. This 2-foot thick stabilization layer also may be used for support of the 18-inch RCP drain line, drain manholes, and other below-grade structures, such as large meter boxes (8' x 7.5' x 5' deep), biofilter concrete vaults (11' x 7' x 4.6' deep), and electrical concrete encasements (2' high x 1.5'). A typical trench detail is provided on Plate 4.

In general, we anticipate utility lines with an invert elevation deeper than about +1 foot MSL would encounter the soft and/or loose lagoonal deposits and likely will require the use of the stabilization layer. It should be noted that some of the lagoonal deposits at the site are highly sensitive and may be subjected to appreciable settlement due to disturbance caused by construction activities and shoring installation and/or extraction. Therefore, it may be necessary to support some of the more sensitive utility lines (specifically gravity sewer lines) and below-grade structures on jet-grouted column foundations (similar to pile foundations) or ACIP piles depending on the invert depths and pipe materials. Further discussions are presented in the following "Jet-Grouted Column Foundation Support System" section.

The upper portion of the trench backfill from a level of 12 inches above the pipes to the top of the subgrade or finished grade may consist of the excavated granular materials with a maximum particle size of 6 inches or select granular fill materials. The backfill material should be moisture-conditioned to above the optimum moisture content, placed in maximum 8-inch level loose lifts, and mechanically compacted to at least 90 percent relative compaction. In areas where trenches will be in paved areas, the upper 3 feet of the trench backfill below the pavement finished grade should be compacted to no less than 95 percent relative compaction.

3.11 Jet-Grouted Column Foundation Support System

As mentioned above, the lagoonal deposits at the site are highly sensitive and may be subjected to appreciable settlement due to disturbance caused by construction activities and shoring installation and/or extraction. Therefore, it may be necessary to support some of the more sensitive utility lines (specifically gravity sewer lines) and below-grade structures on jet-grouted column foundations (similar to pile foundations) depending on the invert depths and pipe materials.

Jet grouting is a technique utilizing a special drill bit and injection monitor with radial horizontal nozzles to produce stabilized soil-cement columns. The jet-grouting technique is a process that produces soil-cement columns by pumping neat cement grout slurry through horizontal jets injected at high pressures. The horizontal jets of cement grout slurry cuts and mixes the surrounding in-situ materials with the neat cement slurry grout as the drill bit is slowly rotated and withdrawn to form a soil-cement column.

We envision some of the new gravity sewer line inverts may be located within the soft and/or loose lagoonal deposits anticipated at shallow depths. In order to provide support for the new gravity sewer lines from appreciable future settlements, we recommend installing jet-grouted column foundations under the pipes along the new gravity sewer line alignments. The jet-grouted column foundations would derive vertical support from end bearing and skin friction along the sides of the jet-grouted column foundations with the surrounding soils.

The following subsections provide detailed discussions on these utility lines and below-grade structures. In addition, several items of the jet-grouted column foundations also are addressed in the following subsections:

1. Off-Site Gravity Sewer Line
2. On-Site Utility Lines
3. Below-Grade Structures
4. Jet-Grouted Column Foundations
5. Jet Grouting Equipment
6. Jet Grouting Test Program
7. Construction Considerations

3.11.1 Off-Site Gravity Sewer Line

The off-site gravity sewer lines (or any sewer lines) to be dedicated to the City and County of Honolulu, as well as the portions of sewer lines (including manhole structures) extending up to the first sewer line manhole within private property, should be supported by jet-grouted columns following the strict guidelines by the City and County of Honolulu where settlement of the sewer line is not tolerable. Therefore, we recommend installing jet-grouted column foundations with a minimum diameter of 36 inches at a maximum center-to-center spacing of 10 feet

along these sewer line alignments. We also anticipate the new sewer lines likely will be constructed using PVC pipes, which generally come in 20-foot long pipe sections.

The top of the jet-grouted columns should be installed up to 6 inches below the new sewer line inverts to allow for placement of the gravel bedding material wrapped in a non-woven geotextile fabric (Mirafi 180N or equivalent. For estimating purposes, the tip of the jet-grouted columns may be assumed at a depth of about 40 feet below the existing ground surface. A Geolabs representative should be present during the jet-grouted column installation to confirm the foundation bearing material at each of the jet-grouted column locations.

As an alternate, the off-site gravity sewer lines may be supported on the 24-inch thick stabilization layer (in addition to the 6-inch thick bedding) as discussed above provided that the off-site gravity sewer lines remain private and are not dedicated to the City and County of Honolulu. In addition, it is advisable that the slopes for these gravity sewer lines be increased (ideally 2% slope or greater) to account for potential settlements in the line. If the owner elects to support the gravity sewer lines on the 24-inch thick stabilization layer, some additional maintenance of the lines should be anticipated and expected due to the potential for settlement of the installed lines.

3.11.2 On-Site Utility Lines

We recommend providing a 24-inch thick stabilization layer for the on-site underground utility lines and manhole structures because we anticipate the majority of the inverts of the underground utility lines will be near or within the soft and/or loose lagoonal deposits encountered below a depth of about 5 to 7 feet below the existing ground surface. Use of the 24-inch thick stabilization layer for the on-site underground utility lines assumes that some amount of utility line settlement (1 to 3 inches) is considered to be acceptable. Where competent ground conditions are exposed at about the utility line invert elevations, the 24-inch thick stabilization layer may be omitted.

The requirement for the 24-inch stabilization layer should be determined in the field based on the exposed ground conditions at the pipe invert elevations. Therefore, a Geolabs representative should observe the exposed trench subgrade conditions before placement of the pipe bedding to evaluate if the 24-inch thick stabilization layer below the on-site underground utility lines is necessary.

3.11.3 Jet-Grouted Column Foundations

Based on our experience with similar projects, the jet-grouted column foundations should have a minimum diameter of 36 inches. In addition, the grout mix should have a specific gravity of at least 1.5 and should be able to produce jet-grouted column foundations with a 7-day unconfined compressive strength of at least 150 pounds per square inch (psi) and a 28-day unconfined compressive strength of at least 300 psi.

In general, the jet-grouted column foundations should extend to a depth of about 40 feet below the existing ground surface. It should be noted that local variations in the subsurface profile should be anticipated. Because the depths of each column foundation will vary depending on the subsurface conditions and the depth to the invert at each column foundation location, a Geolabs representative should be present to observe the jet grouting operations.

The jet-grouted column foundations should be installed up to about 6 inches below the new utility line inverts to allow for the placement of the gravel bedding material. For preliminary design and cost estimation purposes, an allowable compressive load capacity of up to 30 tons with a column foundation tip elevation of about -34 feet MSL may be used for the recommended jet-grouted column foundation design.

3.11.4 Jet Grouting Equipment

Based on the subsurface conditions anticipated at the site, we recommend using the single fluid method of jet grouting for support of the new utility lines for this project. The drilling equipment should be capable of advancing the jetting rods to the depth required and working in limited headroom conditions. The drilling

equipment also should be equipped with automated controls necessary to slowly rotate and withdraw the jetting rods at those rates determined necessary for the formation of the jet-grouted column foundations. Rates of rotation and withdrawal of the jetting rods for each column foundation should be recorded by the contractor and confirmed by a Geolabs representative.

Grout mixers, holding tanks, and associated equipment should be capable of continuously producing a uniform grout mixture required for the formation of the jet-grouted column foundations. Uniformity of the grout mixture should be measured and recorded by the contractor by taking unit weight (density) measurements of the mixed grout by mud balance at least once every 2,000 gallons of grout mixed and pumped.

High-pressure pumps for the jet grouting operations should be capable of delivering grout at a minimum pressure of 4,000 psi. The high-pressure pumps should be equipped with the necessary gauges to measure and record grout pumping pressures, flow rate, and total grout used for each column foundation.

3.11.5 Jet Grouting Test Program

We recommend undertaking a jet grouting test program to evaluate the proposed grouting methods and the ability of the proposed grout mix to produce jet grout column foundations meeting the depth, diameter, and material property requirements. The test program should be conducted and evaluated; including the results of 28-day unconfined compressive strength tests, prior to starting production jet grouting work.

To achieve these objectives, we recommend constructing at least one test section consisting of a minimum of three jet grout column foundations using the same procedures proposed for the production jet grouting work. The jet grout columns should extend to a depth of about 40 feet below the existing ground surface. The test columns should be installed up to near the existing ground surface to allow for later excavation to below the groundwater level for physical inspection. Excavation to expose the grout columns of the test section should not be sooner than 14 days after the jet grout columns have been constructed.

After the jet grout test columns have set up sufficiently, at least two continuous core samples should be obtained from the full depth of the test columns. In general, we recommend employing triple tube core barrels with thin walls to obtain continuous core samples of the jet grout columns. The core barrel should have a nominal inside diameter of at least 3 inches or greater. The core sample should be obtained from the outer half of the jet grout column radius.

The core samples should be inspected and checked for segregation. A minimum of four compression tests should be performed on each of the core samples in accordance with ASTM D1633 or ASTM D2850, as appropriate.

We recommend a Geolabs representative be present during the jet grouting test program to observe and evaluate the field performance of the proposed jet grouting equipment and methods. Therefore, observation of the jet grouting operations by Geolabs is necessary and should be designated a “Special Inspection” item.

3.11.6 Construction Considerations

Existing underground utilities may be present along the new utility line alignments. The contractor should be responsible for locating and avoiding the underground utility lines during the jet-grouted column foundation installation.

The subsurface conditions generally consist of fills, lagoonal deposits, and older alluvial materials. It should be noted that cobbles and boulders are present below the lagoonal deposit across the project site. If dense cobbles and boulders are encountered above the design tip elevation, drilling of the jet-grouted columns may be terminated earlier by deriving its load bearing capacity from end-bearing onto the cobble and boulder deposits.

Some of the new utility lines may run adjacent to existing sidewalks and travelway. Therefore, grout, soil, and water spoil returns produced during the jet grouting operations should be contained and disposed of properly by the contractor.

3.12 Design Review

Final drawings and specifications for the proposed construction should be forwarded to Geolabs for review and written comments prior to bid solicitation and/or construction. This review is necessary to evaluate conformance of the plans and specifications with the intent of the foundation and earthwork recommendations provided herein. If this review is not made, Geolabs cannot assume responsibility for misinterpretation of the recommendations presented herein.

3.13 Post-Design Services/Services During Construction

It is highly recommended to retain Geolabs for geotechnical engineering support and continued services during construction. The following are critical items of construction monitoring that require "Special Inspection" as stipulated in Section 1704 of IBC 2006.

1. Review of micropile foundation installation submittals
2. Observation of the load test pile installation and load testing
3. Observation of the production micropile installation
4. Observation of shallow foundation excavations
5. Review of jet-grouting submittals
6. Observation of jet-grouting test program
7. Observation of jet-grouted column installation
8. Observation of the subgrade soil preparation
9. Observation of fill placement and compaction

A Geolabs representative should monitor the other aspects of the earthwork construction. This is to observe compliance with the intent of the design concepts, specifications, or recommendations and to expedite suggestions for design changes that may be required in the event that subsurface conditions differ from those anticipated at the time this report was prepared. The recommendations provided herein are contingent upon such observations.

If the actual subsurface conditions encountered during construction are different from those assumed or considered in this report, then appropriate modifications to the design should be made.

END OF DISCUSSION AND RECOMMENDATIONS

SECTION 4. LIMITATIONS

The analyses and recommendations submitted herein are based in part upon information obtained from the field borings. Variations of the subsurface conditions between and beyond the field borings may occur, and the nature and extent of these variations may not become evident until construction is underway. If variations then appear evident, it will be necessary to re-evaluate the recommendations presented herein.

The locations of the field borings indicated in this report are approximate, having been estimated by taping from visible features shown on the Site Plan transmitted by Gray, Hong, Nojima & Associates, Inc. on May 7, 2019. Elevations of the borings were interpolated based on the spot elevations shown on the same plan. The locations and elevations of the field borings should be considered accurate only to the degree implied by the methods used.

The stratification breaks shown on the graphic representations of the borings depict the approximate boundaries between soil and/or rock types and, as such, may denote a gradual transition. Water level data from the borings were measured at the times shown on the graphic representations and/or presented in the text of this report. These data have been reviewed and interpretations made in the formulation of this report. However, it must be noted that fluctuation may occur due to variation in tides, rainfall, perched groundwater conditions, groundwater withdrawal, and other factors.

This report has been prepared for the exclusive use of Halewai`olu Senior Development, LLC and their project consultants for specific application to the *Halewai`olu Senior Residences* project in Honolulu on the Island of Oahu as described herein in accordance with generally accepted geotechnical engineering principles and practices. No warranty is expressed or implied.

This report has been prepared solely for the purpose of assisting the architects and engineers in the preparation of the design documents for the new office building project. Therefore, this report may not contain sufficient data, or the proper information, for use to form the basis for preparation of construction cost estimates or contract

bidding. A contractor wishing to bid on this project should retain a competent geotechnical engineer to assist in the interpretation of this report and/or performance of site-specific exploration for bid estimating purposes.

The owner/client should be aware that unanticipated subsurface conditions are commonly encountered. Unforeseen subsurface conditions, such as perched groundwater, soft deposits, hard layers, or cavities, may occur in localized areas and may require additional probing or corrections in the field (which may result in construction delays) to attain a properly constructed project. Therefore, a sufficient contingency fund is recommended to accommodate these possible extra costs.

This geotechnical engineering exploration conducted at the project site was not intended to investigate the potential for presence of hazardous materials existing at the project site. It should be noted that the equipment, techniques, and personnel used to conduct a geo-environmental exploration differ substantially from those applied in geotechnical engineering.

END OF ADDITIONAL SERVICES AND LIMITATIONS

CLOSURE

The following plates and appendices are attached and complete this report:

Project Location Map ..... Plate 1

Site Plan ..... Plate 2

Generalized Geologic Cross Sections ..... Plates 3.1 and 3.2

Typical Trench Detail ..... Plate 4

Field Exploration ..... Appendix A

Seismic Shear Wave Velocity Test ..... Appendix B

Laboratory Tests ..... Appendix C

Infiltration Tests ..... Appendix D

Photographs of Core Samples ..... Appendix E

Geotechnical Data from Preliminary Exploration ..... Appendix F

-ΩΩΩΩΩΩΩΩΩ-

Respectfully submitted,

GEOLABS, INC.

By _____

Robin M. Lim, P.E.
President

RML:TK:mj

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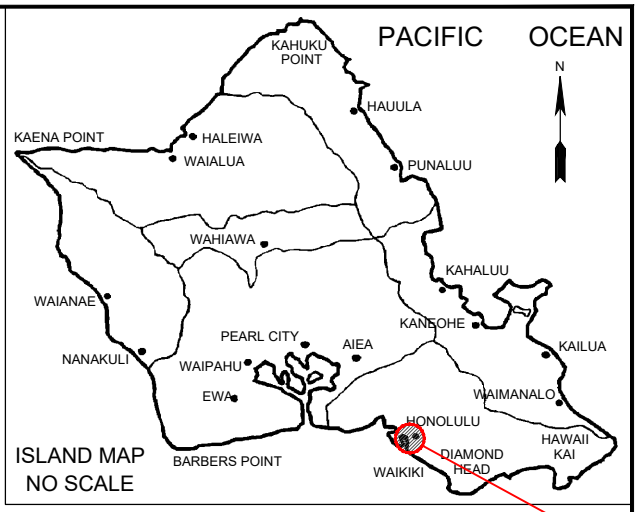
PLATES



GENERAL PROJECT LOCATION »

PROJECT LOCATION »

PROJECT LOCATION MAP

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
TMK: (1) 1-7-006: 012

2000 1000 0 2000 FT.

GRAPHIC SCALE

N

REFERENCE: MAP CREATED WITH TOPO!® ©2010 NATIONAL GEOGRAPHIC; ©2007 TELE ATLAS, REL. 1/2007.

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Geotechnical Engineering

DATE	DRAWN BY	PLATE
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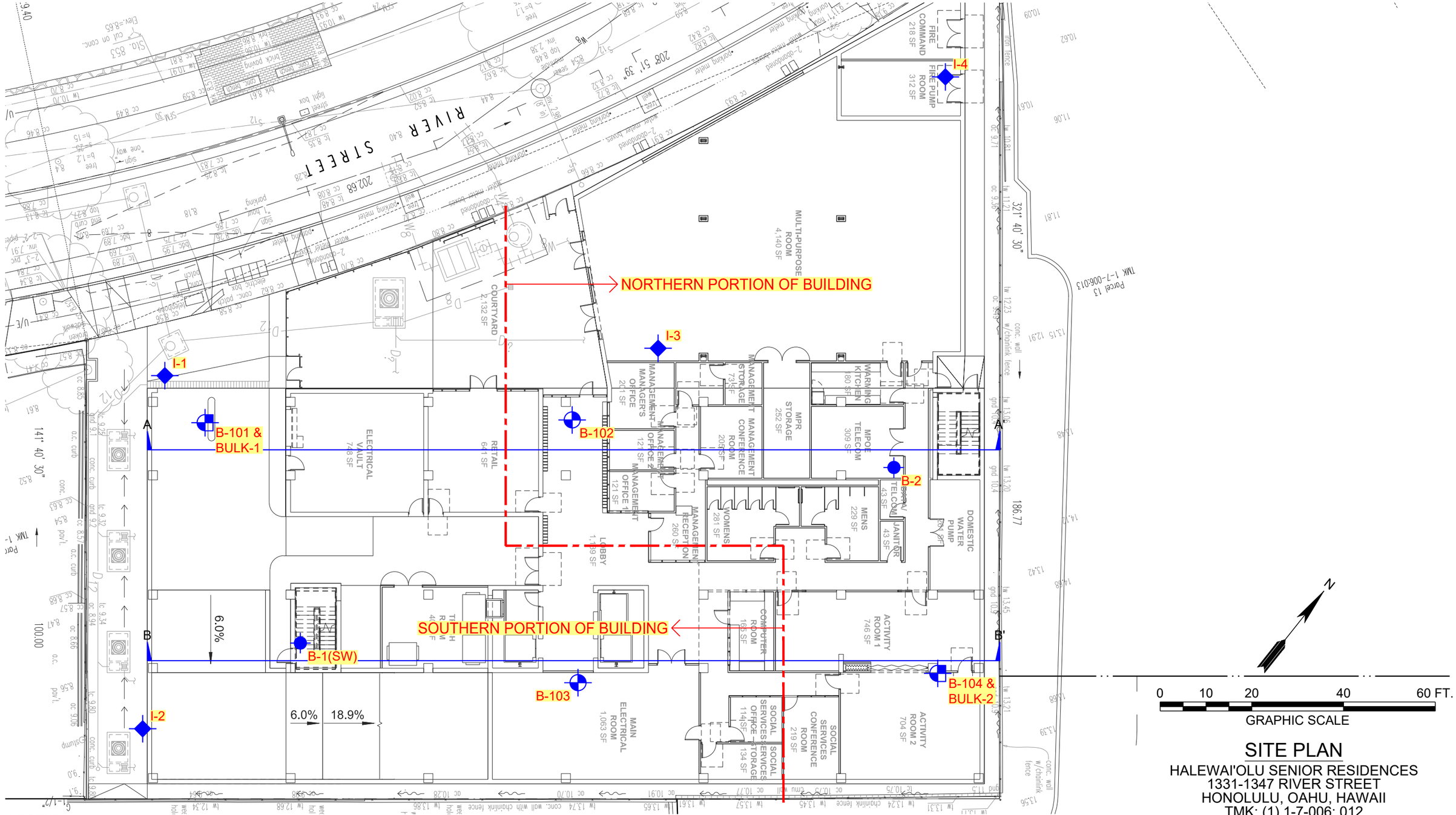

SITE PLAN

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
TMK: (1) 1-7-006: 012

LEGEND:

- APPROXIMATE BORING LOCATION
- APPROXIMATE BULK SAMPLE LOCATION
- APPROXIMATE BORING LOCATION, FROM PREVIOUS GEOLABS, INC. REPORT (W.O. 7414-00)
- APPROXIMATE INFILTRATION TEST LOCATION
- SW SEISMIC SHEAR WAVE VELOCITY TESTING
- GENERALIZED GEOLOGIC CROSS-SECTION

REFERENCE: SITE PLAN TRANSMITTED BY GRAY HONG NOJIMA & ASSOCIATES, INC. ON MAY 7, 2019.

GEOLABS, INC.
Geotechnical Engineering

DATE	DRAWN BY	PLATE
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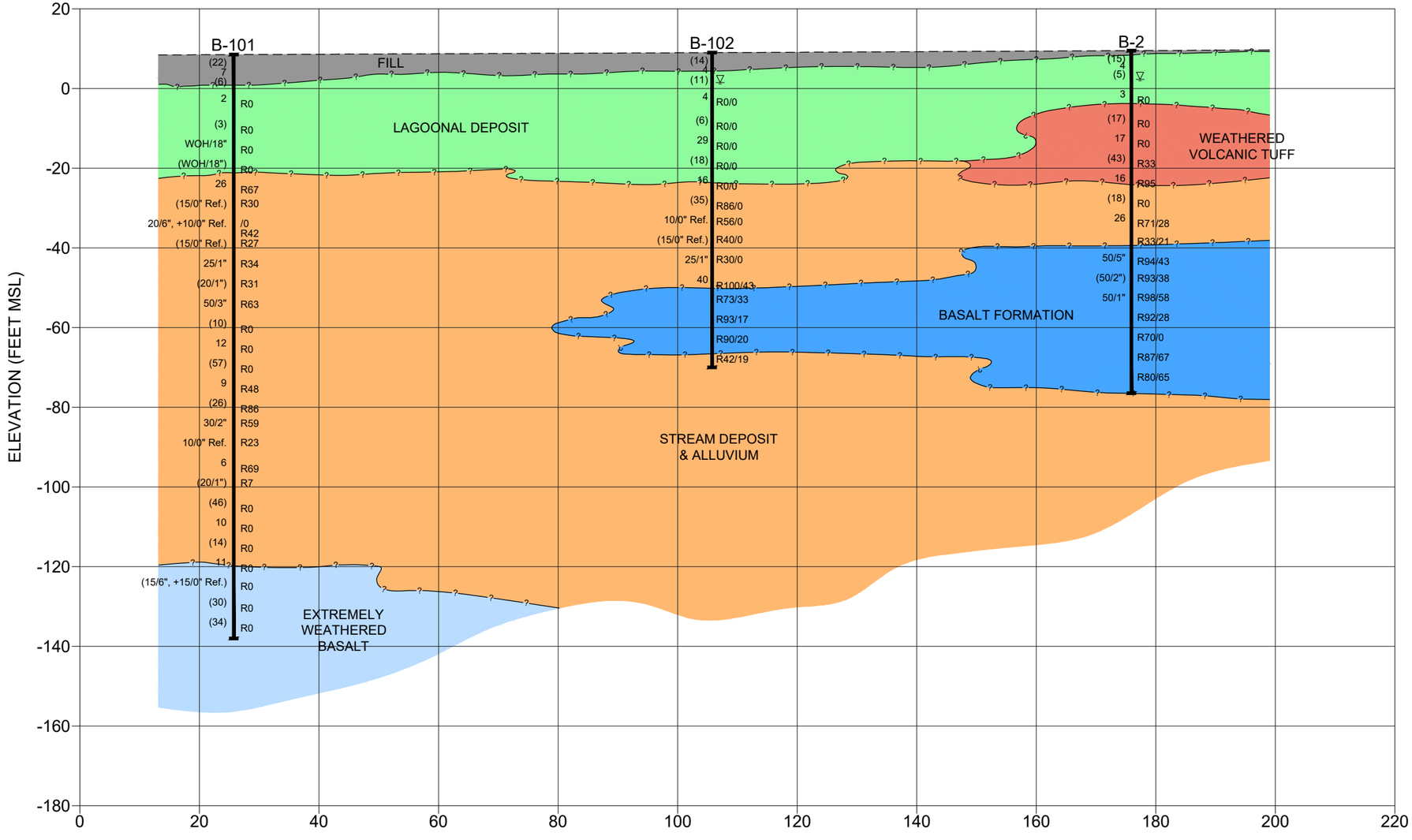

LEGEND:

- FILL
- STREAM DEPOSIT & ALLUVIUM
- LAGOONAL DEPOSIT
- BASALT FORMATION
- EXTREMELY WEATHERED BASALT
- WEATHERED VOLCANIC TUFF

LEGEND:

20 BLOW COUNT REQUIRED FOR 12 INCHES OF PENETRATION OF A 2-INCH O.D. STANDARD PENETRATION SAMPLER

(20) BLOW COUNT REQUIRED FOR 12 INCHES OF PENETRATION OF A 3-INCH O.D. MODIFIED CALIFORNIA SAMPLER

R100/50 REC/RQD VALUES IN PERCENT

NOTE: THE CONDITIONS ILLUSTRATED ARE BASED ON OUR BORINGS AND GEOLOGICAL INTERPRETATIONS. WHILE THESE ARE BELIEVED TO BE GENERALLY CORRECT, THE CONDITIONS MAY VARY LOCALLY FROM THOSE INDICATED.

HORIZONTAL 0 10 20 40 60 FT.
VERTICAL 0 15 30 60 90 FT.
GRAPHIC SCALE

GENERALIZED SUBSURFACE PROFILE A-A'

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
TMK: (1) 1-7-006: 012

GEOLABS, INC.
Geotechnical Engineering

DATE	DRAWN BY	PLATE
APRIL 2019	ASP	3.1
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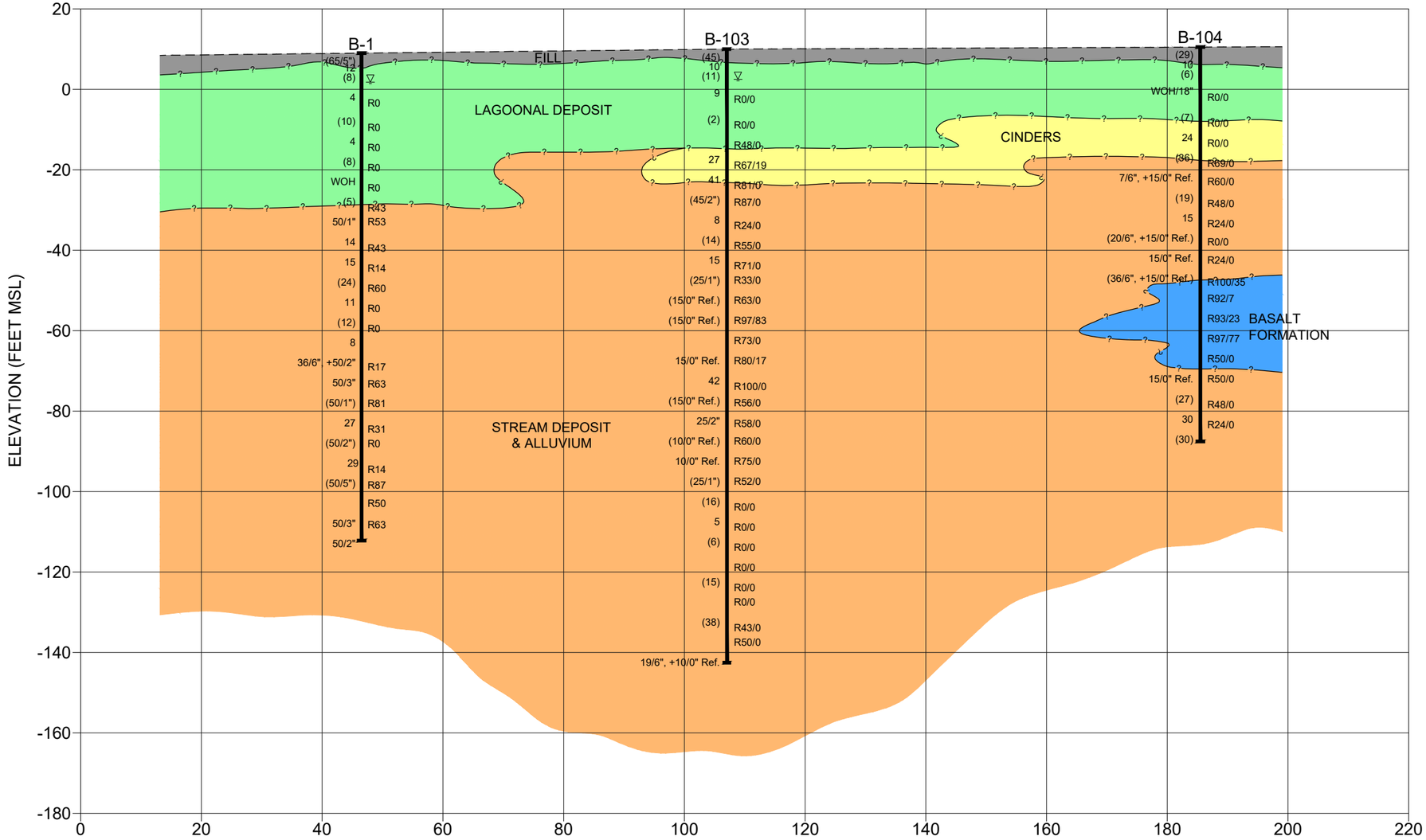

LEGEND:

- FILL
- STREAM DEPOSIT & ALLUVIUM
- LAGOONAL DEPOSIT
- BASALT FORMATION
- CINDERS

LEGEND:

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(20) BLOW COUNT REQUIRED FOR 12 INCHES OF PENETRATION OF A 3-INCH O.D. MODIFIED CALIFORNIA SAMPLER

R100/50 REC/RQD VALUES IN PERCENT

NOTE: THE CONDITIONS ILLUSTRATED ARE BASED ON OUR BORINGS AND GEOLOGICAL INTERPRETATIONS. WHILE THESE ARE BELIEVED TO BE GENERALLY CORRECT, THE CONDITIONS MAY VARY LOCALLY FROM THOSE INDICATED.

HORIZONTAL 0 10 20 40 60 FT.
VERTICAL 0 15 30 60 90 FT.

GRAPHIC SCALE

GENERALIZED SUBSURFACE PROFILE B-B'

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
TMK: (1) 1-7-006: 012

GEOLABS, INC.
Geotechnical Engineering

DATE	DRAWN BY	PLATE
APRIL 2019	ASP	3.2
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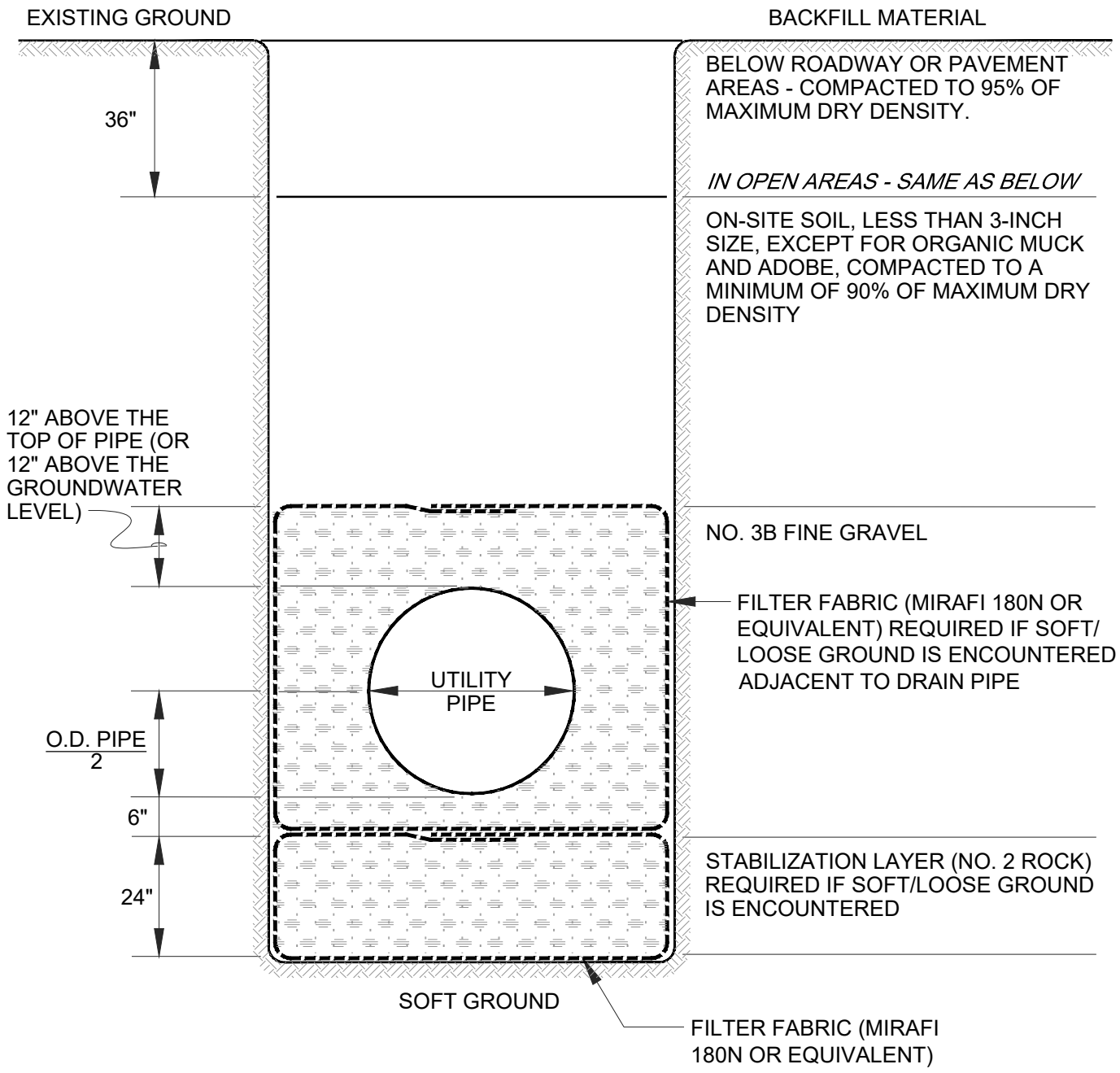

TYPICAL TRENCH DETAIL

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
TMK: (1) 1-7-006: 012

GEOLABS, INC.
Geotechnical Engineering

DATE	DRAWN BY	PLATE
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APPENDIX A

APPENDIX A

Field Exploration

Our preliminary field exploration at the project site consisted of drilling and sampling two test borings, designated as Boring Nos. 1 and 2, extending to depths of about 121.2 and 86 feet below the existing pavement surface, respectively. The current field exploration program consisted of drilling and sampling four additional test borings, designated as Boring Nos. 101 through 104, extending to depths of about 79 to 152.5 feet below the existing pavement surface. In addition, four shallow borings to a depth of about 5 feet were drilled for the performance of infiltration testing. The approximate locations of the drilled borings from the preliminary and current field explorations are shown on the Site Plan (Plate 2). The borings were drilled using a truck-mounted drill rig equipped with continuous flight augers and rotary coring tools.

Our geologists classified the materials encountered in the borings by visual and textural examination in the field in general accordance with ASTM D2488, Standard Practice for Description and Identification of Soils, and monitored the drilling operations on a near-continuous (full-time) basis. These classifications were further reviewed visually and by testing in the laboratory. Soils were classified in general accordance with ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), as shown on the Soil Log Legend, Plate A-0.1. Deviations made to the soil classification in accordance with ASTM D2487 are described on the Soil Classification Log Key, Plate A-0.2. Graphic representations of the materials encountered are presented on the Logs of Boring, Plates A-1 thru A-8.

Relatively “undisturbed” soil samples were obtained in general accordance with ASTM D3550, Ring-Lined Barrel Sampling of Soils, by driving a 3-inch OD Modified California sampler with a 140-pound hammer falling 30 inches. In addition, some samples were obtained from the drilled boring in general accordance with ASTM D1586, Penetration Test and Split-Barrel Sampling of Soils, by driving a 2-inch OD standard penetration sampler using the same hammer and drop. The blow counts needed to drive the sampler the second and third 6 inches of an 18-inch drive are shown as the “Penetration Resistance” on the Logs of Boring at the appropriate sample depths. The penetration resistance shown on the logs of boring indicates the number of blows required for the specific sampler type used. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.

Pocket penetrometer tests were performed on selected cohesive soil samples in the field. The pocket penetrometer test provides an indication of the unconfined compressive strength of the sample. Results of the pocket penetrometer tests are summarized on the Logs of Borings at the appropriate sample depths.

Core samples of the rock materials encountered at the project site were obtained by using diamond core drilling techniques in general accordance with ASTM D2113, Diamond Core Drilling for Site Investigation. Core drilling is a rotary drilling method that

uses a hollow bit to cut into the rock formation. The rock material left in the hollow core of the bit is mechanically recovered for examination and description. Rock cores were described in general accordance with the Rock Description System, as shown on the Rock Log Legend, Plate A-0.2. The Rock Description System is based on the publication “Suggested Methods for the Quantitative Description of Discontinuities in Rock Masses” by the International Society for Rock Mechanics (March 1977).

Recovery (REC) may be used as a subjective guide to the interpretation of the relative quality of rock masses, where appropriate. Recovery is defined as the actual length of material recovered from a coring attempt versus the length of the core attempt. For example, if 3.7 feet of material is recovered from a 5.0-foot core run, the recovery would be 74 percent and would be shown on the Logs of Borings as REC = 74%.

The Rock Quality Designation (RQD) is also a subjective guide to the relative quality of rock masses. RQD is defined as the percentage of the core run in rock that is sound material in excess of 4 inches in length without any discontinuities, discounting any drilling, mechanical, and handling induced fractures or breaks. If 2.5 feet of sound material is recovered from a 5.0-foot core run in rock, the RQD would be 50 percent and would be shown on the Logs of Borings as RQD = 50%. Generally, the following is used to describe the relative quality of the rock based on the "Practical Handbook of Physical Properties of Rocks and Minerals” by Robert S. Carmichael (1989).

Rock Quality	**RQD** (%)
Very Poor	0 – 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 – 100

The excavation characteristics of a rock mass or coral formation is a function of the relative hardness of the coral/rock, its relative quality, brittleness, and fissile characteristics. A dense formation with a high RQD value would be very difficult to excavate or drill and would probably require more arduous methods of excavation.

GEOLABS, INC.

Geotechnical Engineering

Soil Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS (MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE)	GRAVELS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (MORE THAN 12% FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE)	CLEAN SANDS (LESS THAN 5% FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (MORE THAN 12% FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS (50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT 50 OR MORE)		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND

- (2-INCH) O.D. STANDARD PENETRATION TEST
- (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE
- SHELBY TUBE SAMPLE
- GRAB SAMPLE
- CORE SAMPLE
- WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING
- WATER LEVEL OBSERVED IN BORING AFTER DRILLING
- WATER LEVEL OBSERVED IN BORING OVERNIGHT

- LL LIQUID LIMIT (NP=NON-PLASTIC)
- PI PLASTICITY INDEX (NP=NON-PLASTIC)
- TV TORVANE SHEAR (tsf)
- UC UNCONFINED COMPRESSION OR UNIAXIAL COMPRESSIVE STRENGTH
- TXUU UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)

Plate

A-0.1

LOG LEGEND FOR SOIL 7414-10.GPJ GEOLABS.GDT 4/27/19

GEOLABS, INC.

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Soil Classification Log Key

(with deviations from ASTM D2488)

GEOLABS, INC. CLASSIFICATION*

GRANULAR SOIL (- #200 <50%)

- **PRIMARY** constituents are composed of the largest percent of the soil mass. Primary constituents are capitalized and bold (i.e., **GRAVEL, SAND**)
- **SECONDARY** constituents are composed of a percentage less than the primary constituent. If the soil mass consists of 12 percent or more fines content, a cohesive constituent is used (**SILTY** or **CLAYEY**); otherwise, a granular constituent is used (**GRAVELLY** or **SANDY**) provided that the secondary constituent consists of 20 percent or more of the soil mass. Secondary constituents are capitalized and bold (i.e., **SANDY** GRAVEL, **CLAYEY** SAND) and precede the primary constituent.
- **accessory descriptions** compose of the following:
  with some: >12%
  with a little: 5 - 12%
  with traces of: <5%
  accessory descriptions are lower cased and follow the Primary and Secondary Constituents
  (i.e., SILTY GRAVEL **with a little sand**)

COHESIVE SOIL (- #200 ≥ 50%)

- **PRIMARY** constituents are based on plasticity. Primary constituents are capitalized and bold (i.e., **CLAY, SILT**)
- **SECONDARY** constituents are composed of a percentage less than the primary constituent, but more than 20 percent of the soil mass. Secondary constituents are capitalized and bold (i.e., **SANDY** CLAY, **SILTY** CLAY, **CLAYEY** SILT) and precede the primary constituent.
- **accessory descriptions** compose of the following:
  with some: >12%
  with a little: 5 - 12%
  with traces of: <5%
  accessory descriptions are lower cased and follow the Primary and Secondary Constituents
  (i.e., SILTY CLAY **with some sand**)

EXAMPLE: Soil Containing 60% Gravel, 25% Sand, 15% Fines. Described as: **SILTY GRAVEL** with some sand

RELATIVE DENSITY / CONSISTENCY

Granular Soils			Cohesive Soils			
N-Value (Blows/Foot)		Relative Density	N-Value (Blows/Foot)		PP Readings (tsf)	Consistency
SPT	MCS		SPT	MCS		
0 - 4	0 - 7	Very Loose	0 - 2	0 - 4		Very Soft
4 - 10	7 - 18	Loose	2 - 4	4 - 7	< 0.5	Soft
10 - 30	18 - 55	Medium Dense	4 - 8	7 - 15	0.5 - 1.0	Medium Stiff
30 - 50	55 - 91	Dense	8 - 15	15 - 27	1.0 - 2.0	Stiff
> 50	> 91	Very Dense	15 - 30	27 - 55	2.0 - 4.0	Very Stiff
			> 30	> 55	> 4.0	Hard

MOISTURE CONTENT DEFINITIONS

Dry: Absence of moisture, dry to the touch

Moist: Damp but no visible water

Wet: Visible free water

ABBREVIATIONS

WOH: Weight of Hammer

WOR: Weight of Drill Rods

SPT: Standard Penetration Test Split-Spoon Sampler

MCS: Modified California Sampler

PP: Pocket Penetrometer

GRAIN SIZE DEFINITION

Description	Sieve Number and / or Size
Boulders	> 12 inches (305-mm)
Cobbles	3 to 12 inches (75-mm to 305-mm)
Gravel	3-inch to #4 (75-mm to 4.75-mm)
Coarse Gravel	3-inch to 3/4-inch (75-mm to 19-mm)
Fine Gravel	3/4-inch to #4 (19-mm to 4.75-mm)
Sand	#4 to #200 (4.75-mm to 0.075-mm)
Coarse Sand	#4 to #10 (4.75-mm to 2-mm)
Medium Sand	#10 to #40 (2-mm to 0.425-mm)
Fine Sand	#40 to #200 (0.425-mm to 0.075-mm)

Soil descriptions are based on ASTM D2488-09a, Visual-Manual Procedure, with the above modifications by Geolabs, Inc. to the Unified Soil Classification System (USCS).

Plate

A-0.2

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Rock Log Legend

ROCK DESCRIPTIONS

	**BASALT**		**CONGLOMERATE**
	**BOULDERS**		**LIMESTONE**
	**BRECCIA**		**SANDSTONE**
	**CLINKER**		**SILTSTONE**
	**COBBLES**		**TUFF**
	**CORAL**		**VOID/CAVITY**

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

The following terms describe general fracture spacing of a rock:

Massive: Greater than 24 inches apart

Slightly Fractured: 12 to 24 inches apart

Moderately Fractured: 6 to 12 inches apart

Closely Fractured: 3 to 6 inches apart

Severely Fractured: Less than 3 inches apart

DEGREE OF WEATHERING

The following terms describe the chemical weathering of a rock:

Unweathered: Rock shows no sign of discoloration or loss of strength.

Slightly Weathered: Slight discoloration inwards from open fractures.

Moderately Weathered: Discoloration throughout and noticeably weakened though not able to break by hand.

Highly Weathered: Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.

Extremely Weathered: Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.

HARDNESS

The following terms describe the resistance of a rock to indentation or scratching:

Very Hard: Specimen breaks with difficulty after several "pinging" hammer blows.
Example: Dense, fine grain volcanic rock

Hard: Specimen breaks with some difficulty after several hammer blows.
Example: Vesicular, vugular, coarse-grained rock

Medium Hard: Specimen can be broked by one hammer blow. Cannot be scraped by knife. SPT may penetrate by ~25 blows per inch with bounce.
Example: Porous rock such as clinker, cinder, and coral reef

Soft: Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by ~100 blows per foot.
Example: Weathered rock, chalk-like coral reef

Very Soft: Crumbles under hammer blow. Can be peeled and carved by knife. Can be indented by finger pressure.
Example: Saprolite

Plate
A-0.3

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HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Log of Boring

101

Approximate Ground Surface Elevation (feet): 8.5 *

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	USCS	Description
	31	88			22				GM	2-inch **ASPHALTIC CONCRETE**
										Gray **SILTY GRAVEL**, medium dense, moist (fill)
									GP	Tan **SANDY GRAVEL (CORALLINE)**, medium
	40				7				CL	dense, moist (fill)
										Dark gray **SANDY CLAY**, medium stiff, moist (fill)
	44	64			6		5		MH	Brown **CLAYEY SILT**, medium stiff, moist (fill)
									MH	Dark gray **CLAYEY SILT**, soft, moist (marsh deposit)
LL=52 PI=20	42		0		2		10			
TXUU S_u=0.2 ksf	58	71	0		3		15			
			0		WOH/ 18"	2.0	20			
	79	56	0		WOH/ 18"		25			
	36		67		26		30			grades with some cobbles
							35			

Date Started:	April 24, 2019	Water Level: ▼	7.5 ft. 04/25/2019 0819 HRS	Plate
Date Completed:	April 29, 2019			
Logged By:	B. Aiu	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	
Total Depth:	146.5 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	A - 1.1
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
			30		15/0" Ref.					MH	
	39		42		20/6" +10/0" Ref.		40				
			27		15/0" Ref.		45				
			34		25/1"		50				
			31		20/1"		55				
			63		50/3"		60				
TXUU S_u=1.1 ksf	54	71	0		10	2.0	65			MH	Brown **CLAYEY SILT**, medium stiff (alluvium)
							70				

Date Started:	April 24, 2019	Water Level: ▼ 7.5 ft. 04/25/2019 0819 HRS	Plate
Date Completed:	April 29, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 1.2
Total Depth:	146.5 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
LL=70 PI=33	63		0		12		75			MH
	11	105	0		57		80			
	51		48		9		85			
TXUU S_u=1.4 ksf	47	77	86		26	1.5	90			
			59		30/2"		95			
			23		10/0" Ref.		100			
	61		69		6		105			

(Continued from previous plate)

Description

grades with some cobbles

Date Started:	April 24, 2019	Water Level: ▼ 7.5 ft. 04/25/2019 0819 HRS	Plate
Date Completed:	April 29, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 1.3
Total Depth:	146.5 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
			7		20/1"		110	MH	grades without cobbles
TXUU S_u=6.2 ksf	50	71	0		46		115		
	65		0		10		120		
TXUU S_u=2.0 ksf	88	50	0		14		125		
	81		0		11		130	CH	Gray **SILTY CLAY** with some sand, very stiff (extremely weathered basalt)
TXUU S_u=3.0 ksf	61	65	0		15/6" +15/0" Ref.		135		
	52	72	0		30		140		

Date Started:	April 24, 2019	Water Level: ▼ 7.5 ft. 04/25/2019 0819 HRS	Plate
Date Completed:	April 29, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 1.4
Total Depth:	146.5 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	68	60	0		34	3.5	145			CH	
											Boring terminated at 146.5 feet
							150				
							155				
							160				
							165				
							170				
							175				

Date Started:	April 24, 2019	Water Level: ▼ 7.5 ft. 04/25/2019 0819 HRS		Plate
Date Completed:	April 29, 2019			
Logged By:	B. Aiu	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 1.5
Total Depth:	146.5 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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HALEWAI'OLU SENIOR RESIDENCES
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Log of Boring

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Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet): 9 *
	44	77			14					GM MH	2-inch **ASPHALTIC CONCRETE** Gray **SILTY GRAVEL**, medium dense, moist (base course)
	48				4						Brown **CLAYEY SILT** with some gravel (basaltic), medium stiff, moist (fill)
	23	90			11		5			SM	Brown **SILTY SAND (BASALTIC)** with some gravel (basaltic), loose, moist (stream deposit)
Sieve - #200 = 40.3%	61		0		4		10				
	49	74	0		6		15			SP	Brownish gray **SAND (BASALTIC)** with traces of gravel, medium dense (lagoonal deposit)
	31		0		29		20				
Sieve - #200 = 0.1%	28	85	0		18		25				
	56		0		16		30			CH	
							35				

Date Started:	April 17, 2019	Water Level: ▽ 7.5 ft. 04/17/2019 0905 HRS	Plate
Date Completed:	April 18, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 2.1
Total Depth:	79 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
TXUU S_u=2.1 ksf	44	75	86		35	>4.5	CH	Gray with multi-color mottling **SILTY CLAY** with some sand (basaltic), and cobbles (basaltic) medium stiff (stream deposit)
	54		56		10/0" Ref.			grades with a little boulders
			40		15/0" Ref.			
			30		25/1"			
LL=103 PI=73	91		100	75	40			
UC= 2790 psi			73	33				Gray **BASALT**, severely fractured, slightly weathered, hard (basalt formation)
UC= 2510 psi			93	17				

Date Started:	April 17, 2019	Water Level: ▽ 7.5 ft. 04/17/2019 0905 HRS	Plate
Date Completed:	April 18, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 2.2
Total Depth:	79 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

(Continued from previous plate)

Description

			90	25							
			42				75			CH	Brown **SILTY CLAY** with some sand (basaltic) and boulders (basaltic), very stiff (alluvium)
							80				Boring terminated at 79 feet
							85				
							90				
							95				
							100				
							105				

Date Started:	April 17, 2019	Water Level: ▽	7.5 ft. 04/17/2019 0905 HRS	Plate
Date Completed:	April 18, 2019			
Logged By:	B. Aiu	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	
Total Depth:	79 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	A - 2.3
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet): 10 *
	26	93			45					ML	2-inch **ASPHALTIC CONCRETE** Brown **SANDY SILT** with some gravel, medium stiff, moist (fill)
	32				10					MH	Brown **CLAYEY SILT** with a little sand, medium stiff, moist (alluvium)
	54	67			11	1.0	5				
										MH	Dark gray **CLAYEY SILT**, soft, moist (marsh deposit)
	19				9		10				
			0								
							15				
	83	54			2						
			0				20				
	69										
			48	0			25				
											Dark gray **CINDER SANDSTONE**, closely fractured, moderately weathered, medium hard (cinders)
	61				27						
			67	19			30				
					41						
			81	0			35			MH	

Date Started:	April 22, 2019	Water Level: ▽	7.5 ft. 04/22/2019 0910 HRS	Plate
Date Completed:	April 24, 2019			
Logged By:	B. Aiu	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 3.1
Total Depth:	152.5 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											(Continued from previous plate)
	42	79	87		45/2"					MH	Gray **CLAYEY SILT** with some gravel (basaltic), and cobbles (basaltic) medium stiff (river deposit)
							40				
LL=67 PI=30	67		24		8						grades to brown
							45				
TXUU S_u=1.0 ksf	165	38	55		14						
							50				
	44		71		15						grades with boulders
							55				
			33		25/1"						
							60				
			63		15/0" Ref.						
							65				
			97		15/0" Ref.						
							70				

Date Started:	April 22, 2019	Water Level: ▽	7.5 ft. 04/22/2019 0910 HRS	Plate
Date Completed:	April 24, 2019			
Logged By:	B. Aiu	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 3.2
Total Depth:	152.5 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
			73				75			MH
			80		15/0" Ref.		80			
	27				42					
			100				85			
	5		56		15/0" Ref.					
							90			
	42		58		25/2"					
							95			
			60		10/0" Ref.					
							100			
			75		10/0" Ref.					
							105			

(Continued from previous plate)

Description

Date Started:	April 22, 2019	Water Level: ▽ 7.5 ft. 04/22/2019 0910 HRS	Plate
Date Completed:	April 24, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	
Total Depth:	152.5 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	A - 3.3
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
			52		25/1"			MH	
TXUU S_u=1.0 ksf	89	50	0		16	1.0	110	CH	Brown **SILTY CLAY** with some sand, soft (alluvium)
LL=125 PI=80	103		0		5		115		
TXUU S_u=0.5 ksf	136	36	0		6	0.5	120		
	131		0				125		
TXUU S_u=1.3 ksf	104	47	0		15	1.5	130		
			0				135		
							140		

Date Started:	April 22, 2019	Water Level: ▽ 7.5 ft. 04/22/2019 0910 HRS	Plate
Date Completed:	April 24, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 3.4
Total Depth:	152.5 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
	75	58	43		38	1.5	145			CH
			50				150			
	18				19/6" +10/0" Ref.		155			
							160			
							165			
							170			
							175			

(Continued from previous plate)

Description

grades with some cobbles

Boring terminated at 152.5 feet

Date Started:	April 22, 2019	Water Level: ▽ 7.5 ft. 04/22/2019 0910 HRS	Plate
Date Completed:	April 24, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	
Total Depth:	152.5 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	A - 3.5
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

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Log of Boring

104

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet): 10.5 *
	7	99			29					ML	2-inch **ASPHALTIC CONCRETE**
	29				10						Brown **SANDY SILT** with some gravel, medium stiff, moist (fill)
	82	51			6	1.0	5			MH	Brown **CLAYEY SILT**, medium stiff, moist (recent alluvium)
	93		0		WOH/ 18"		10			MH	Dark gray **CLAYEY SILT**, soft, moist (lagoonal deposit)
	48	78	0		7		15			MH	Brown **CLAYEY SILT** with some gravel (basaltic), soft (stream deposit)
Sieve - #200 = 8.0%	40		0		24		20			SW-SM	Brownish gray **SAND (BASALTIC)** with a little silt and traces of gravel, medium dense (cinder)
	59	63	69		36		25				
	42		60		7/6" +15/0" Ref.		30			MH	Gray **CLAYEY SILT** with some gravel (basaltic), and cobbles (basaltic) medium stiff (stream deposit)
							35				

Date Started:	April 15, 2019	Water Level: ▼ 8.0 ft. 04/16/2019 0835 HRS		Plate
Date Completed:	April 16, 2019			
Logged By:	B. Aiu	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 4.1
Total Depth:	98 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

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Log of Boring

104

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
										MH	
TXUU S_u=1.1 ksf	48	76	48		19		40				
LL=77 PI=39	61		24		15		45				
	37	89	0		20/6" +15/0" Ref.		50				
	15		24		15/0" Ref.		55				
	10		100	35	36/6" +15/0" Ref.		60				Gray **BASALT**, closely fractured, slightly weathered, hard (basalt formation)
			92	7							
UC= 17430 psi			93	23			65				
							70				

Date Started:	April 15, 2019	Water Level: ▼ 8.0 ft. 04/16/2019 0835 HRS		Plate
Date Completed:	April 16, 2019			
Logged By:	B. Aiu	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 4.2
Total Depth:	98 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

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Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
UC= 27630 psi			97	77				
			50	0				
							MH	Brown **CLAYEY SILT** with some sand (basaltic), very stiff (alluvium)
			50		15/0" Ref.			
TXUU S_u=3.0 ksf	53	70			27			
			48					
LL=52 PI=8	53				30			
			24					grades with some gravel
	53	71			30		CH	Gray **SILTY CLAY**, stiff (weathered basalt formation)
								Boring terminated at 98 feet

75 80 85 90 95 100 105

Date Started:	April 15, 2019	Water Level: ▼ 8.0 ft. 04/16/2019 0835 HRS	Plate
Date Completed:	April 16, 2019		
Logged By:	B. Aiu	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 4.3
Total Depth:	98 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-10	Driving Energy: 140 lb. wt., 30 in. drop	

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Log of Boring

I-1

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet): 8 * Description
											ASPHALTIC CONCRETE
										GP	Dark gray **GRAVEL (BASALTIC)**, moist (base course)
										CH	Dark gray **SILTY CLAY**, very soft to soft, moist (lagoonal deposit)
					2						
							5				Boring terminated at 5 feet
							10				

Date Started:	April 4, 2019	Water Level:	Not Encountered 04/04/2019 0914 HRS	Plate
Date Completed:	April 4, 2019			
Logged By:	K. Gerstnecker	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 5
Total Depth:	5 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

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Log of Boring

I-2

Laboratory			Field								Approximate Ground Surface Elevation (feet): 9.5 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											ASPHALTIC CONCRETE
										GP	Dark gray **GRAVEL (BASALTIC)**, moist (base course)
										CH	Dark brown **SILTY CLAY** with some sand (coralline), with some sand (basaltic) stiff, moist (older alluvium)
					10						
							5				Boring terminated at 5 feet
							10				

Date Started:	April 4, 2019	Water Level: ▼	Not Encountered 04/04/2019 0923 HRS	Plate
Date Completed:	April 4, 2019			
Logged By:	K. Gerstnecker	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 6
Total Depth:	5 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

I-3

Laboratory			Field								Approximate Ground Surface Elevation (feet): 9 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											ASPHALTIC CONCRETE
										GP	Dark gray **GRAVEL (BASALTIC)**, moist (base course)
										CH	Dark gray **SILTY CLAY** with some gravel (basaltic), with some sand (basaltic) very soft to soft, moist (lagoonal deposit)
					3						
										SM	Brownish red to brownish gray **SILTY SAND (BASALTIC)**, very dense, moist (cinder)
							5				Boring terminated at 5 feet
							10				

Date Started:	April 4, 2019	Water Level: ▼	Not Encountered 04/04/2019 0850 HRS	Plate
Date Completed:	April 4, 2019			
Logged By:	K. Gerstnecker	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 7
Total Depth:	5 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

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Log of Boring

I-4

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet): 10 *
											ASPHALTIC CONCRETE
										GM	Dark gray and light tan **SILTY GRAVEL (CORALLINE)** with some gravel (basaltic), moist (base course)
										CH	Dark brown **SILTY CLAY** with some sand (coralline), with some sand (basaltic) stiff, moist (older alluvium)
					9						
							5				Boring terminated at 5 feet
							10				

Date Started:	April 4, 2019	Water Level: ▼	Not Encountered 04/04/2019 0942 HRS	Plate
Date Completed:	April 4, 2019			
Logged By:	K. Gerstnecker	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 8
Total Depth:	5 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	7414-10	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-10.GPJ GEOLABS.GDT 5/24/19

APPENDIX B

APPENDIX B

Seismic Shear Wave Velocity Test

Seismic shear wave velocity profiling of the subsurface materials at the project site was performed using Seismic Cone Penetration Testing (SCPT) equipment. The purpose of the seismic shear wave velocity profiling of the subsurface materials was to more closely analyze the seismic design considerations for the project. Shear wave velocity testing using seismic cone penetration testing equipment was performed at a selected boring location, designated as B-1(SW), located within the old alluvial stream channel as shown on the Site Plan (Plate 2). The seismic shear wave velocity profiling was performed at various depths extending to a maximum depth of about 120 feet below the existing pavement surface.

To conduct the seismic shear wave velocity test in the boring, the test boring was advanced utilizing rotary coring methods to the maximum depth of the boring. A log of the materials encountered in the boring is presented in the Logs of Borings in Appendix A. After the boring was advanced to the maximum depth of the borehole, the bored hole was backfilled with 0.25-inch diameter coated bentonite pellets. The temporary casing from the coring operations was used as a tremie pipe to place the bentonite pellets starting from the bottom and advancing upward. When the bentonite pellets are in contact with the groundwater in the borehole, the pellets started to hydrate slowly. As the bentonite pellets hydrate, they swell and soften. The probe was then pushed through the softened bentonite extending to a depth of about 120 feet below the existing pavement surface using seismic cone testing equipment (SCPT).

The seismic shear wave velocity test consists of hydraulically pushing a 10-ton steel electronic subtraction cone with an apex angle of 60 degrees and a projected surface area of 1.55 square inches (10 square centimeters) into the bored hole. The cone carries a uniaxial horizontal accelerator geophone to detect the arrival of a shear wave generated and propagated from the ground surface. The seismic measurements were made when the SCPT had stopped and a shear wave was sent into the subsurface. A shear wave was generated at the surface by striking a loaded plank with a switched hammer. The propagation time of the wave from the hammer blow to the cone was measured at each discrete depth interval. The vector difference of these depths divided by the time difference for the shear wave to arrive at the various depths gave provided the average shear wave velocity over the depth interval.

The seismic shear wave velocities measured and the weighted average seismic shear wave velocity calculated for the top 100 feet of the soil profile at the test location are presented on Plates B-1.1 thru B-1.5 in Appendix B. The weighted average shear wave velocity was calculated based on the average shear wave velocity method described in Section 1615.1.5 of the International Building Code (2006 Edition).

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1333 RIVER STREET
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Data Plot of Boring

1

Approximate Ground Surface Elevation (feet): 9 *

Core Recovery (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
			0	GW-GM MH	4-inch **ASPHALTIC CONCRETE**
	65/5"				Gray **SANDY GRAVEL (BASALTIC)** with a little silt, dense, damp (base course)
	12			MH	Dark brown **CLAYEY SILT** with some sand and gravel, very stiff, moist (fill)
	8	1.0	5		Brown **CLAYEY SILT** with some sand, medium stiff, moist (recent alluvium)
	4		10	SP-SM	Brownish gray **GRAVELLY SAND** with a little silt, loose (stream deposit)
0					
	10		15	SM	Gray **SILTY SAND** with some gravel, loose (lagoonal deposit)
0					
	4		20		
0					
	8		25		
0				MH	Gray **CLAYEY SILT** with a little fine sand and shells, very soft (lagoonal deposit)
	WOH		30		
0					
			35		

SHEAR WAVE VELOCITY (feet/sec)

1000	2000	3000	4000
670	320	540	330
380	390	420	360
280	280	310	

Date Started:	September 26, 2016	Water Level: ▽ 7.2 ft. 09/26/2016 0918 HRS ▼ 7.9 ft. 09/27/2016 0845 HRS	Plate
Date Completed:	September 28, 2016		
Logged By:	D. Gremminger	Drill Rig: CME-75DG2	B - 1.1
Total Depth:	121.17 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-00	Driving Energy: 140 lb. wt., 30 in. drop	

SHEAR_WAVE_PLOT 7414-00.GPJ GEOLABS.GDT 1/10/17

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HONOLULU, OAHU, HAWAII

Data Plot of Boring

1

Core Recovery (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	5					MH	grades with sand and gravel (basaltic)
43						GW	Dark gray **SANDY GRAVEL (BASALTIC)** with some cobbles (basaltic), very dense (river channel deposit)
53	50/1"		40				
			45				
	14					MH	Orangish brown **CLAYEY SILT** with some sand, stiff (alluvium)
43							
	15		50				grades with some gravel and cobbles (basaltic)
14							
	24	1.5	55				
60							
	11		60				
0						MH	Brown **CLAYEY SILT** with some fine sand, stiff (alluvium)
	12	1.5	65				
0							
			70				

SHEAR WAVE VELOCITY (feet/sec)

1000 2000 3000 4000

340
1570
1650
1850
1890
930
830

Date Started:	September 26, 2016	Water Level: ▽ 7.2 ft. 09/26/2016 0918 HRS ▼ 7.9 ft. 09/27/2016 0845 HRS	Plate
Date Completed:	September 28, 2016		
Logged By:	D. Gremminger	Drill Rig: CME-75DG2	
Total Depth:	121.17 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	B - 1.2
Work Order:	7414-00	Driving Energy: 140 lb. wt., 30 in. drop	

SHEAR_WAVE_PLOT 7414-00.GPJ GEOLABS.GDT 1/10/17

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1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Data Plot of Boring

1

Core Recovery (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description	SHEAR WAVE VELOCITY (feet/sec)
						MH		1000 2000 3000 4000
	8						grades with some rounded gravel, medium stiff	
			75					650
17	36/6" +50/2"			S			grades with dense cobbles (basaltic)	
			80					
63	50/3"							870
			85				Gray **COBBLY BOULDERS (BASALTIC)** with a little gravel (basaltic) and seams of clayey silt, very dense (river deposit)	
81	50/1"							
			90					1490
	27							
31								
			95					
0	50/2"							2980
						MH	Brown **CLAYEY SILT** with some fine sand, very stiff (alluvium)	
			100					
	29							
14							grades with a little gravel and cobbles	2630
			105					

Date Started:	September 26, 2016	Water Level: ▽ 7.2 ft. 09/26/2016 0918 HRS ▼ 7.9 ft. 09/27/2016 0845 HRS	Plate
Date Completed:	September 28, 2016		
Logged By:	D. Gremminger	Drill Rig: CME-75DG2	B - 1.3
Total Depth:	121.17 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-00	Driving Energy: 140 lb. wt., 30 in. drop	

SHEAR_WAVE_PLOT 7414-00.GPJ GEOLABS.GDT 1/10/17

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1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Data Plot of Boring

1

Core Recovery (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
						MH	
87	50/5"						Gray **COBBLY BOULDERS (BASALTIC)**, very dense (river deposit)
			110				
50							
			115				
63	50/3"						grades with seams of sandy silt with gravel
			120				
	50/2"						Boring terminated at 121.17 feet * Elevations estimated from Topographic Survey Map transmitted by Michaels Development Company on November 30, 2016.
			125				
			130				
			135				
			140				

SHEAR WAVE VELOCITY (feet/sec)

1000 2000 3000 4000

2070

3860

5050

Date Started:	September 26, 2016	Water Level: ▽ 7.2 ft. 09/26/2016 0918 HRS ▼ 7.9 ft. 09/27/2016 0845 HRS	Plate
Date Completed:	September 28, 2016		
Logged By:	D. Gremminger	Drill Rig: CME-75DG2	
Total Depth:	121.17 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	B - 1.4
Work Order:	7414-00	Driving Energy: 140 lb. wt., 30 in. drop	

SHEAR_WAVE_PLOT 7414-00.GPJ GEOLABS.GDT 1/10/17

SHEAR WAVE VELOCITY TEST RESULTS

Halewai`olu Senior Residences
1333 River Street
Honolulu, Oahu, Hawaii

B-1 (SW)				
Depth (From)	Depth (To)	Layer Thickness (d_i)	Estimated Shear Wave Velocity (V_{si})	Average Travel Time (d_i/V_{si})
(feet)	(feet)	(feet)	(feet/second)	(milliseconds)
0.0	2.2	2.2	673	3.27
2.2	4.9	2.7	322	8.35
4.9	8.1	3.2	538	5.92
8.1	11.5	3.4	325	10.40
11.5	14.8	3.3	382	8.76
14.8	18.0	3.2	392	8.20
18.0	21.4	3.4	415	8.14
21.4	24.6	3.2	357	8.91
24.6	28.0	3.4	276	12.24
28.0	31.1	3.2	282	11.29
31.1	34.5	3.4	305	11.08
34.5	37.7	3.2	336	9.47
37.7	49.8	12.1	1,572	7.70
49.8	53.9	4.1	1,646	2.47
53.9	58.7	4.9	1,846	2.63
58.7	61.6	2.9	1,893	1.53
61.6	63.9	2.3	929	2.51
63.9	70.7	6.8	825	8.19
70.7	78.6	7.9	646	12.24
78.6	85.2	6.6	869	7.55
85.2	92.1	6.9	1,492	4.62
92.1	99.6	7.6	2,980	2.54
99.6	105.2	5.5	2,625	2.11
105.2	107.2	2.0	2,073	0.98
107.2	113.1	5.9	3,860	1.52
113.1	120.0	6.9	5,048	1.37
TOTAL		120.0		164.00

Standard Weighted Average	1,517	feet/second
Computed $V_{s100'}$ Using IBC Formula	657	feet/second

APPENDIX C

APPENDIX C

Laboratory Tests

Moisture Content (ASTM D2216) and Unit Weight (ASTM D2937) determinations were performed on selected samples as an aid in the classification and evaluation of soil properties. The test results are presented on the Logs of Boring at the appropriate sample depths.

Seven Atterberg Limits tests (ASTM D4318) were performed on selected soil samples to evaluate the liquid and plastic limits to aid in soil classifications. The test results are summarized on the Logs of Borings at the appropriate sample depths. Graphic presentations of the test results are provided on Plate C-1.

Three Sieve Analysis tests (ASTM C117 and C136) were performed on selected soil samples to evaluate the gradation characteristics of the soils and to aid in soil classification. In addition, two hydrometer tests (ASTM D422) were conducted on the samples to further evaluate the finer grain materials of the soils. Graphic presentations of the grain size distribution of the soils are provided on Plate C-2.

Three one-inch Ring Swell tests were performed on relatively undisturbed samples to evaluate the swelling potential of the near-surface soils. The test results are summarized on Plate C-3.

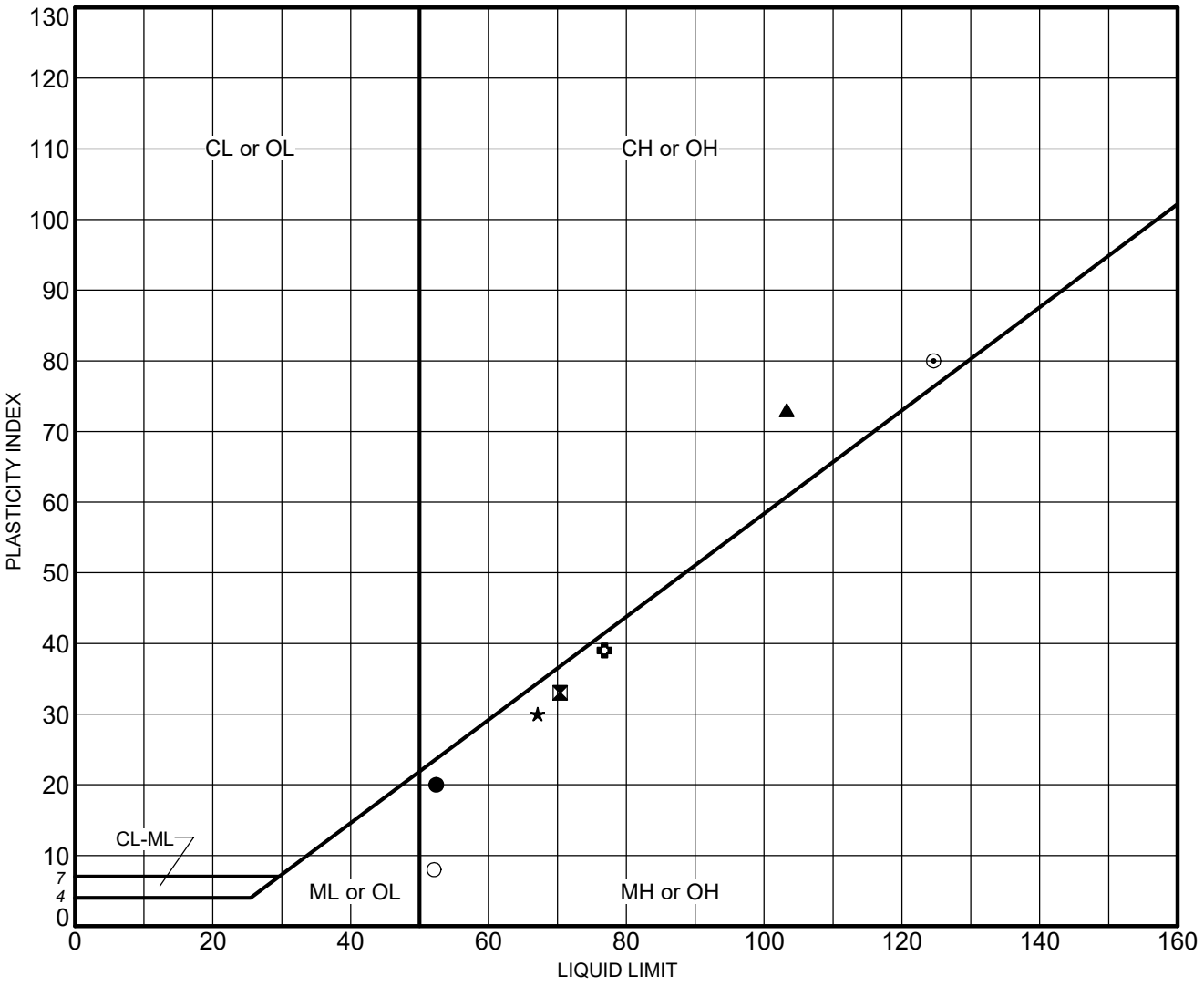
Four Uniaxial Compression tests (ASTM D7012, Method C) were performed on selected core samples to evaluate the unconfined compressive strength of the basalt formation encountered. The test results are presented on Plate C-4.

Thirteen Unconsolidated Undrained Triaxial Compression tests (ASTM D2850) were performed on selected soil samples to evaluate the undrained shear strength of the in-situ soils. The approximate in-situ effective overburden pressure was used as the applied confining pressure for the relatively “undisturbed” soil sample. The test results and the stress-strain curves are presented on Plates C-5 through C-17.

One Modified Proctor compaction test (ASTM D1557) was performed on a bulk sample of the near-surface soils to evaluate the dry density and moisture content relationships. The test results are presented on Plates C-18.

Two laboratory California Bearing Ratio tests (ASTM D1883) were performed on bulk samples of the near-surface soils to evaluate the pavement support characteristics of the soils. The test results are presented on Plates C-19 and C-20.

Two sets of Corrosivity tests, including pH (ASTM G51), Minimum Resistivity (ASTM G57), Chloride Content (EPA 300.0), and Sulfate Content (EPA 300.0), were performed by our office and TestAmerica Laboratories, Inc. on selected soil samples obtained from our field exploration. The test results are summarized on Plate C-21.



	Sample	Depth (ft)	LL	PL	PI	Description
●	B-101	10.0-11.4	52	32	20	Dark gray clayey silt (MH)
⧓	B-101	71.5-73.0	70	37	33	Brown clayey silt (MH)
▲	B-102	56.0-57.5	103	30	73	Gray with multi-color mottling silty clay (CH) with some sand
★	B-103	41.5-43.0	67	37	30	Brown clayey silt (MH) with some gravel
⊙	B-103	116.5-118.0	125	45	80	Brown silty clay (CH) with some sand
✿	B-104	41.5-43.0	77	38	39	Gray clayey silt (MH) with some gravel
○	B-104	91.5-93.0	52	44	8	Brown clayey silt (MH) with some sand

NP = NON-PLASTIC

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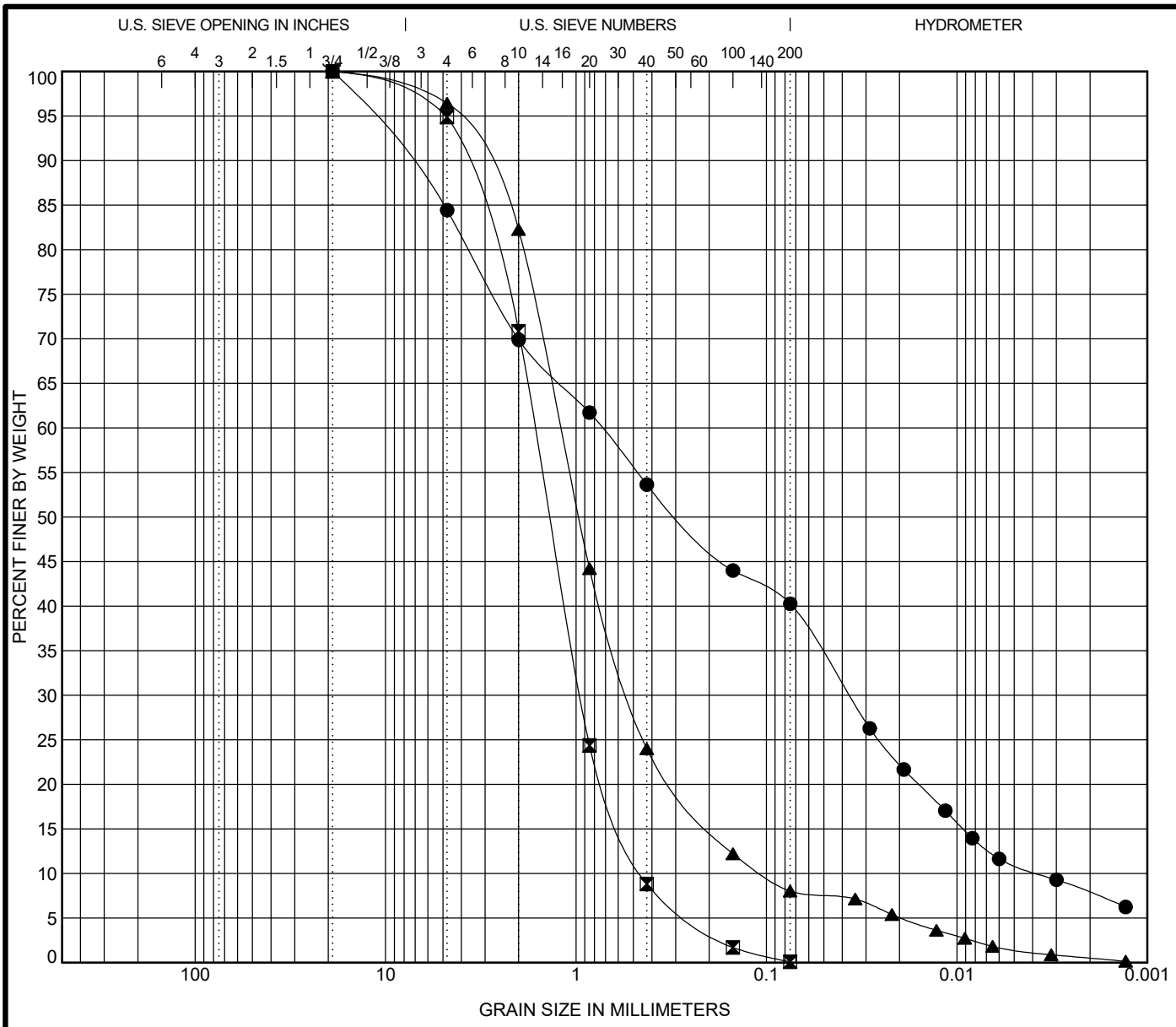
ATTERBERG LIMITS TEST RESULTS - ASTM D4318

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 1

G ATTERBERG PI-130 LL-160 7414-10.GPJ GEOLABS.GDT 5/30/19



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	B-102	10.0-11.5	Brown silty sand (SM) with some gravel				0.5	198.0
⊠	B-102	26.0-27.5	Brownish gray sand (SP) with traces of gravel				1.2	3.7
▲	B-104	21.5-23.0	Brownish gray silty sand (SW-SM) w/ a little silt & traces of gravel				2.2	11.7

	Sample	Depth (ft)	D100 (mm)	D60 (mm)	D30 (mm)	D10 (mm)	%Gravel	%Sand	%Fine
●	B-102	10.0-11.5	19	0.734	0.037	0.004	15.6	44.2	40.3
⊠	B-102	26.0-27.5	19	1.638	0.943	0.448	5.1	94.8	0.1
▲	B-104	21.5-23.0	19	1.213	0.522	0.104	3.6	88.4	8.0

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GRAIN SIZE DISTRIBUTION - ASTM C117 & C136

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 2

G_GRAIN_SIZE_MOD_7414-10.GPJ GEOLABS.GDT 5/24/19

Location	Depth (feet)	Soil Description	Dry Density (pcf)	Moisture Contents			Ring Swell (%)
				Initial (%)	Air-Dried (%)	Final (%)	
B-102*	1.0 - 2.5	Brown clayey silt with some gravel	72.2	46.8	37.8	49.5	0.0
B-103*	1.0 - 2.5	Brown sandy silt with some gravel	74.9	32.5	23.7	42.1	0.0
B-104*	1.0 - 2.5	Brown sandy silt with some gravel	89.0	23.8	20.2	30.1	0.3

NOTE: Samples tested were either relatively undisturbed or remolded in 2.4-inch diameter by 1-inch high rings. They were air-dried overnight and then saturated for 24 hours under a surcharge pressure of 55 psf.

* Relatively Undisturbed
** Remolded

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SUMMARY OF RING SWELL TESTS

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 3

G_RING_SWELL_TEST_7414-10.GPJ GEOLABS.GDT 5/24/19

Location	Depth	Length	Diameter	Length/ Diameter Ratio	Density	Load	Compressive Strength
	(feet)	(inches)	(inches)		(pcf)	(lbs)	(psi)
B-102	61 - 66	6.860	3.250	2.11	171.0	23,130	2,790
B-102	66 - 71	6.890	3.250	2.12	178.4	20,840	2,510
B-104	66.5 - 71.5	6.860	3.250	2.11	181.7	144,610	17,430
B-104	71.5 - 76.5	6.860	3.250	2.11	189.2	229,180	27,630

ASTM D7012 (METHOD C)

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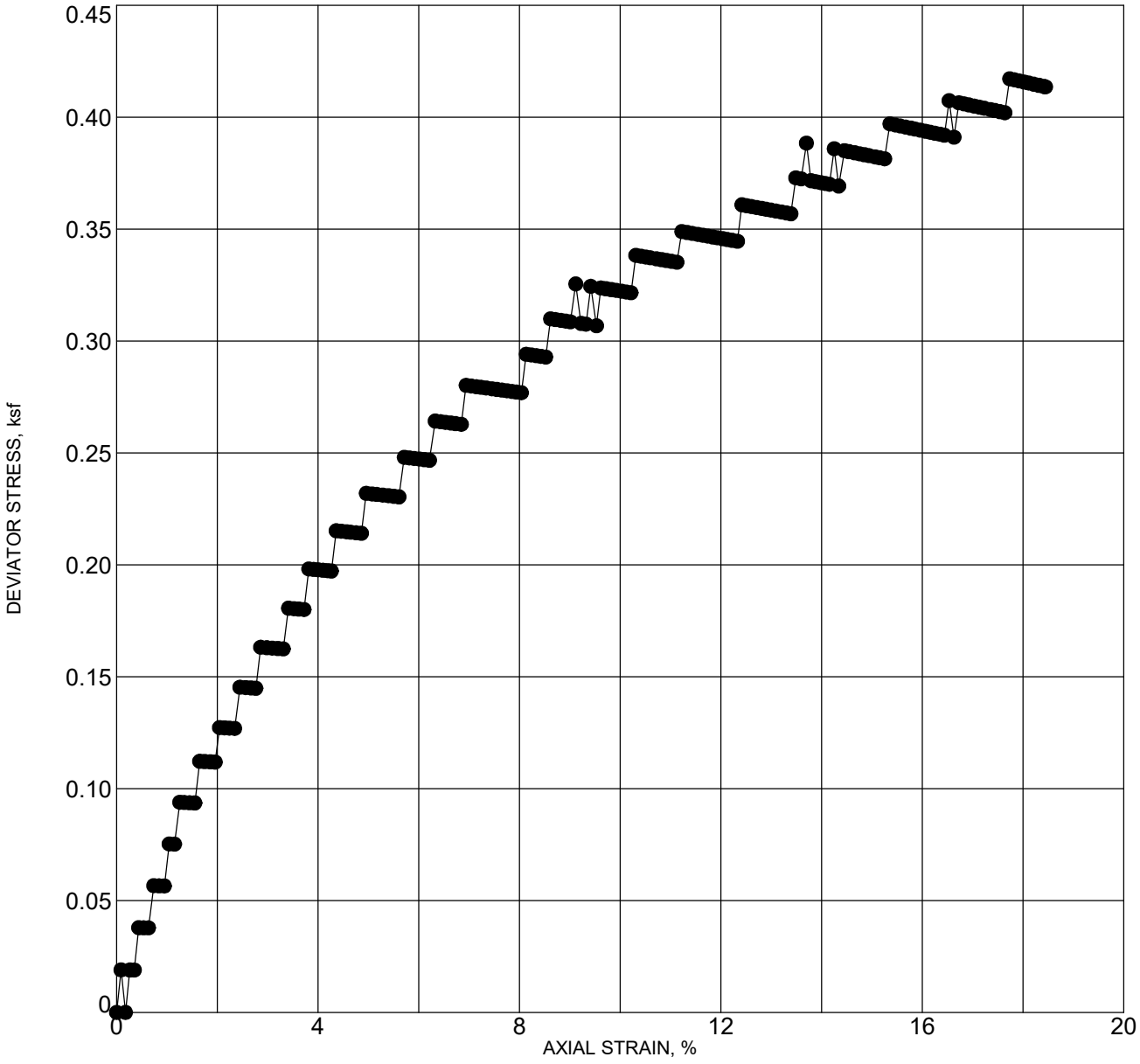
UNIAXIAL COMPRESSIVE STRENGTH TEST

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 4

G_ROCK_UC_TEST_PORTRAIT_7414-10.GPJ_GEOLABS.GDT_5/24/19



Max. Deviator Stress (ksf):	0.4
Confining Stress (ksf):	1.0

Location: B-101
Depth: 16.5 - 18.0 feet
Description: Dark gray clayey silt
Test Date: 5/1/2019

Dry Density (pcf)	70.7	Sample Diameter (inches)	2.397
Moisture (%)	58.4	Sample Height (inches)	5.000
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.97

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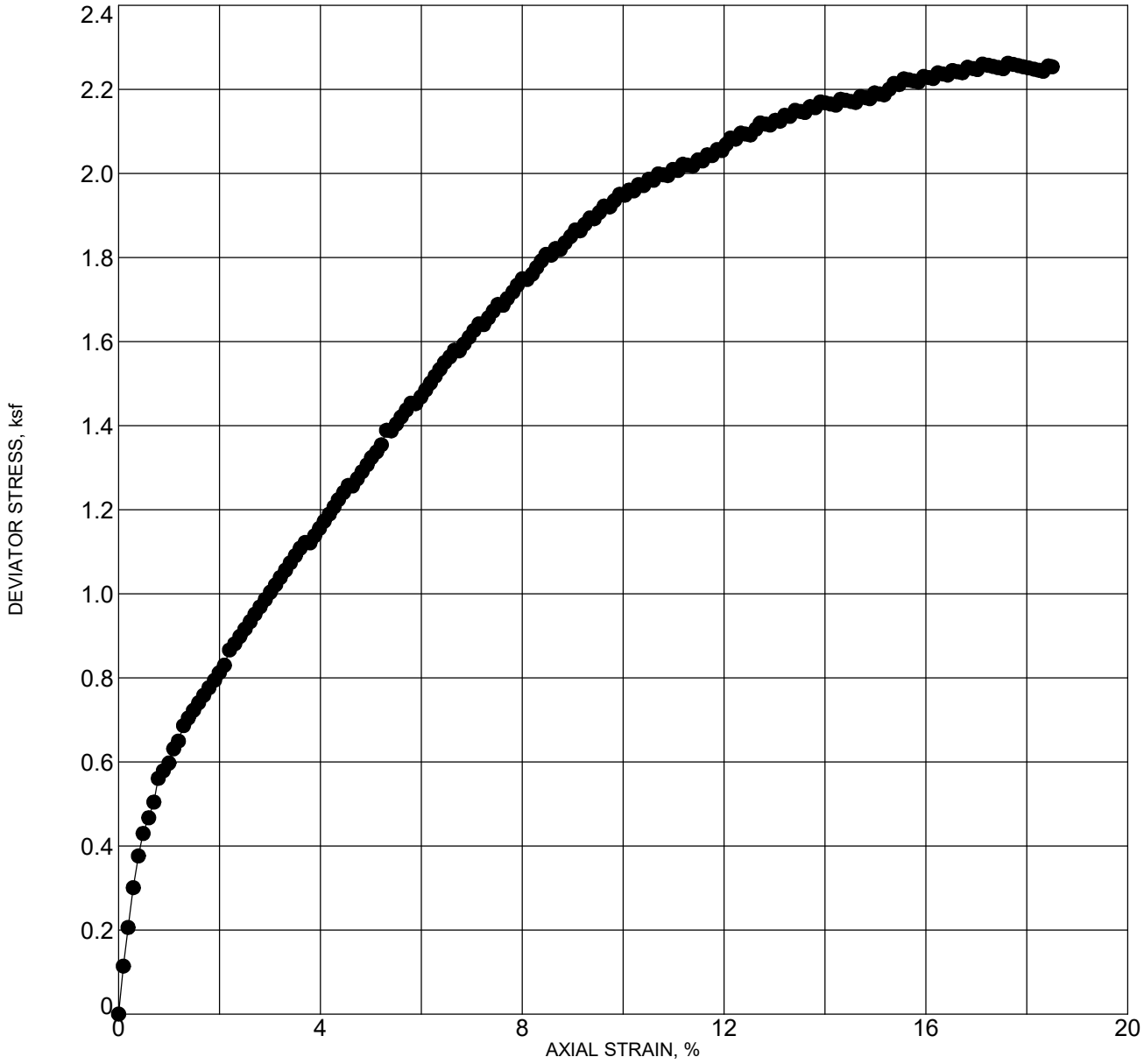
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 5

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	2.2
Confining Stress (ksf):	3.0

Location: B-101
Depth: 66.5 - 68.0 feet
Description: Brown clayey silt
Test Date: 5/2/2019

Dry Density (pcf)	70.9	Sample Diameter (inches)	2.403
Moisture (%)	53.7	Sample Height (inches)	5.167
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.99

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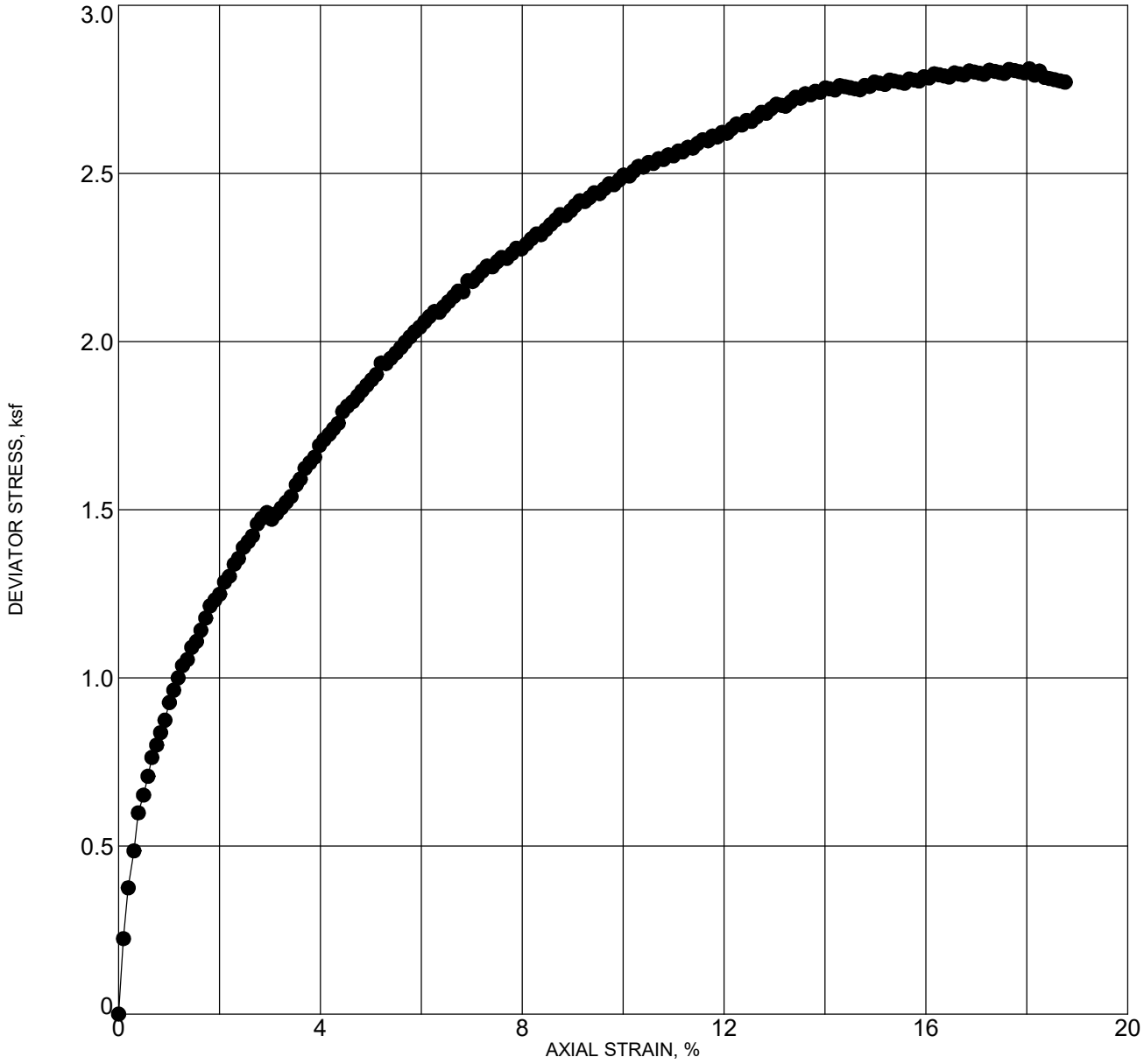
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 6

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	2.8
Confining Stress (ksf):	3.7

Location: B-101
Depth: 86.5 - 88.0 feet
Description: Brown clayey silt
Test Date: 5/2/2019

Dry Density (pcf)	77.4	Sample Diameter (inches)	2.403
Moisture (%)	47.1	Sample Height (inches)	5.067
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.97

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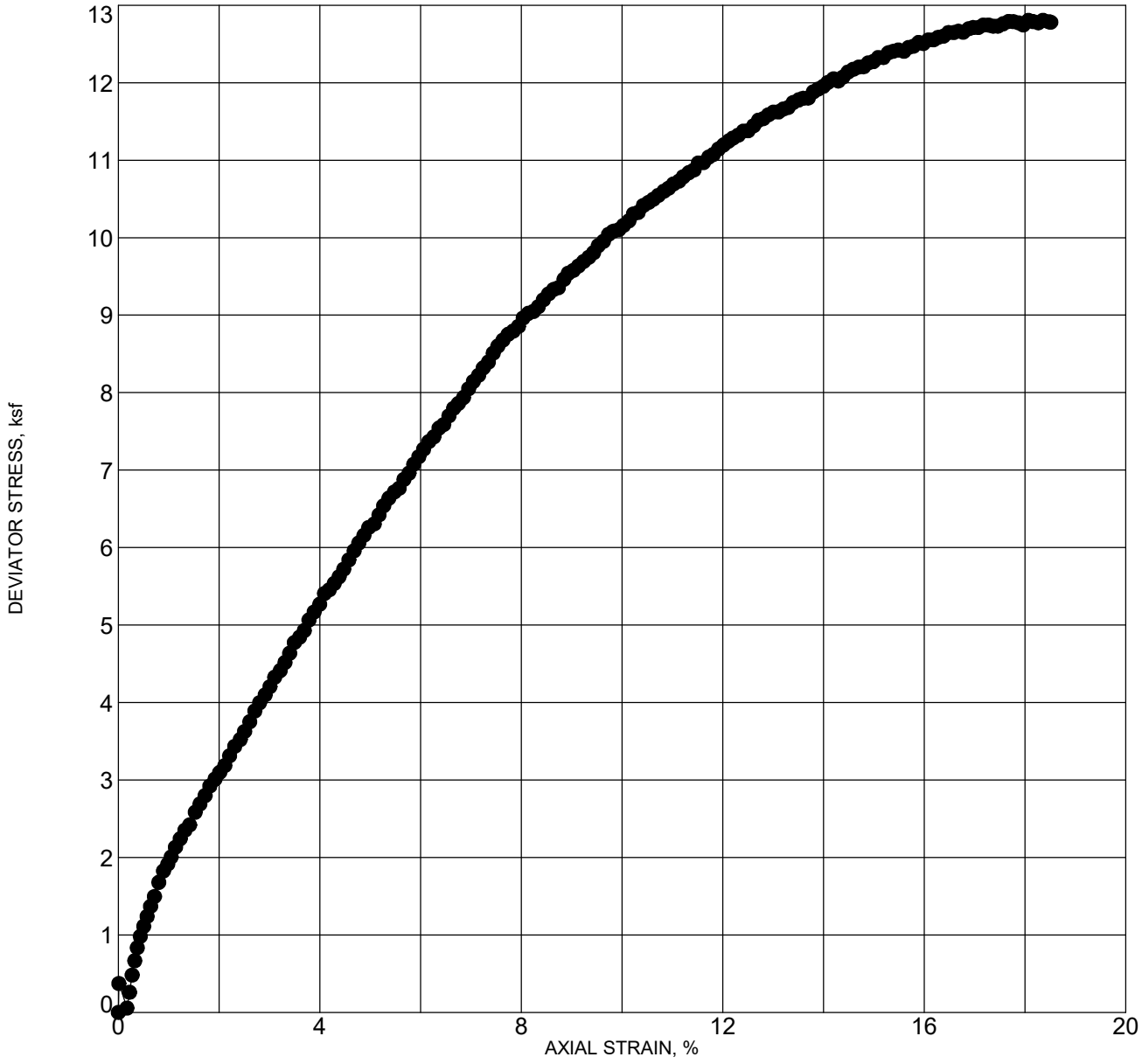
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 7

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	12.3
Confining Stress (ksf):	4.6

Location: B-101
Depth: 111.5 - 113.0 feet
Description: Brown clayey silt
Test Date: 5/2/2019

Dry Density (pcf)	71.5	Sample Diameter (inches)	2.417
Moisture (%)	50.1	Sample Height (inches)	5.167
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.99

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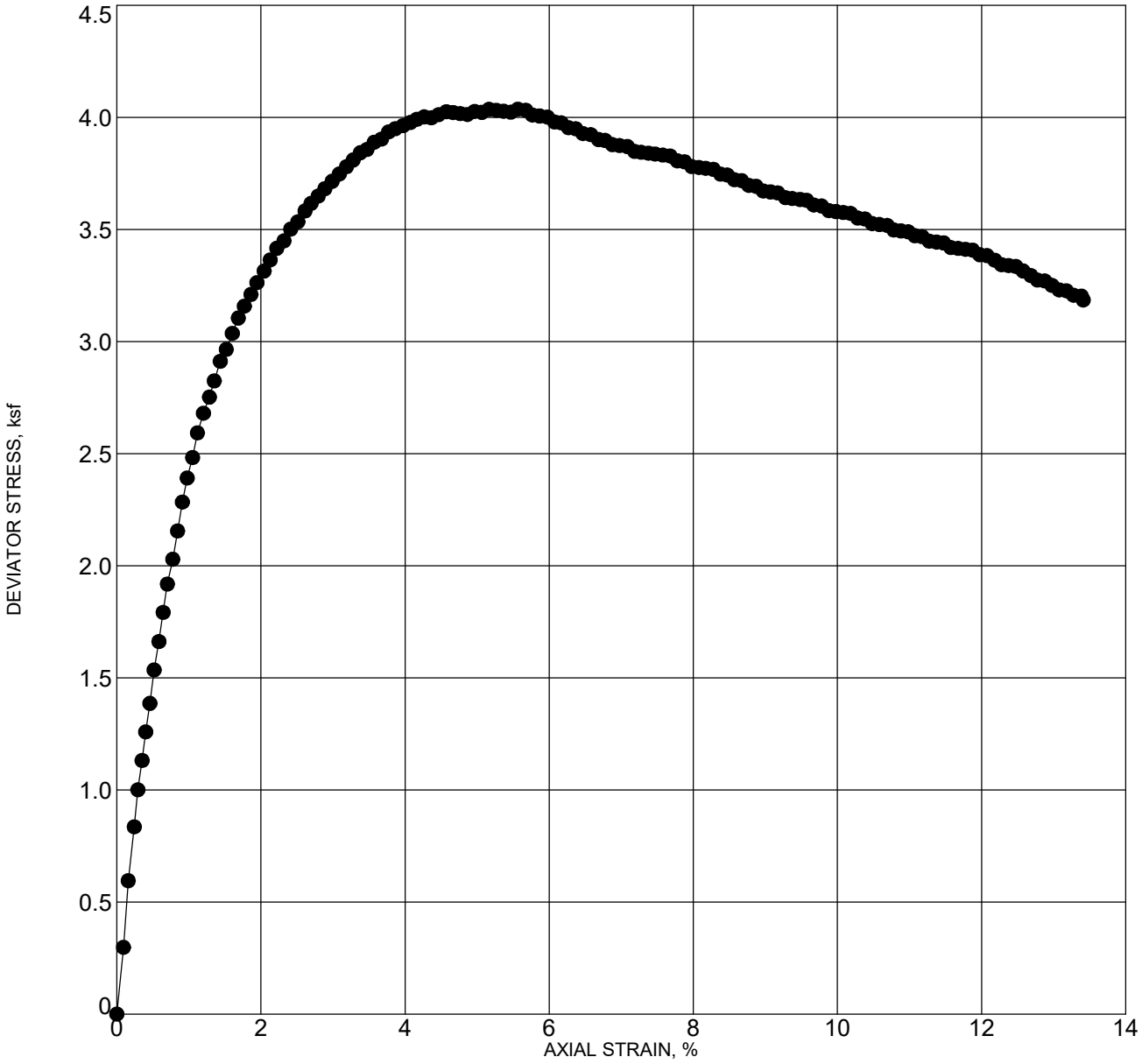
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 8

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	4.0
Confining Stress (ksf):	5.0

Location: B-101
Depth: 121.5 - 123.0 feet
Description: Brown clayey silt
Test Date: 5/3/2019

Dry Density (pcf)	50.5	Sample Diameter (inches)	2.413
Moisture (%)	87.8	Sample Height (inches)	5.267
Axial Strain at Failure (%)	5.6	Strain Rate (% / minute)	0.98

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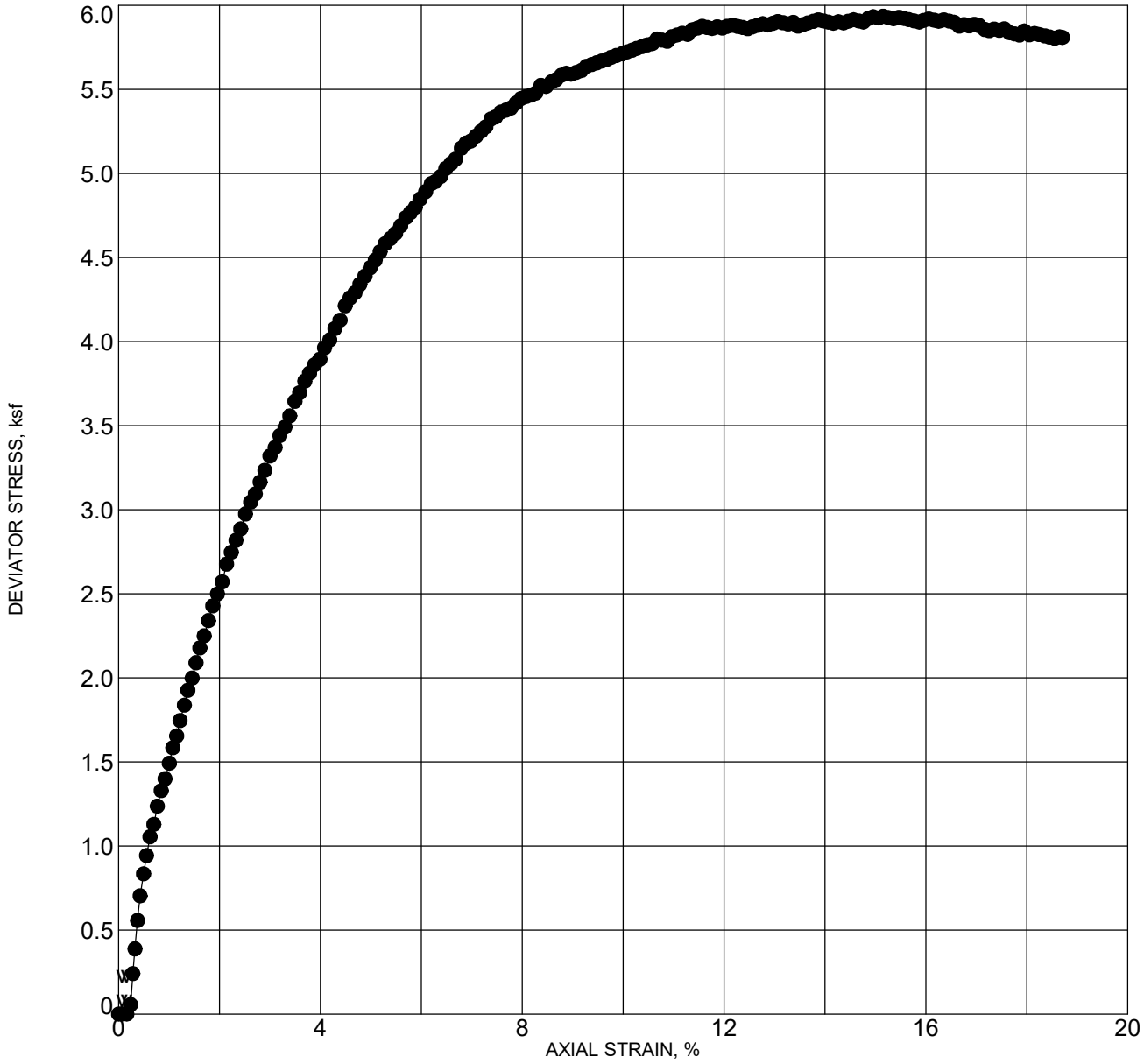
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 9

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	5.9
Confining Stress (ksf):	5.3

Location: B-101
Depth: 131.5 - 132.5 feet
Description: Gray silty clay with some sand
Test Date: 5/7/2019

Dry Density (pcf)	64.7	Sample Diameter (inches)	2.417
Moisture (%)	60.7	Sample Height (inches)	5.167
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	1.00

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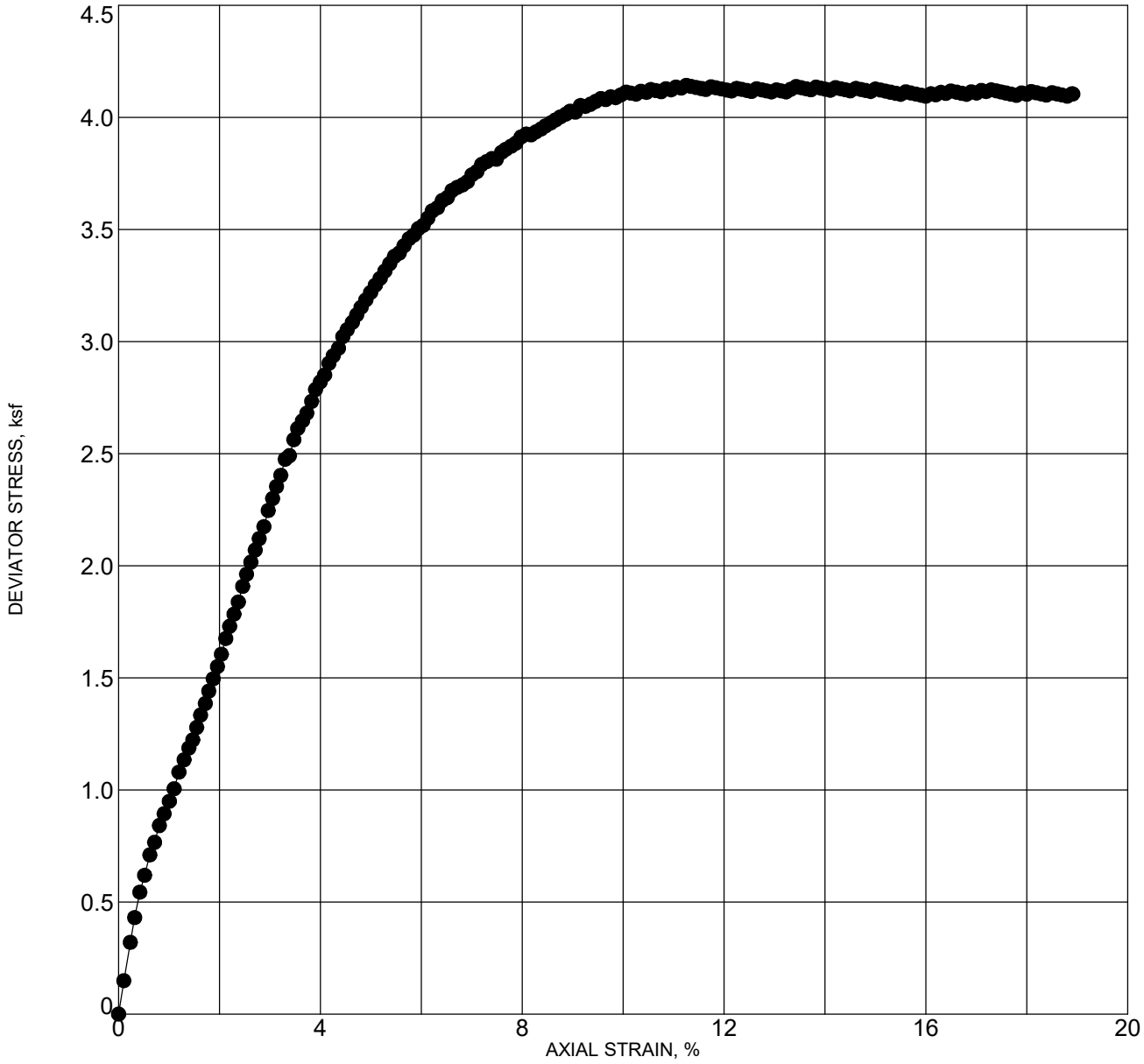
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 10

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	4.1
Confining Stress (ksf):	1.8

Location: B-102
Depth: 36.0 - 37.5 feet
Description: Gray with multi-color mottling silty clay with some sand
Test Date: 4/30/2019

Dry Density (pcf)	74.7	Sample Diameter (inches)	2.403
Moisture (%)	44.5	Sample Height (inches)	5.123
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.98

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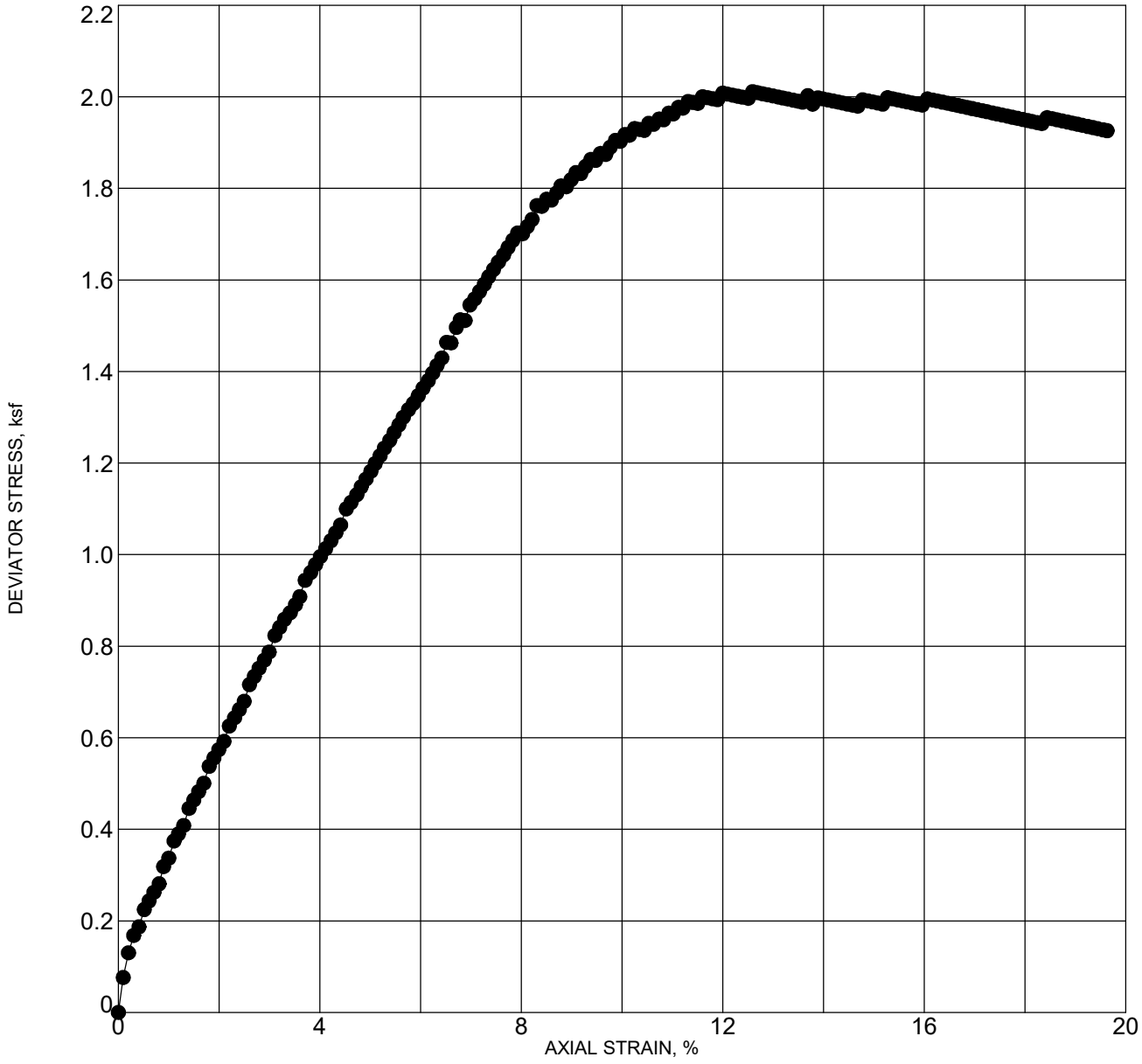
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 11

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	2.0
Confining Stress (ksf):	2.2

Location: B-103
Depth: 46.5 - 48.0 feet
Description: Gray clayey silt with some gravel
Test Date: 4/30/2019

Dry Density (pcf)	38.5	Sample Diameter (inches)	2.400
Moisture (%)	164.8	Sample Height (inches)	5.060
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.99

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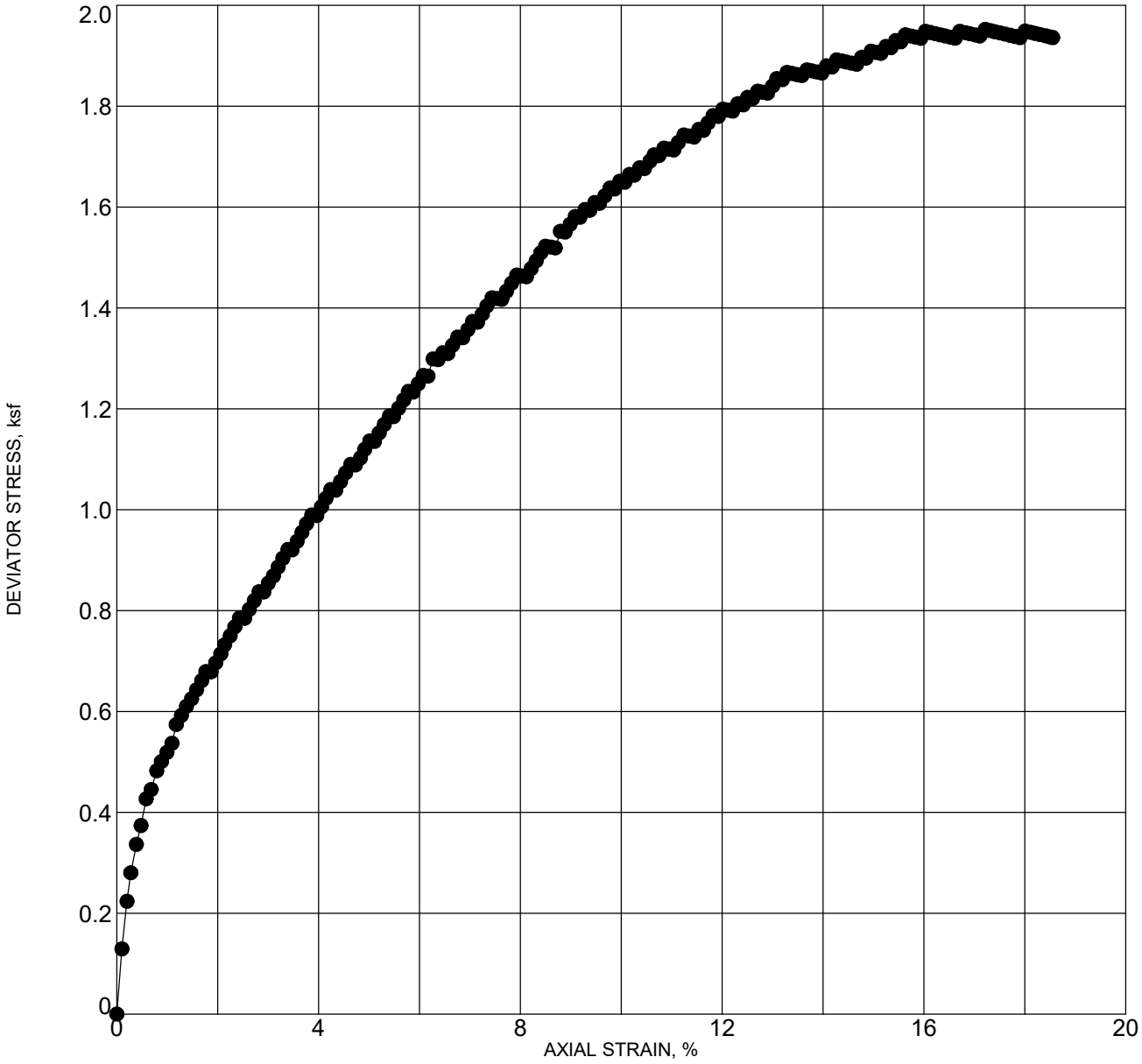
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 12

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	1.9
Confining Stress (ksf):	4.6

Location: B-103
Depth: 111.5 - 113.0 feet
Description: Brown silty clay with some gravel
Test Date: 5/3/2019

Dry Density (pcf)	50.3	Sample Diameter (inches)	2.410
Moisture (%)	89.0	Sample Height (inches)	5.233
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.98

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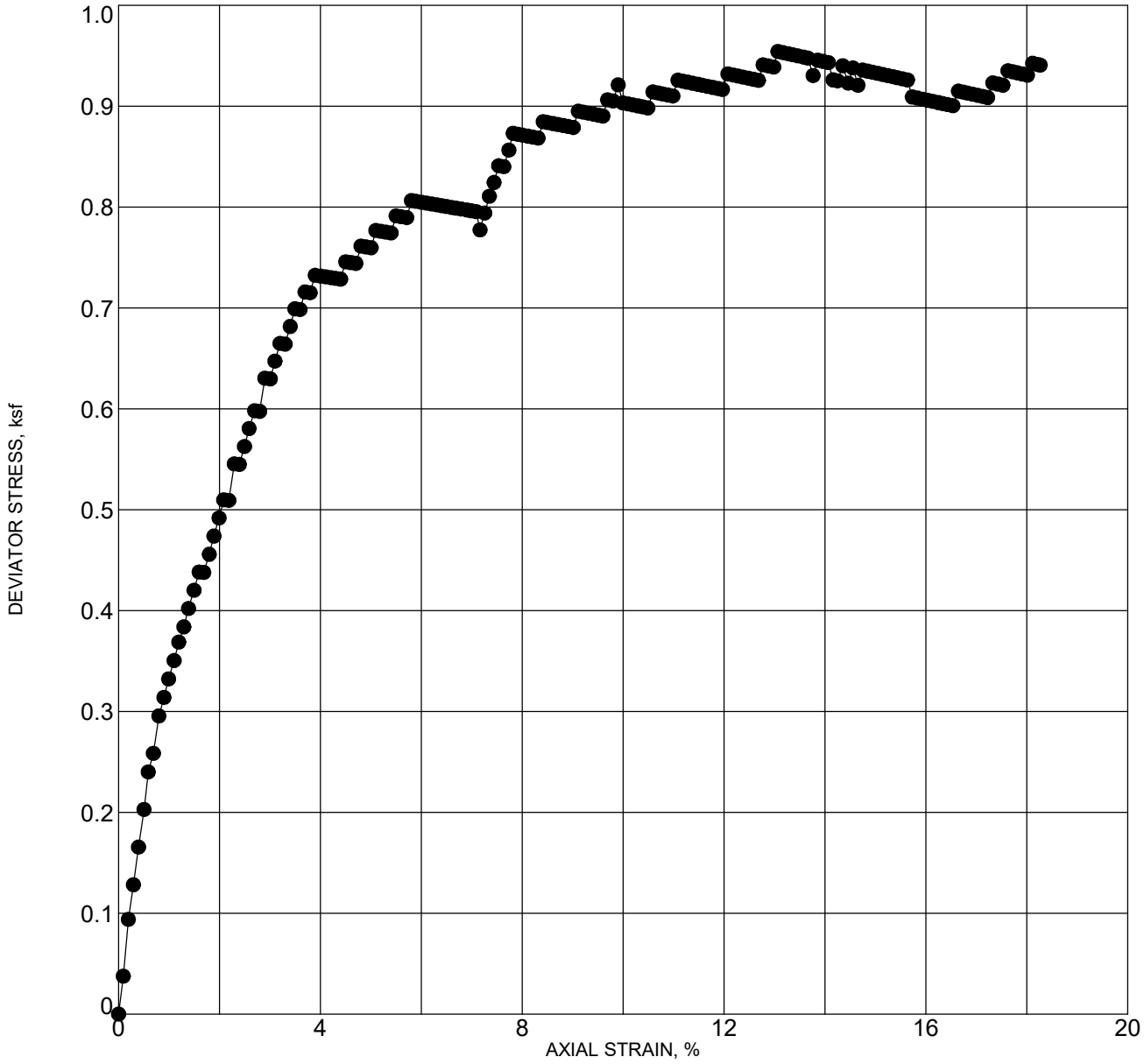
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 13

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	0.9
Confining Stress (ksf):	5.0

Location: B-103
Depth: 121.0 - 123.0 feet
Description: Brown silty clay with some sand
Test Date: 5/3/2019

Dry Density (pcf)	35.7	Sample Diameter (inches)	2.413
Moisture (%)	135.8	Sample Height (inches)	5.233
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.99

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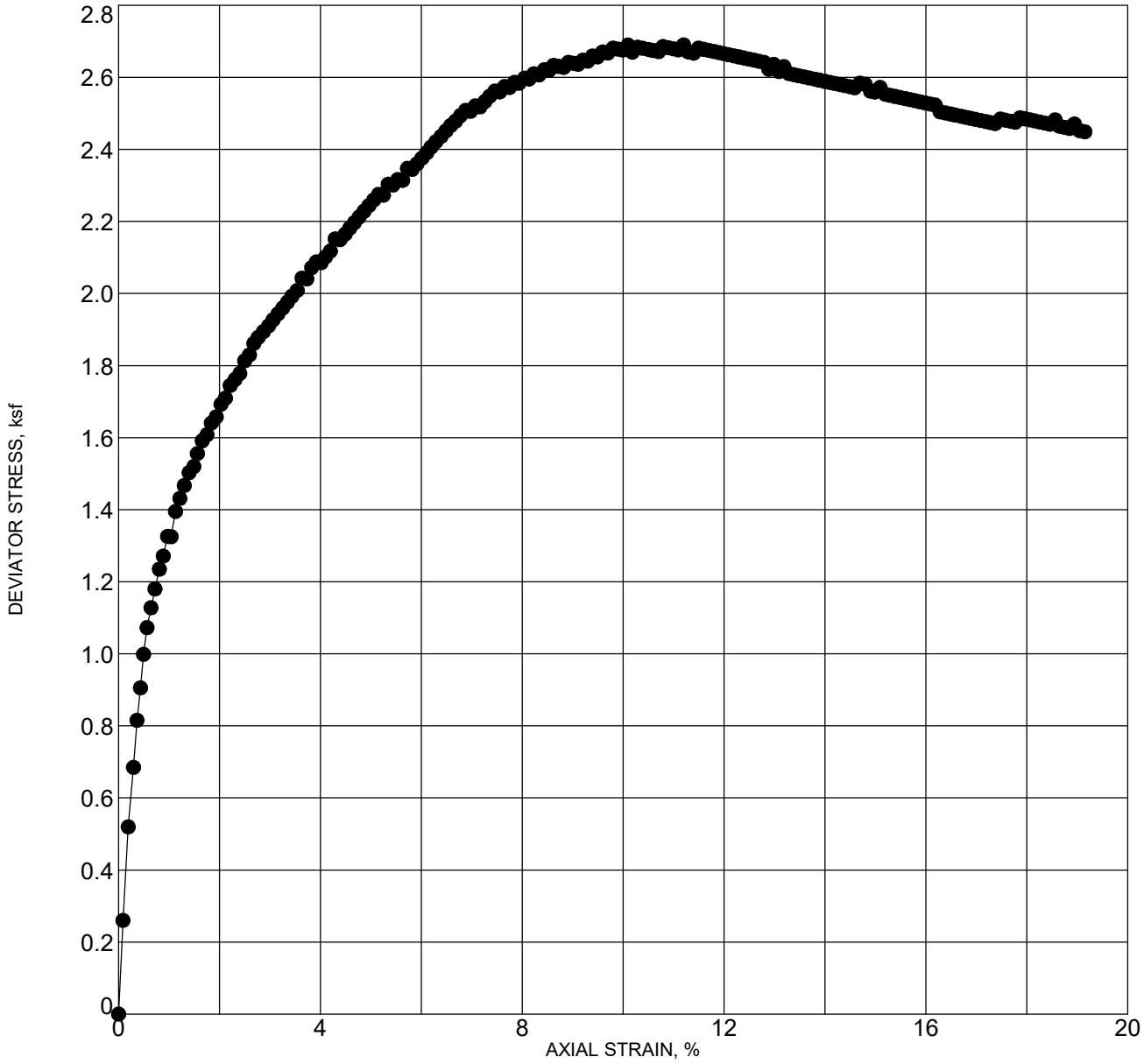
W.O. 7414-10

TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 14

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	2.6
Confining Stress (ksf):	5.4

Location: B-103
Depth: 131.5 - 133.0 feet
Description: Brown silty clay with some sand
Test Date: 5/3/2019

Dry Density (pcf)	46.7	Sample Diameter (inches)	2.413
Moisture (%)	104.4	Sample Height (inches)	5.067
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.99

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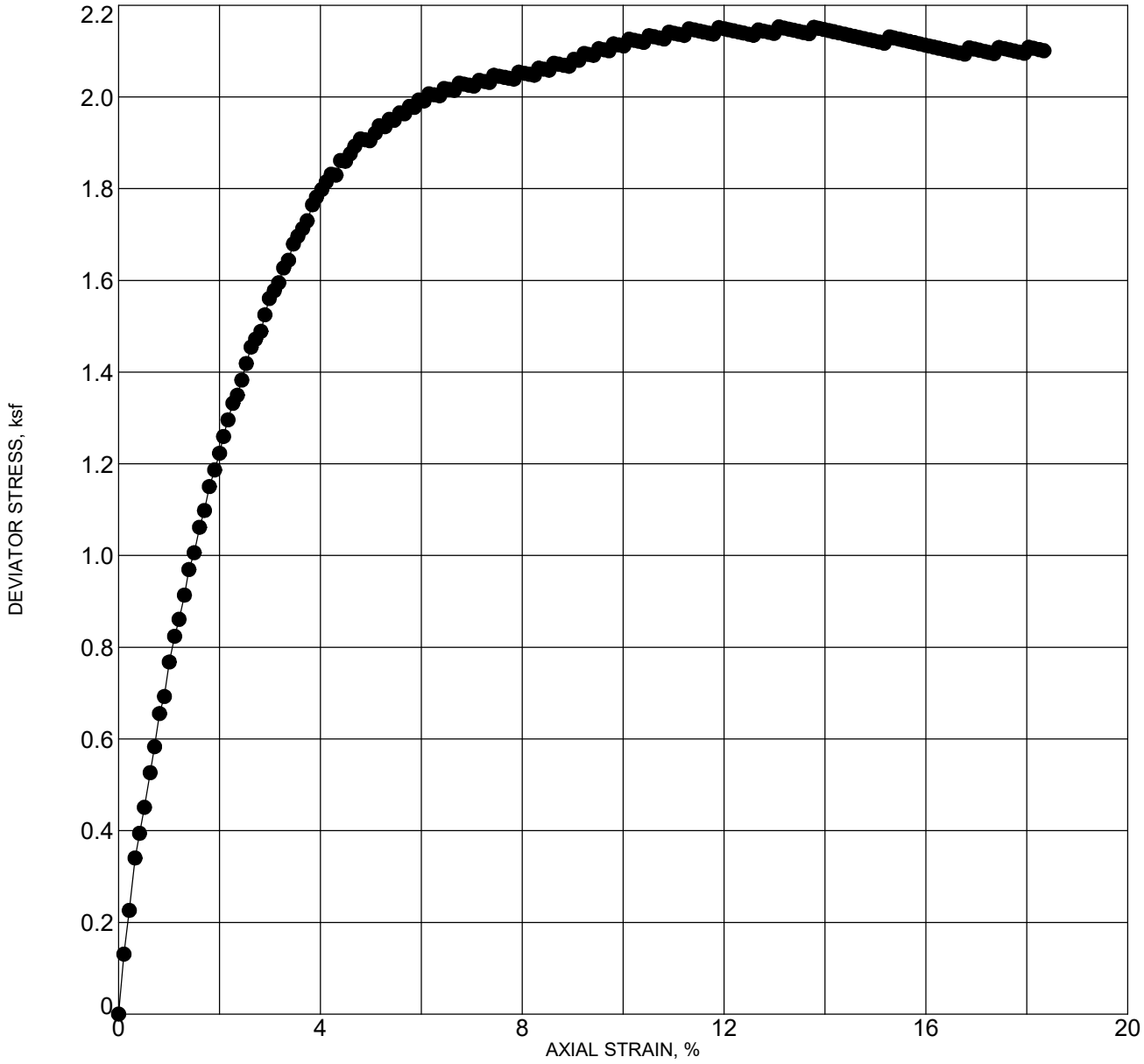
W.O. 7414-10

TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 15

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	2.1
Confining Stress (ksf):	1.8

Location: B-104
Depth: 36.5 - 38.0 feet
Description: Gray clayey silt with some gravel
Test Date: 4/30/2019

Dry Density (pcf)	75.5	Sample Diameter (inches)	2.397
Moisture (%)	48.4	Sample Height (inches)	4.997
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	0.99

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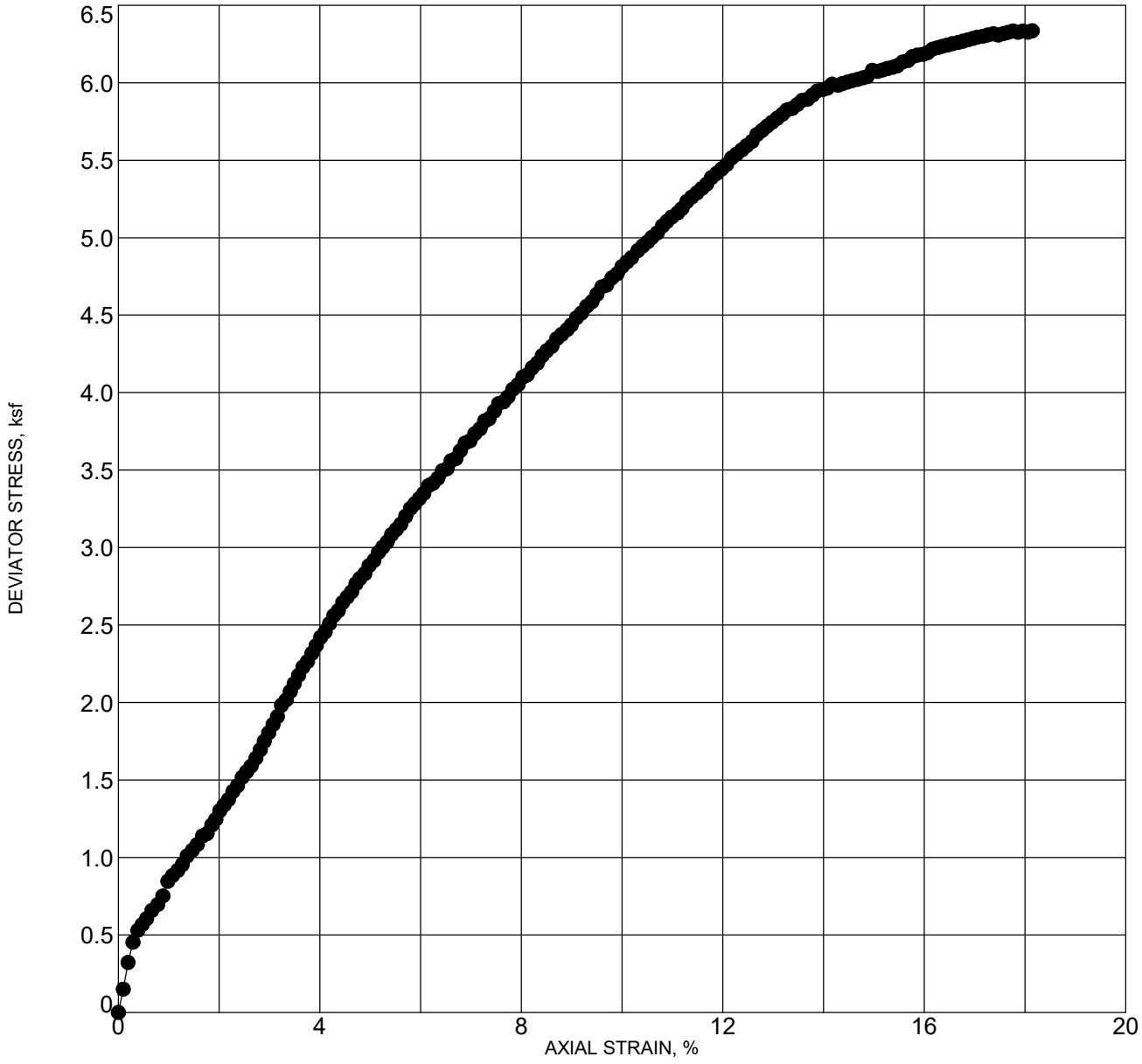
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 16

G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19



Max. Deviator Stress (ksf):	6.1
Confining Stress (ksf):	3.5

Location: B-104
Depth: 86.5 - 88.0 feet
Description: Brown clayey silt with some sand
Test Date: 4/30/2019

Dry Density (pcf)	69.9	Sample Diameter (inches)	2.393
Moisture (%)	53.5	Sample Height (inches)	5.033
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	1.00

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TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 17

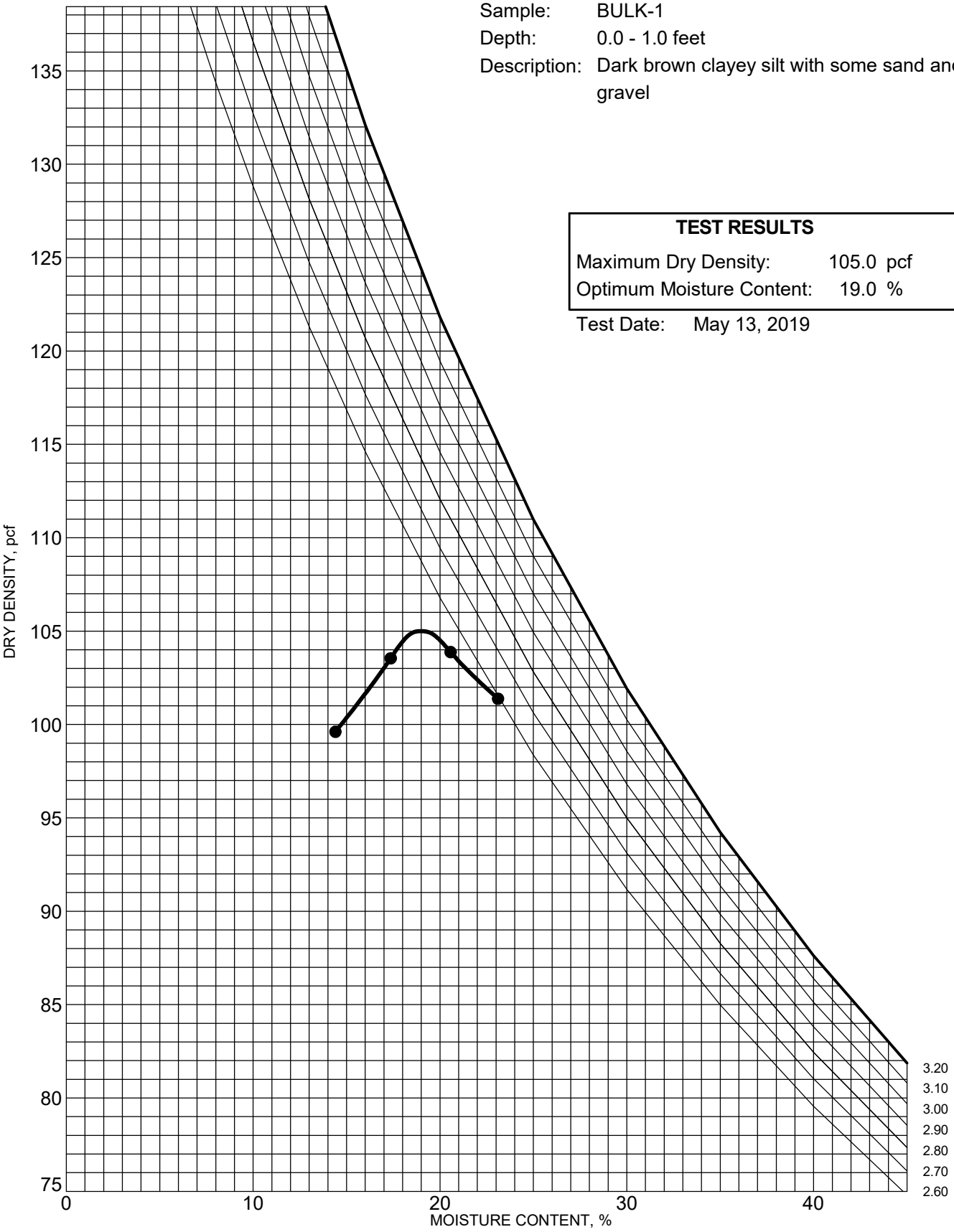
G_TXUU_7414-10.GPJ GEOLABS.GDT 5/24/19

Sample: BULK-1
Depth: 0.0 - 1.0 feet
Description: Dark brown clayey silt with some sand and gravel

TEST RESULTS

Maximum Dry Density:	105.0 pcf
Optimum Moisture Content:	19.0 %

Test Date: May 13, 2019



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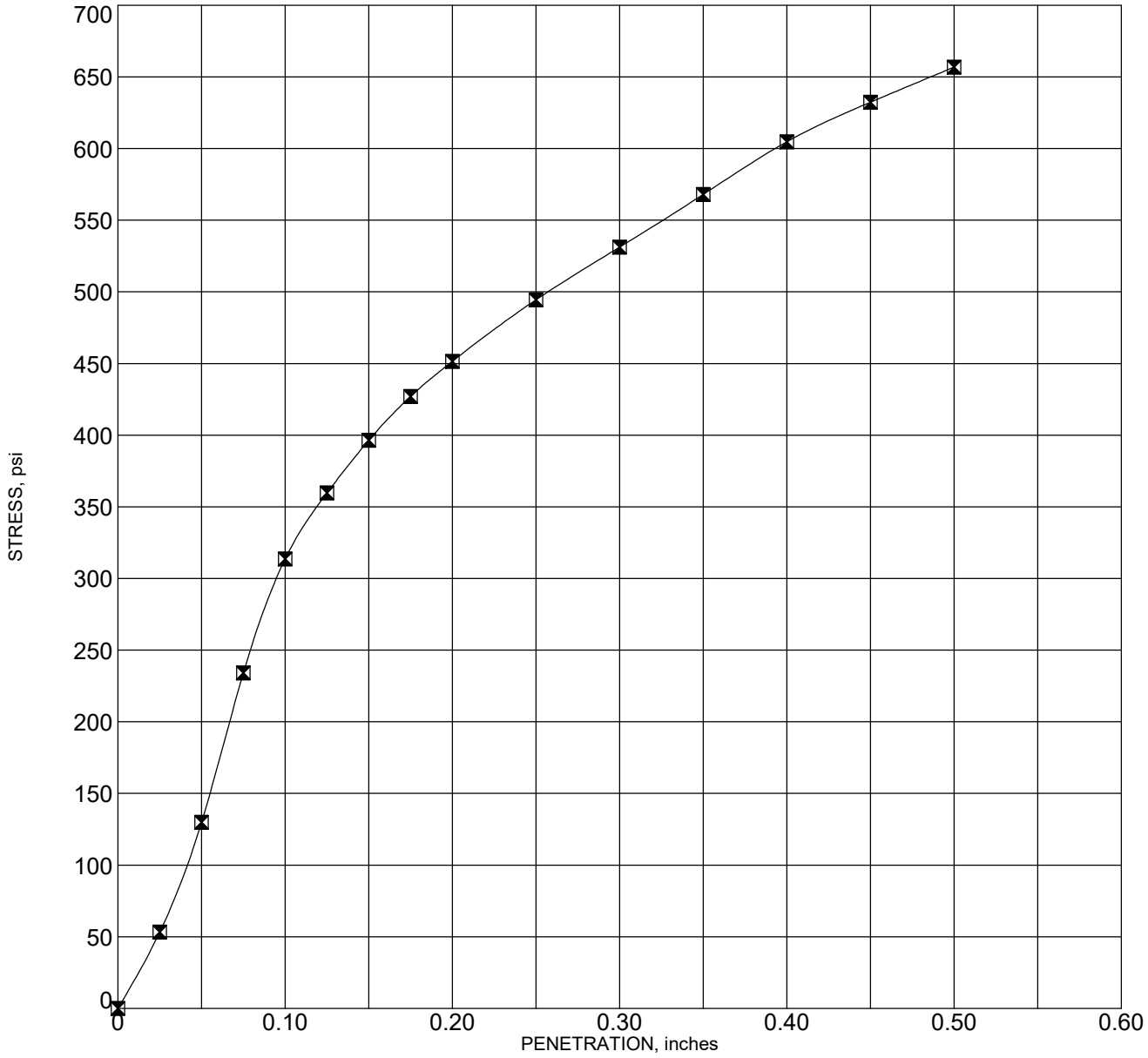
MOISTURE-DENSITY RELATIONSHIP - ASTM D1557 A

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 18

G_COMPACTION 7414-10.GPJ GEOLABS.GDT 5/24/19



Corr. CBR @ 0.1"	34.8
Corr. CBR @ 0.2"	31.2
Swell (%)	1.03

Sample: BULK-1
Depth: 0.0 - 1.0 feet
Description: Dark brown clayey silt with some sand and gravel

Molding Dry Density (pcf)	81.7	Hammer Wt. (lbs)	10
Molding Moisture (%)	28.9	Hammer Drop (inches)	18
Days Soaked	7	No. of Blows	56
Aggregate	3/4 inch minus	No. of Layers	5

GEOLABS, INC.
GEOTECHNICAL ENGINEERING

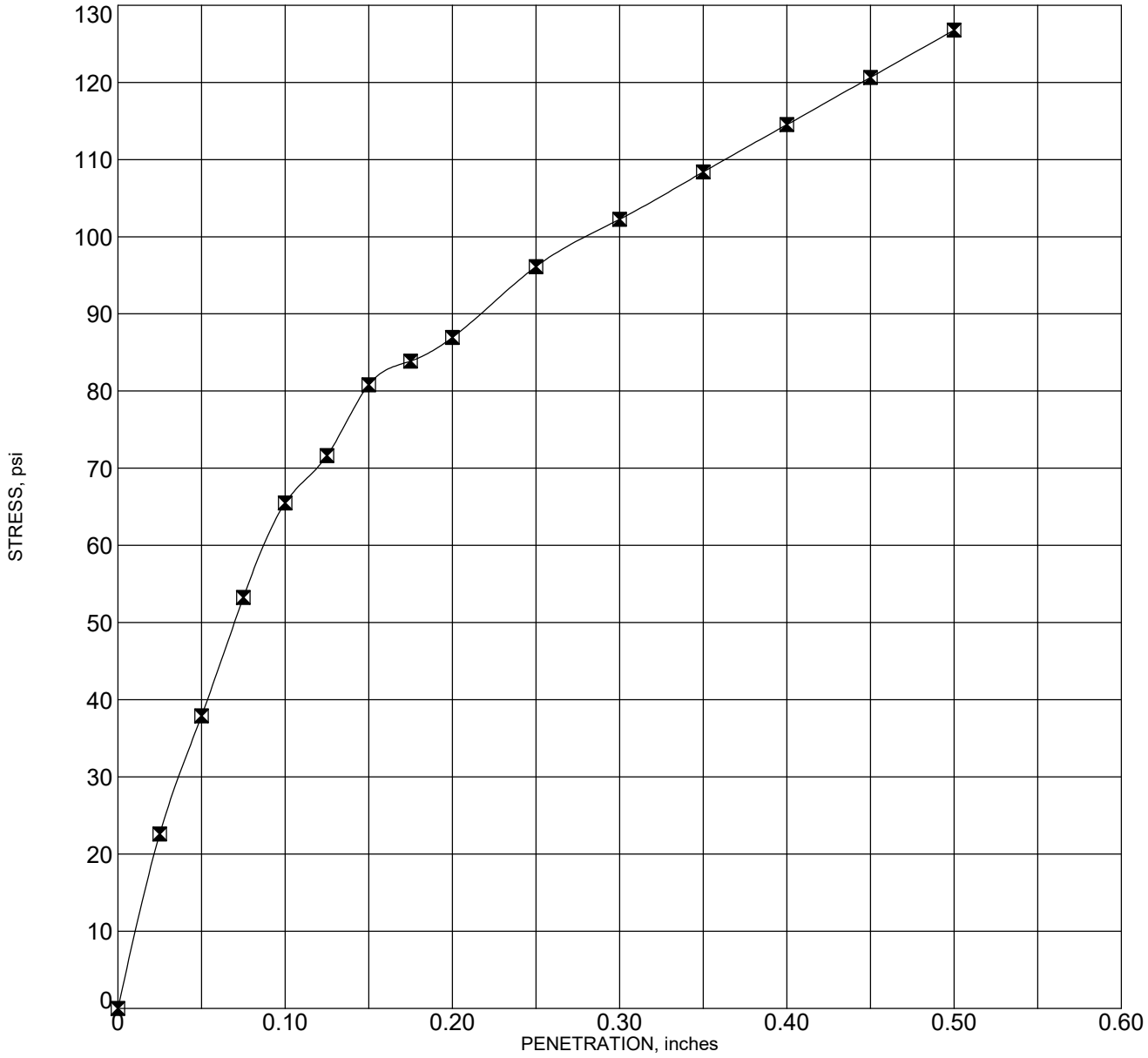
W.O. 7414-10

CALIFORNIA BEARING RATIO - ASTM D1883

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 19

G_CBR_7414-10.GPJ GEOLABS.GDT 5/24/19



Corr. CBR @ 0.1"	6.5
Corr. CBR @ 0.2"	5.8
Swell (%)	0.17

Sample: BULK-2
Depth: 0.0 - 1.0 feet
Description: Brown clayey silt

Molding Dry Density (pcf)	87.3	Hammer Wt. (lbs)	10
Molding Moisture (%)	33.6	Hammer Drop (inches)	18
Days Soaked	7	No. of Blows	56
Aggregate	3/4 inch minus	No. of Layers	5

GEOLABS, INC.
GEOTECHNICAL ENGINEERING

W.O. 7414-10

CALIFORNIA BEARING RATIO - ASTM D1883

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 20

G_CBR_7414-10.GPJ GEOLABS.GDT 5/24/19

Location	Depth (feet)	pH Value	Minimum Resistivity (ohm-cm)	Chloride Content (mg/kg)	Sulfate Content (mg/kg)
B-102	5.0 - 6.5	8.05*	3200*	9	26
B-103	10.0 - 11.5	7.81*	510*	110	750

TEST METHODS (by TestAmerica Laboratories, Inc.)

pH Value	Method 9045C
Minimum Resistivity	SM 2510B
Chloride Content	EPA 300.0
Sulfate Content	EPA 300.0

TEST METHODS (by Geolabs, Inc.)*

pH Value	ASTM G51
Minimum Resistivity	ASTM G57
Chloride Content	N/A
Sulfate Content	N/A

ND: Not Detected Within Reporting Limits

G SUMMARY OF CORROSIVITY TESTS 7414-10.GPJ GEOLABS.GDT 5/24/19

GEOLABS, INC.
GEOTECHNICAL ENGINEERING

W.O. 7414-10

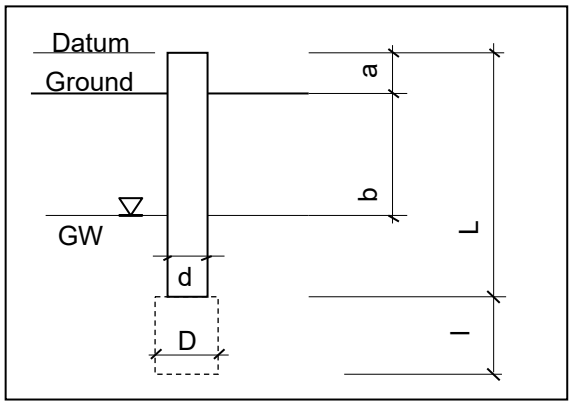
SUMMARY OF CORROSIVITY TESTS

HALEWAI'OLU SENIOR RESIDENCES
1331-1347 RIVER STREET
HONOLULU, OAHU, HAWAII
(1) 1-7-006: 012

Plate
C - 21

APPENDIX D

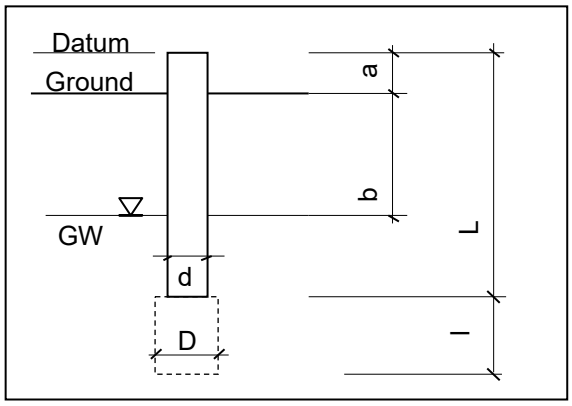
INFILTRATION TEST RECORD



Project:	Halewaiolu Senior Residence	
	1331 - 1337 River Street	
W.O.:	7414-10	
Boring No.:	**I-1**	
Date of Testing:	4/5/2019	
Method of Testing:	Falling Head - LID Method	
Source of Water:	Bucket	
Existing Ground Surface Elev.	+8	feet, MSL
GW level, b (from ground):	N/A	feet
Datum, a (above ground):	0.0	feet
Depth of Boring (from ground):	5.0	feet
Length, L (from datum):	5.0	feet
Open Hole Length, l:	0.0	feet
Test Depth Elevation:	+3	feet, MSL
Diameter of Open Hole, D:	N/A	inches
Diameter of Casing, d (I.D.):	4.0	inches

Trial	Elapsed Time (min)	Pumping Rate (gpm)	Depth to Water (measured from datum) (inches)	Infiltration Rate (inches per hour)
Trial 1				
	0	N/A	36.00	
	15		36.50	
	30		37.00	
	45		38.00	
	60		38.25	2.25
Trial 2				
	0	N/A	36.00	
	15		36.50	
	30		37.00	
	45		38.00	
	60		38.75	2.75
Trial 3				
	0	N/A	36.00	
	15		36.75	
	30		37.50	
	45		38.25	
	60		38.75	2.75
Trial 4				
	0	N/A	36.00	
	15		36.50	
	30		37.00	
	45		38.00	
	60		38.75	2.75

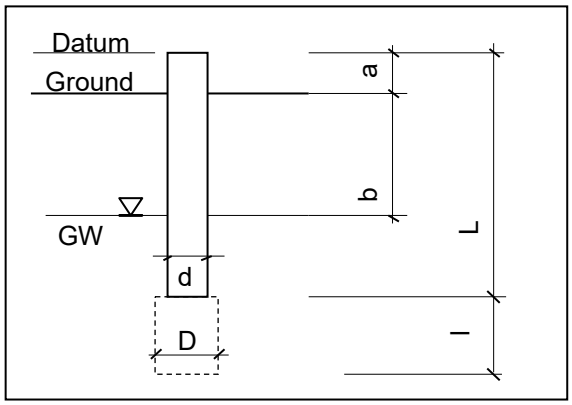
INFILTRATION TEST RECORD



Project:	Halewaiolu Senior Residence	
	1331 - 1337 River Street	
W.O.:	7414-10	
Boring No.:	**I-2**	
Date of Testing:	4/5/2019	
Method of Testing:	Falling Head - LID Method	
Source of Water:	Bucket	
Existing Ground Surface Elev.	+9.5	feet, MSL
GW level, b (from ground):	N/A	feet
Datum, a (above ground):	0.0	feet
Depth of Boring (from ground):	5.0	feet
Length, L (from datum):	5.0	feet
Open Hole Length, l:	0.0	feet
Test Depth Elevation:	+4.5	feet, MSL
Diameter of Open Hole, D:	N/A	inches
Diameter of Casing, d (I.D.):	4.0	inches

Trial	Elapsed Time (min)	Pumping Rate (gpm)	Depth to Water (measured from datum) (inches)	Infiltration Rate (inches per hour)
Trial 1				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00
Trial 2				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00
Trial 3				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00
Trial 4				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00

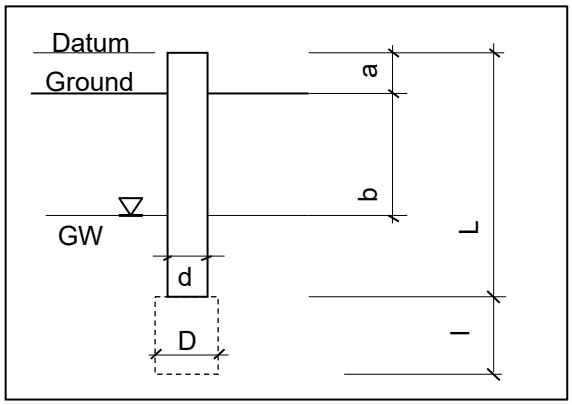
INFILTRATION TEST RECORD



Project:	Halewaiolu Senior Residence	
	1331 - 1337 River Street	
W.O.:	7414-10	
Boring No.:	**I-3**	
Date of Testing:	4/5/2019	
Method of Testing:	Falling Head - LID Method	
Source of Water:	Bucket	
Existing Ground Surface Elev.	+9	feet, MSL
GW level, b (from ground):	N/A	feet
Datum, a (above ground):	0.0	feet
Depth of Boring (from ground):	5.0	feet
Length, L (from datum):	5.0	feet
Open Hole Length, l:	0.0	feet
Test Depth Elevation:	+4	feet, MSL
Diameter of Open Hole, D:	N/A	inches
Diameter of Casing, d (I.D.):	4.0	inches

Trial	Elapsed Time (sec)	Pumping Rate (gpm)	Depth to Water (measured from datum) (inches)	Infiltration Rate (inches per hour)
Trial 1				
	0	N/A	36.00	
	15		36.50	
	30		37.00	
	45		37.75	
	60		38.75	2.75
Trial 2				
	0	N/A	36.00	
	15		36.50	
	30		37.00	
	45		38.50	
	60		39.50	3.50
Trial 3				
	0	N/A	36.00	
	15		37.25	
	30		38.25	
	45		39.50	
	60		40.25	4.25
Trial 4				
	0	N/A	36.00	
	15		37.00	
	30		38.00	
	45		39.25	
	60		40.25	4.25

INFILTRATION TEST RECORD



Project:	Halewaiolu Senior Residence	
	1331 - 1337 River Street	
W.O.:	7414-10	
Boring No.:	**I-4**	
Date of Testing:	4/5/2019	
Method of Testing:	Falling Head - LID Method	
Source of Water:	Bucket	
Existing Ground Surface Elev.	+10	feet, MSL
GW level, b (from ground):	N/A	feet
Datum, a (above ground):	0.0	feet
Depth of Boring (from ground):	5.0	feet
Length, L (from datum):	5.0	feet
Open Hole Length, l:	0.0	feet
Test Depth Elevation:	+5	feet, MSL
Diameter of Open Hole, D:	N/A	inches
Diameter of Casing, d (I.D.):	4.0	inches

Trial	Elapsed Time (sec)	Pumping Rate (gpm)	Depth to Water (measured from datum) (inches)	Infiltration Rate (inches per hour)
Trial 1				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00
Trial 2				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00
Trial 3				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00
Trial 4				
	0	N/A	36.00	
	15		36.00	
	30		36.00	
	45		36.00	
	60		36.00	0.00

APPENDIX E

B-101 33.0’ TO 111.5’



B-102 37.5’ TO 79.0’

37.5’ 41.5’ 51.0’ 61.0’ 66.0’ 71.0’ 76.0’



41.0’ 51.0’ 61.0’ 66.0’ 71.0’ 76.0’ 79.0’

B-103 23.0’ TO 66.5’



B-103 66.5’ TO 96.5’

66.5’ **71.5’** **76.5’** **83.0’** **87.0’**



71.5’ **76.5’** **81.5’** **86.5’** **96.5’**

B-103 96.5’ TO 151.5’

96.5’ **101.5’** **106.5’** **141.5’**



101.5’ **106.5’** **111.5’** **151.5’**

B-104 28.0’ TO 96.5’

28.0’ **52.0’** **61.5’** **66.5’** **71.5’** **76.5’** **88.0’**



36.5’ **61.5’** **66.5’** **71.5’** **76.5’** **86.5’** **96.5’**

APPENDIX F

GEOLABS, INC.

Geotechnical Engineering

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Log of Boring 1

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet): 9 * **Description**
							0			GW-GM MH	4-inch **ASPHALTIC CONCRETE**
	18	95			65/5"						Gray **SANDY GRAVEL (BASALTIC)** with a little silt, dense, damp (base course)
	36				12					MH	Dark brown **CLAYEY SILT** with some sand and gravel, very stiff, moist (fill)
	39	69			8	1.0	5				Brown **CLAYEY SILT** with some sand, medium stiff, moist (recent alluvium)
Sieve - #200 = 11.8%	19		0		4		10			SP-SM	Brownish gray **GRAVELLY SAND** with a little silt, loose (stream deposit)
	10	113	0		10		15			SM	Gray **SILTY SAND** with some gravel, loose (lagoonal deposit)
Sieve - #200 = 25.8%	35		0		4		20				
	29	119	0		8		25			MH	Gray **CLAYEY SILT** with a little fine sand and shells, very soft (lagoonal deposit)
LL=93 PI=43	92		0		WOH		30				
							35				

Date Started:	September 26, 2016	Water Level: ▽ 7.2 ft. 09/26/2016 0918 HRS ▼ 7.9 ft. 09/27/2016 0845 HRS	Plate
Date Completed:	September 28, 2016		
Logged By:	D. Gremminger	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 1.1
Total Depth:	121.17 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG 7414-00.GPJ GEOLABS.GDT 12/5/16

GEOLABS, INC.

Geotechnical Engineering

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Log of Boring 1

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
	60	60	43		5					MH	grades with sand and gravel (basaltic)
			53		50/1"		40			GW	Dark gray **SANDY GRAVEL (BASALTIC)** with some cobbles (basaltic), very dense (river channel deposit)
	74		43		14		45			MH	Orangish brown **CLAYEY SILT** with some sand, stiff (alluvium)
LL=74 PI=32	36		14		15		50				grades with some gravel and cobbles (basaltic)
TXUU S_u=2.5 ksf	65	62	60		24	1.5	55				
	61		0		11		60			MH	Brown **CLAYEY SILT** with some fine sand, stiff (alluvium)
TXUU S_u=1.2 ksf	58	69	0		12	1.5	65				
							70				

Date Started:	September 26, 2016	Water Level: ▽	7.2 ft. 09/26/2016 0918 HRS	Plate
Date Completed:	September 28, 2016	▼	7.9 ft. 09/27/2016 0845 HRS	
Logged By:	D. Gremminger	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 1.2
Total Depth:	121.17 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	
Work Order:	7414-00	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-00.GPJ GEOLABS.GDT 12/5/16

GEOLABS, INC.

Geotechnical Engineering

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Log of Boring

1

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) Description
LL=67 PI=32	60				8					MH	grades with some rounded gravel, medium stiff
	51	90	17		36/6" +50/2"		75	S			grades with dense cobbles (basaltic)
	16		63		50/3"		80				
UC= 26220 psi			81		50/1"		85				Gray **COBBLY BOULDERS (BASALTIC)** with a little gravel (basaltic) and seams of clayey silt, very dense (river deposit)
	58		31		27		90				
			0		50/2"		95				
	36		14		29		100			MH	Brown **CLAYEY SILT** with some fine sand, very stiff (alluvium)
							105				grades with a little gravel and cobbles

Date Started:	September 26, 2016	Water Level: ▽	7.2 ft. 09/26/2016 0918 HRS	Plate
Date Completed:	September 28, 2016	▼	7.9 ft. 09/27/2016 0845 HRS	
Logged By:	D. Gremminger	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	
Total Depth:	121.17 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	A - 1.3
Work Order:	7414-00	Driving Energy:	140 lb. wt., 30 in. drop	

GEOLABS, INC.

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HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Log of Boring

1

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
	7	81	87		50/5"		110			MH
			50				115			
			63		50/3"		120			
					50/2"		125			
							130			
							135			
							140			

(Continued from previous plate)

Description

Gray **COBBLY BOULDERS (BASALTIC)**, very dense (river deposit)

grades with seams of sandy silt with gravel

Boring terminated at 121.17 feet

* Elevations estimated from Topographic Survey Map transmitted by Michaels Development Company on November 30, 2016.

Date Started:	September 26, 2016	Water Level:	▽ 7.2 ft. 09/26/2016 0918 HRS		Plate
Date Completed:	September 28, 2016		▼ 7.9 ft. 09/27/2016 0845 HRS		
Logged By:	D. Gremminger	Drill Rig:	CME-75DG2	*(Energy Transfer Ratio = 81%)*	A - 1.4
Total Depth:	121.17 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring		
Work Order:	7414-00	Driving Energy:	140 lb. wt., 30 in. drop		

BORING_LOG 7414-00.GPJ GEOLABS.GDT 12/5/16

GEOLABS, INC.

Geotechnical Engineering

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Log of Boring

2

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet): 9.5 * **Description**
										SW	5-inch **ASPHALTIC CONCRETE**
	59	49			15					MH	Tan **GRAVELLY SAND (CORALLINE)** with some silt, medium dense, damp (fill)
	52				4						Brown **CLAYEY SILT** with some fine sand, soft, moist (recent alluvium)
	54	54			5	0.5	5				
										SC	Dark gray **CLAYEY SAND** with some gravel, very loose (lagoonal deposit)
Sieve - #200 = 38.3%	79		0		3		10				
										MH	Brown **CLAYEY SILT** with some fine sand, medium stiff to stiff (recent alluvium)
	49	74	0		17	1.0	15				
										SP	Dark gray **SAND** with a little silt and traces of gravel, medium dense (weathered volcanic tuff)
Sieve - #200 = 10.1%	34		0		17		20				grades with a little cobbles
	33	86	33		43		25				
	67		95		16		30				
							35				

Date Started:	September 28, 2016	Water Level: ▽ 7.2 ft. 09/28/2016 1209 HRS ▼ 7.6 ft. 09/29/2016 0829 HRS	Plate
Date Completed:	September 29, 2016		
Logged By:	D. Gremminger	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 2.1
Total Depth:	86 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG 7414-00.GPJ GEOLABS.GDT 12/5/16

GEOLABS, INC.

Geotechnical Engineering

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Log of Boring

2

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

(Continued from previous plate)

Description

Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
TXUU S_u=1.0 ksf	49	70	0		18	2.0	MH	Brownish gray **CLAYEY SILT** with some gravel and cobbles, very stiff (alluvium)
LL=68 PI=33	20		71	28	26			
	16	91	33	21			ML	Orangish brown **SANDY SILT** with some clay and gravel, very stiff (alluvium)
								grades with cobbles and boulders
	23		94	43	50/5"			Gray **BASALT**, severely to moderately fractured, moderately weathered, very hard (basalt formation)
			93	38	50/2"			
UC= 16090 psi			98	58	50/1"			
			92	28				

40 45 50 55 60 65 70

Date Started:	September 28, 2016	Water Level: ▽ 7.2 ft. 09/28/2016 1209 HRS	Plate
Date Completed:	September 29, 2016	▼ 7.6 ft. 09/29/2016 0829 HRS	
Logged By:	D. Gremminger	Drill Rig: CME-75DG2 *(Energy Transfer Ratio = 81%)*	A - 2.2
Total Depth:	86 feet	Drilling Method: 4" Solid Stem Auger & PQ Coring	
Work Order:	7414-00	Driving Energy: 140 lb. wt., 30 in. drop	

BORING_LOG 7414-00.GPJ GEOLABS.GDT 12/5/16

GEOLABS, INC.

Geotechnical Engineering

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Log of Boring

2

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

(Continued from previous plate)

Description

Core Recovery (%)	RQD (%)	Depth (feet)	Description
70	0	75	grades to severely fractured
87	67	80	grades to moderately to slightly fractured
80	65	85	
			Boring terminated at 86 feet
		90	
		95	
		100	
		105	

Date Started:	September 28, 2016	Water Level: ▽	7.2 ft. 09/28/2016 1209 HRS	Plate
Date Completed:	September 29, 2016	▼	7.6 ft. 09/29/2016 0829 HRS	
Logged By:	D. Gremminger	Drill Rig:	CME-75DG2 *(Energy Transfer Ratio = 81%)*	
Total Depth:	86 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring	A - 2.3
Work Order:	7414-00	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 7414-00.GPJ GEOLABS.GDT 12/5/16

Location	Depth	Soil Description	Dry Density	Moisture Contents			Ring Swell
				Initial	Air-Dried	Final	
	(feet)		(pcf)	(%)	(%)	(%)	(%)
B-1*	1.0 - 1.9	Dark brown clayey silt with some sand and gravel	78.9	26.3	17.7	35.6	0.0
B-2*	1.0 - 2.5	Brown clayey silt with some fine sand	50.2	61.9	46.4	75.1	0.0

NOTE: Samples tested were either relatively undisturbed or remolded in 2.4-inch diameter by 1-inch high rings. They were air-dried overnight and then saturated for 24 hours under a surcharge pressure of 55 psf.

* Relatively Undisturbed
** Remolded

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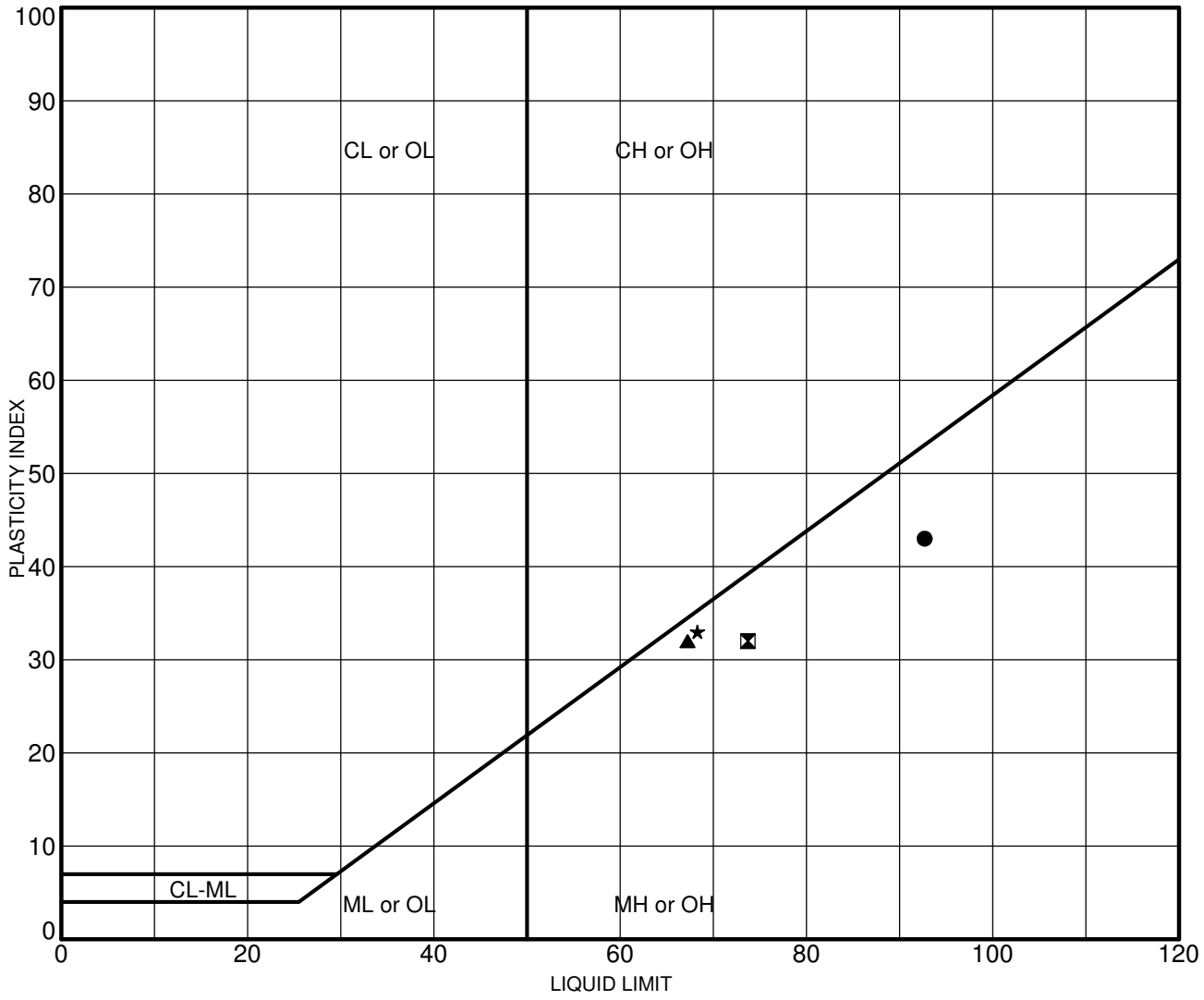
W.O. 7414-00

SUMMARY OF RING SWELL TESTS

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 1

G_RING_SWELL_TEST_7414-00.GPJ GEOLABS.GDT 12/5/16



	Sample	Depth (ft)	LL	PL	PI	Description
●	B-1	31.0-32.5	93	50	43	Gray clayey silt (MH) w/ a little fine sand & shells
⧓	B-1	51.0-52.5	74	42	32	Orangish brown clayey silt (MH) with some sand and gravel
▲	B-1	71.0-72.5	67	35	32	Brown clayey silt (MH) with some rounded gravel
★	B-2	41.0-42.5	68	35	33	Brownish gray clayey silt (MH) with some gravel

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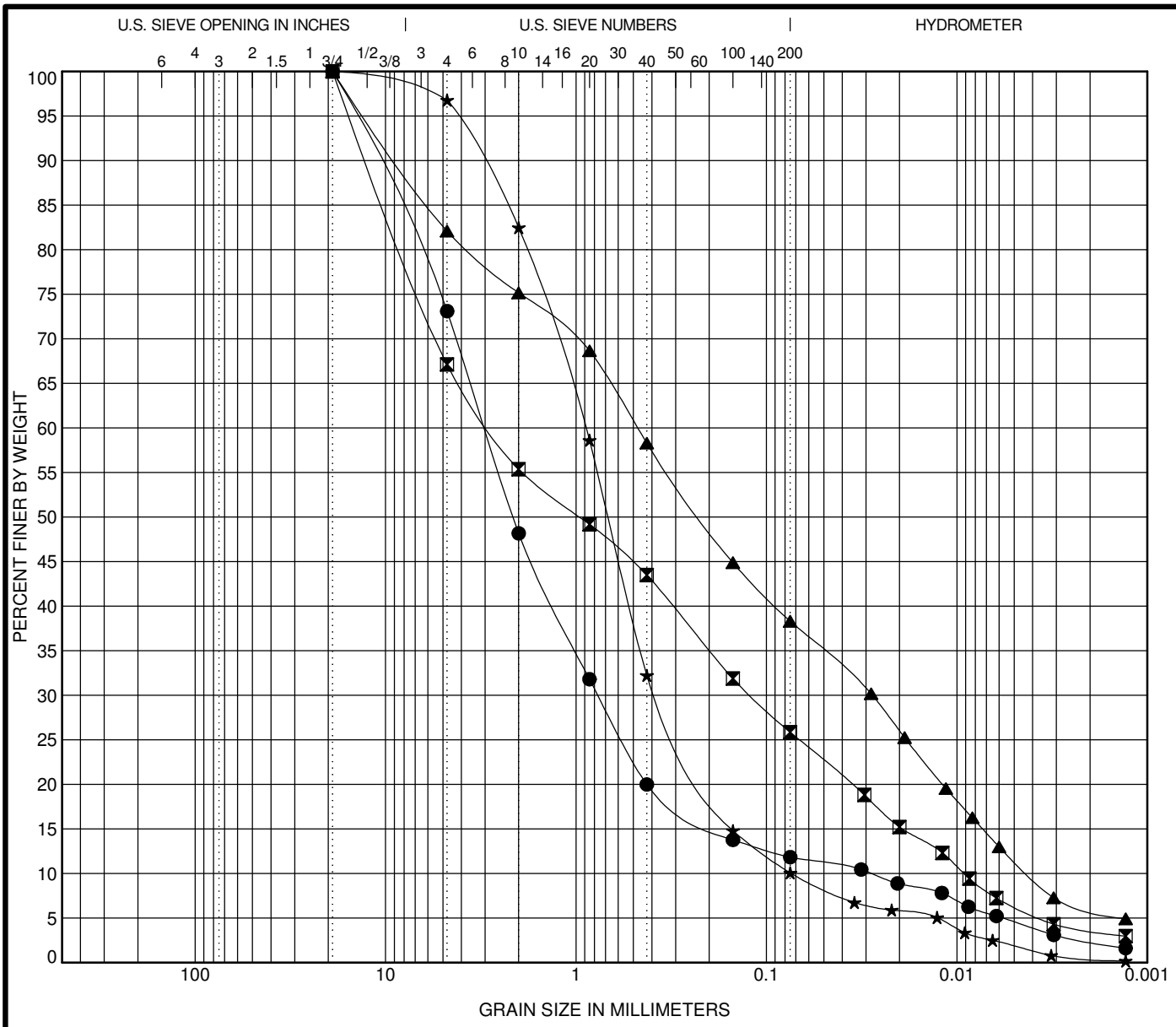
ATTERBERG LIMITS TEST RESULTS - ASTM D4318

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 2

G ATTERBERG PI-100 LL-120 7414-00.GPJ GEOLABS.GDT 12/5/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	B-1	10.0-11.5	Brownish gray gravelly sand (SP-SM) with a little silt				6.9	107.3
⊠	B-1	21.0-22.5	Gray silty sand (SM) with some gravel				0.6	306.4
▲	B-2	10.0-11.5	Dark gray clayey sand (SC) with some gravel				0.4	112.1
★	B-2	21.0-22.5	Dark gray sand (SW-SM) w/ a little silt & traces of gravel				2.1	12.1

	Sample	Depth (ft)	D100 (mm)	D60 (mm)	D30 (mm)	D10 (mm)	%Gravel	%Sand	%Fine
●	B-1	10.0-11.5	19	3.016	0.765	0.028	26.9	61.3	11.8
⊠	B-1	21.0-22.5	19	2.815	0.121	0.009	32.9	41.3	25.8
▲	B-2	10.0-11.5	19	0.477	0.028	0.004	17.9	43.8	38.3
★	B-2	21.0-22.5	19	0.893	0.372	0.074	3.2	86.7	10.1

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GRAIN SIZE DISTRIBUTION - ASTM C117, C136, & D422

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 3

G_GRAIN_SIZE_MOD_7414-00.GPJ GEOLABS.GDT 1/11/17

Location	Depth	Length	Diameter	Length/ Diameter Ratio	Density	Load	Compressive Strength
	(feet)	(inches)	(inches)		(pcf)	(lbs)	(psi)
B-1	86.08 - 91	6.820	3.230	2.11	182.7	214,810	26,220
B-2	61.08 - 66	6.750	3.260	2.07	183.0	134,280	16,090

ASTM D7012 (METHOD C)

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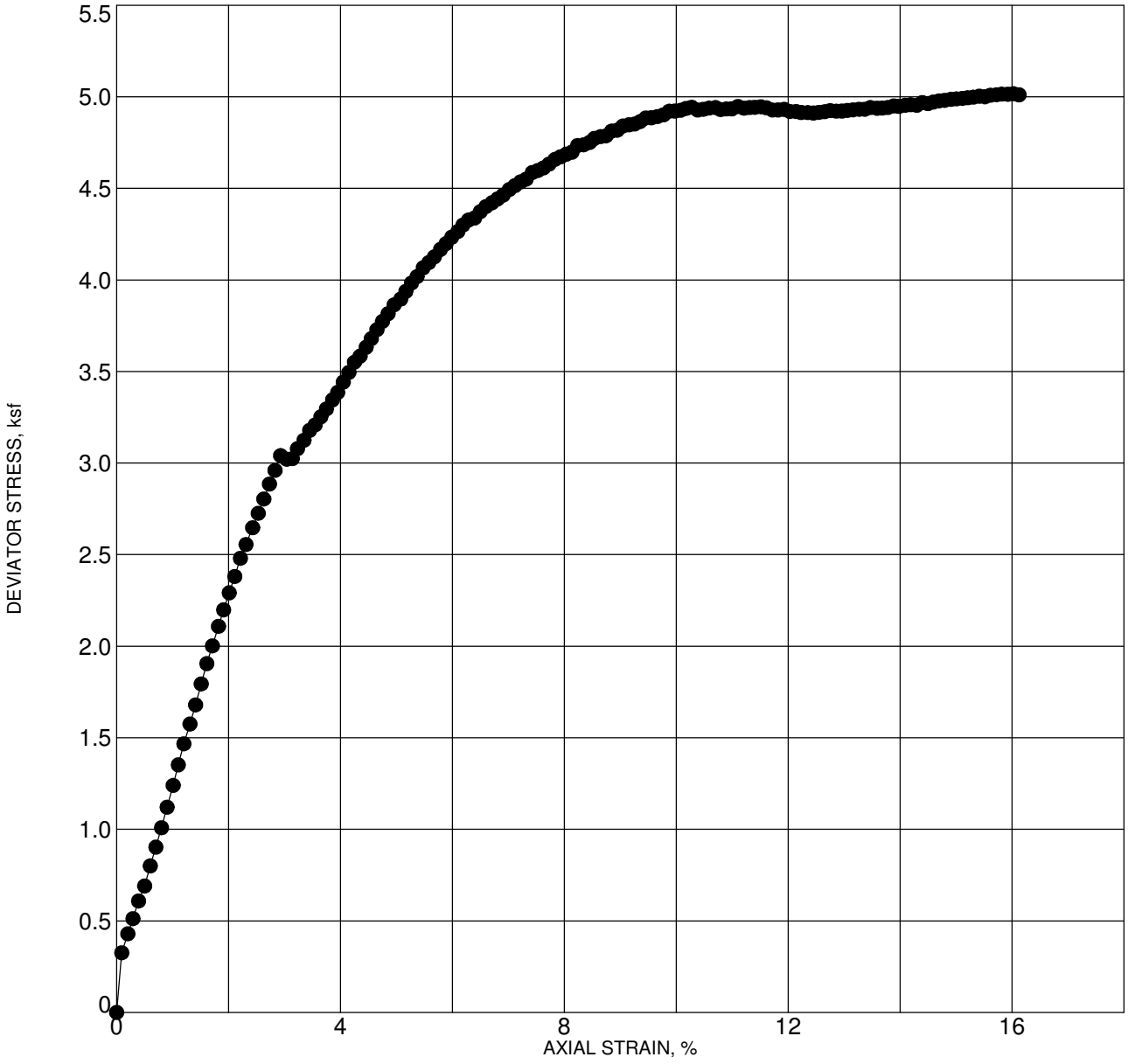
UNIAXIAL COMPRESSIVE STRENGTH TEST

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 4

G_ROCK_UC_TEST_PORTRAIT 7414-00.GPJ GEOLABS.GDT 12/5/16



Max. Deviator Stress (ksf):	5.0
Confining Stress (ksf):	2.3

Location: B-1
Depth: 56.0 - 57.5 feet
Description: Orangish brown clayey silt with some sand
Test Date: 11/14/2016

Dry Density (pcf)	62.2	Sample Diameter (inches)	2.353
Moisture (%)	64.9	Sample Height (inches)	4.953
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	1.02

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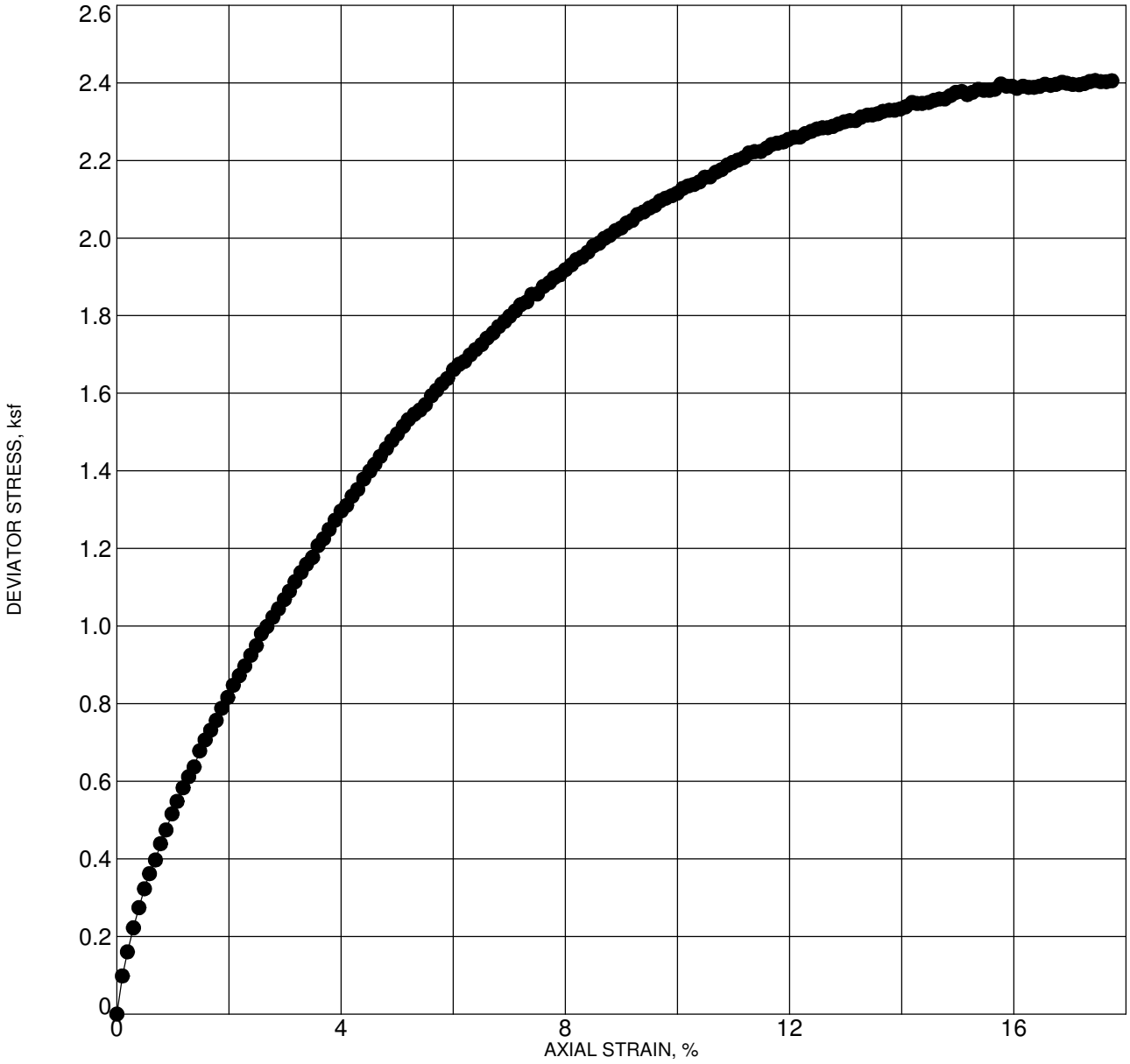
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 5

G_TXUU_7414-00.GPJ GEOLABS.GDT 1/10/17



Max. Deviator Stress (ksf):	2.4
Confining Stress (ksf):	2.7

Location: B-1
Depth: 66.0 - 67.5 feet
Description: Brown clayey silt with some fine sand
Test Date: 11/11/2016

Dry Density (pcf)	68.6	Sample Diameter (inches)	2.360
Moisture (%)	57.7	Sample Height (inches)	4.910
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	1.00

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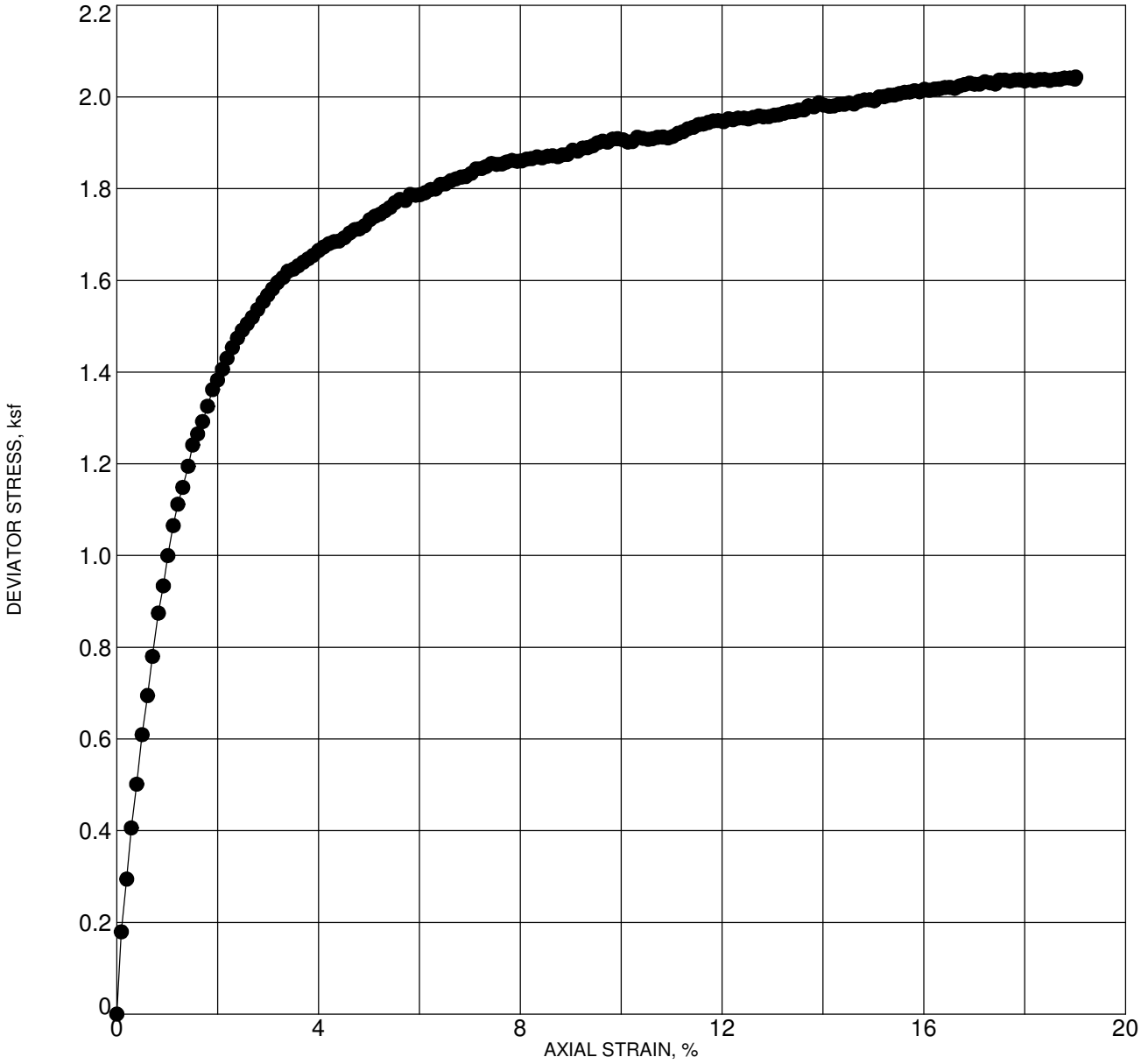
TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 6

G_TXUU 7414-00.GPJ GEOLABS.GDT 12/5/16



Max. Deviator Stress (ksf):	2.0
Confining Stress (ksf):	1.8

Location: B-2
Depth: 36.0 - 37.5 feet
Description: Brownish gray clayey silt with some gravel
Test Date: 11/11/2016

Dry Density (pcf)	69.8	Sample Diameter (inches)	2.387
Moisture (%)	49.4	Sample Height (inches)	4.910
Axial Strain at Failure (%)	15.0	Strain Rate (% / minute)	1.00

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TRIAXIAL UU COMPRESSION TEST - ASTM D2850

HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 7

G_TXUU 7414-00.GPJ GEOLABS.GDT 12/5/16

Location	Depth (feet)	pH Value	Minimum Resistivity (ohm-cm)	Chloride Content (mg/kg)	Sulfate Content (mg/kg)
B-1	5.0 - 6.5	7.40	2,300	19	82

TEST METHODS (by TestAmerica Laboratories, Inc.)

pH Value	Method 9045C
Minimum Resistivity	SM 2510B
Chloride Content	EPA 300.0
Sulfate Content	EPA 300.0

TEST METHODS (by Geolabs, Inc.)*

pH Value	ASTM G51
Minimum Resistivity	ASTM G57
Chloride Content	N/A
Sulfate Content	N/A

ND: Not Detected Within Reporting Limits

GEOLABS, INC.

GEOTECHNICAL ENGINEERING

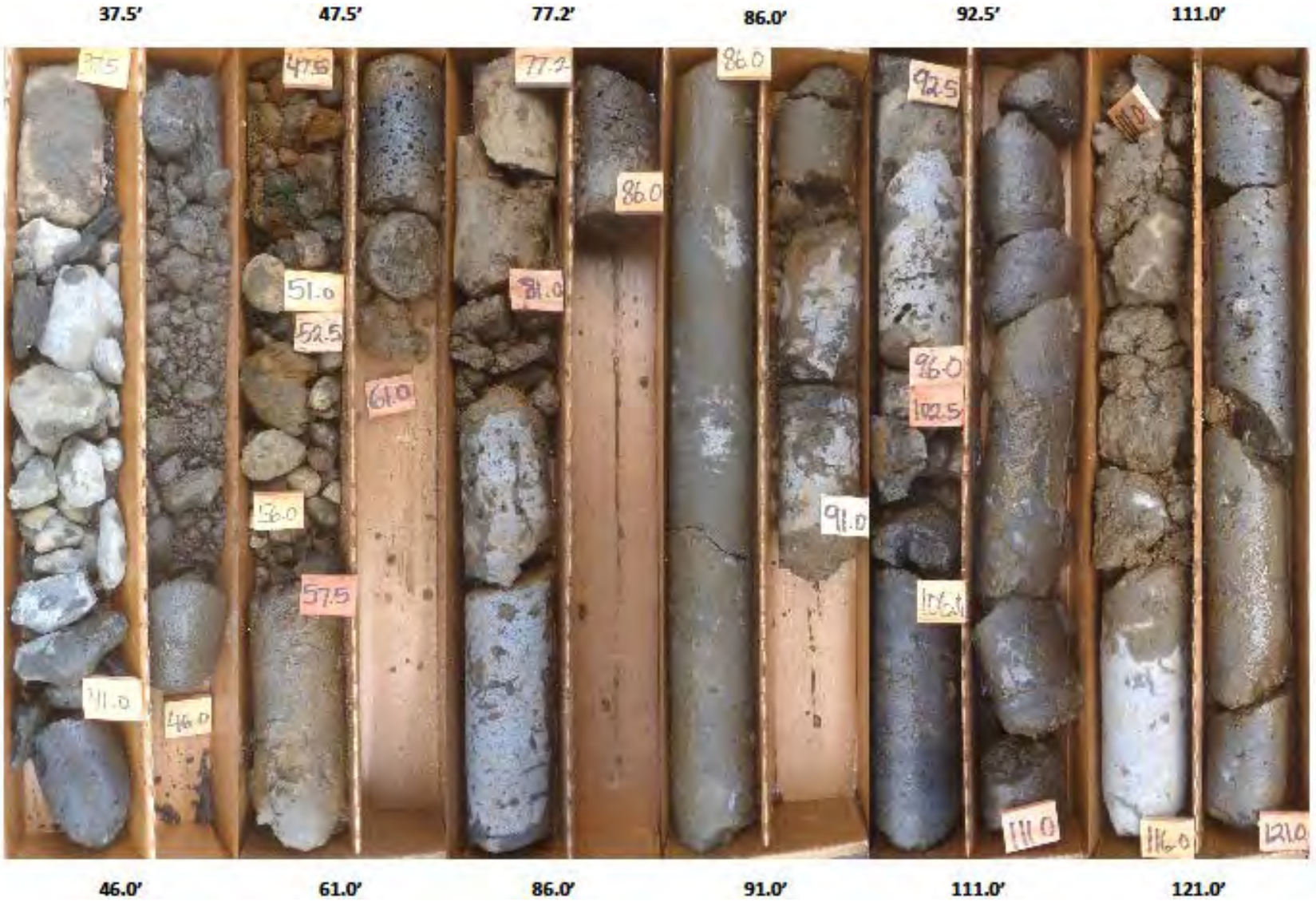
W.O. 7414-00

SUMMARY OF CORROSIVITY TESTS

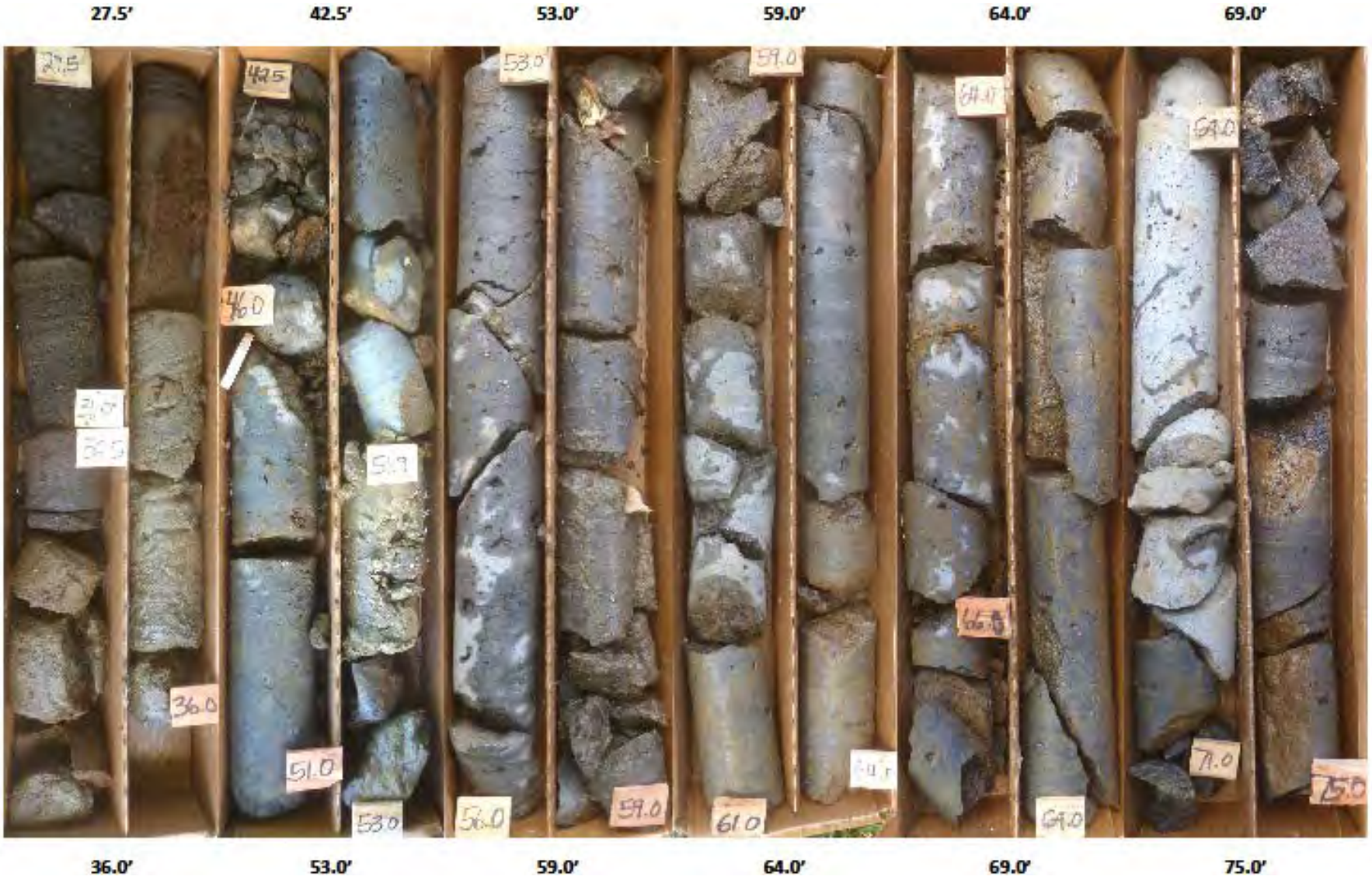
HALEWAI`OLU SENIOR RESIDENCES
1333 RIVER STREET
HONOLULU, OAHU, HAWAII

Plate
C - 8

B-1 37.5' TO 121.0'



B-2 27.5' TO 75.0'


27.5'
42.5'
53.0'
59.0'
64.0'
69.0'
27.5
42.5
53.0
59.0
64.0
69.0
36.0
51.0
53.0
56.0
59.0
61.0
69.0
71.0
75.0
36.0'
53.0'
59.0'
64.0'
69.0'
75.0'

B-2 75.0' TO 86.0'

75.0' **80.0'**



80.0' **86.0'**

Appendix G

Acoustic Study
Y. Ebisu & Associates
April 2019
Amended September 26, 2019

Y. Ebisu & Associates

Acoustical and Electronic Engineers

1126 12th Ave., Room 305
Honolulu, Hawaii 96816
Ph. (808) 735-1634
email: ebisuyassoc@aol.com

YEA Job #57.010
September 26, 2019

Halewai`olu Senior Development LLC
c/o Michaels Development
737 Bishop Street, Suite 1520
Honolulu, HI 96813

Attention: Questor Lau, AIA
Development Officer

Subject: April 2019 Noise Study Report ; Halewai`olu Senior Residences; 1221 River Street

Dear Mr. Lau:

In my noise study report dated April 2019, I had assumed that project build-out would be in Year 2021. The forecasted traffic noise levels in Year 2021 at the faces of the project's residential tower were shown in Table 5 on Page 21 of my report. As indicated in my report, receptors at the residential tower's mauka face (Locations T1 Mauka) were predicted to have the highest traffic noise levels in 2021, ranging as high as 64 to 65 DNL.

When rounding to the nearest 0.1 DNL, the Year 2021 noise level predictions in Table 5 ranged from 64.3 to 64.9 DNL along the residential tower's mauka face. Traffic noise levels are expected to increase by 0.5 DNL from Year 2021 to Year 2029 as indicated in the noise study report, with annual increases being approximately 0.06 DNL per year between Year 2021 and Year 2029. The extrapolated Year 2022 noise level predictions then fall within a range of values from 64.4 to 65.0 DNL along the residential tower's mauka face, when rounded to the nearest 0.1 DNL.

The results of the calculations above indicate that the DNL forecasts for Year 2022 at receptors located closest to the 65 DNL exposure level zone should be identical to the Year 2021 values of Table 5 on Page 21 of my report when rounded to the nearest 1 DNL unit. For this reason, traffic noise mitigation measures should also not be required in Year 2022.

Sincerely,

Yochi Ebisu, P.E.

ACOUSTIC STUDY FOR THE HALEWAI`OLU SENIOR RESIDENCES PROJECT HONOLULU, OAHU, HAWAII

Prepared for:

HALEWAI`OLU SENIOR DEVELOPMENT, LLC

Prepared by:

Y. EBISU & ASSOCIATES
1126 12th Avenue, Room 305
Honolulu, Hawaii 96816

APRIL 2019

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CHAPTER I. SUMMARY

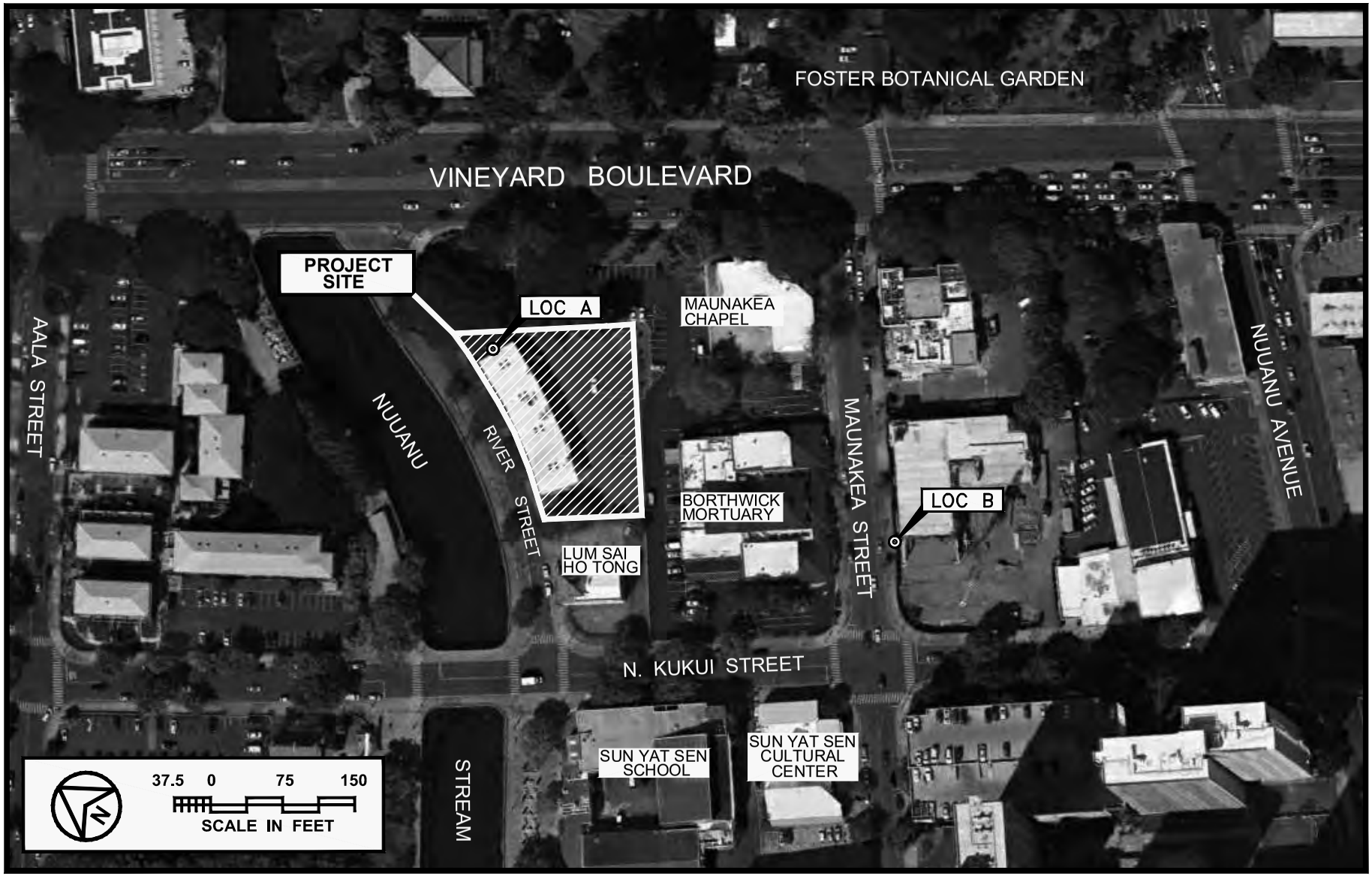
The existing and future traffic noise levels in the vicinity of the proposed Halewai`olu Senior Residences Project (see Figure 1) were evaluated for their potential impacts and their relationship to the current FHA/HUD (Federal Housing Administration/Housing and Urban Development) noise standard. The traffic noise level increases along the access roadways to and from the project site were calculated. No significant increases in traffic noise are predicted to occur along Vineyard Boulevard River Street, North Kukui Street, or Maunakea Street as a result of project plus non-project traffic following project build-out by CY 2021. The increases in future traffic noise levels resulting from project traffic are predicted to range from 0.0 to 0.2 DNL (Day-Night Average Sound Level). Traffic noise from Vineyard Boulevard will continue to control background ambient noise levels in the immediate project environs.

Future traffic noise levels are predicted to not exceed the FHA/HUD standard of 65 DNL at all units of the project's proposed residential tower building through 2021. Noise mitigation measures in the form of the use of sliding windows and consideration of the use of selected building materials at the residential units is recommended to minimize potential noise impacts from future traffic noise. Compliance with the FHA/HUD 65 DNL noise standard may be possible by CY 2029, but will require traffic noise mitigation measures at any residential unit located along the mauka (north) face of the proposed tower building. These required mitigation measures include the use of a solid mauka wall and non-operable windows or doors along the mauka face of the tower, or the use of closure and air conditioning of all rooms which are located along the mauka wall of the residential tower.

The Halewai`olu Senior Residences Project traffic will not increase the future traffic noise along a high volume and high noise level roadway such as Vineyard Boulevard because of the very low volume of project traffic anticipated to use that roadway. The total increases in future traffic noise levels along this high volume roadway resulting from project and non-project traffic are predicted to be 0.0 and 0.2 DNL, respectively, by CY 2021. An additional increase of 0.5 DNL by 2029 is predicted along Vineyard Boulevard as a result of non-project traffic.

Similar increases in traffic noise levels of 0.2 to 0.4 DNL are predicted to occur along North Kukui and Maunakea Streets as a result of project and non-project traffic by CY 2021. Increases of 3.1 and 0.2 DNL are anticipated along River Street as a result of non-project and project traffic, respectively. However, these increases will be difficult to measure or perceive. The 3.1 DNL increase along River Street is not considered to be significant because of the relatively low existing noise levels along that roadway.

Unavoidable, but temporary, noise impacts may occur during the excavation and building erection activities within the project area, and particularly during the earthwork activities on the project site. Because construction activities are predicted to be audible



PROJECT LOCATION MAP AND NOISE MEASUREMENT LOCATIONS

FIGURE 1

within the project site and at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, but the use of quiet equipment is recommended as a standard mitigation measure. The implementation of Hawaii State Department of Health permit procedures and curfew periods for construction activities is also expected for this project.

CHAPTER II. PURPOSE

The primary objective of this study was to describe the existing and future noise environment in the environs of the proposed Halewai`olu Senior Residences Project on the island of Oahu. Traffic noise level increases and impacts associated with the proposed development were to be determined along the public roadways which are expected to service the project related traffic. A specific objective was to determine future traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases.

Potential noise impacts at planned senior housing and commercial units of the project due to traffic noise were also evaluated. Assessments of possible future impacts from short term construction noise at the project site were also included as noise study objectives. Recommendations for minimizing identified noise impacts were also to be provided as required.

CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies (such as FHA/HUD) to assess environmental noise is the Day-Night Average Sound Level (Ldn or DNL). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the DNL descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the DNL descriptor. A more complete list of noise descriptors is provided in Appendix B to this report.

Table 1, derived from Reference 1, presents current federal noise standards and acceptability criteria for residential land uses. Land use compatibility guidelines for various levels of environmental noise as measured by the DNL descriptor system are shown in Figure 2. As a general rule, noise levels of 55 DNL or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, DNL levels generally range from 55 to 65 DNL, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 DNL, and as high as 75 DNL when the roadway is a high speed freeway. In the project area, traffic noise levels along the Rights-of-Way of Vineyard Boulevard are greater than 65 DNL due to the large volumes of traffic and heavy vehicles (trucks and buses) on this major thoroughfare.

For purposes of determining noise acceptability for funding assistance from federal agencies (FHA/HUD and VA), an exterior noise level of 65 DNL or less is considered acceptable for residences and other noise sensitive uses. This standard is applied nationally (Reference 2), including Hawaii. Because of our open-living conditions, the predominant use of naturally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 DNL does not eliminate all risks of noise impacts. Because of these factors, and as recommended in Reference 3, a lower level of 55 DNL is considered to be the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. However, after considering the cost and feasibility of applying the lower level of 55 DNL, government agencies such as FHA/HUD and VA have selected 65 DNL as a more appropriate regulatory standard.

For commercial, industrial, and other non-noise sensitive land uses, exterior noise levels as high as 75 DNL are generally considered acceptable. Exceptions to this occur when naturally ventilated office and other commercial establishments are exposed to exterior levels which exceed 65 DNL.

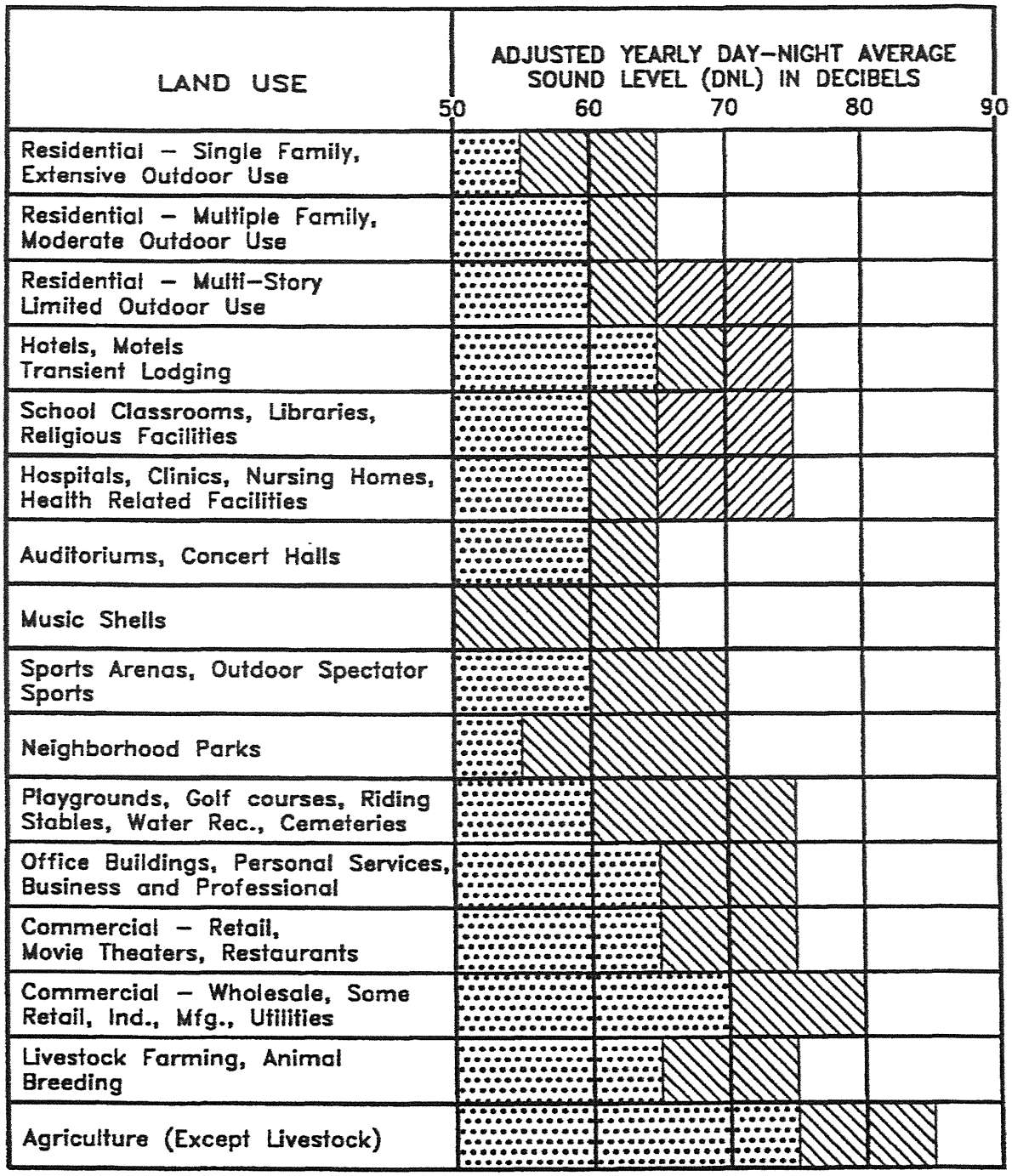
TABLE 1

EXTERIOR NOISE EXPOSURE CLASSIFICATION (RESIDENTIAL LAND USE)

NOISE EXPOSURE CLASS	DAY–NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL (1) STANDARD
Minimal Exposure	Not Exceeding 55 DNL	Not Exceeding 55 Leq	Unconditionally Acceptable
Moderate Exposure	Above 55 DNL But Not Above 65 DNL	Above 55 Leq But Not Above 65 Leq	Acceptable(2)
Significant Exposure	Above 65 DNL But Not Above 75 DNL	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe Exposure	Above 75 DNL	Above 75 Leq	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 Leq.



LAND USE COMPATIBILITY WITH YEARLY AVERAGE DAY-NIGHT AVERAGE SOUND LEVEL (DNL) AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED.
(Source: American National Standards Institute S12.9-1998/Part 5)

FIGURE 2

On the island of Oahu, the State Department of Health (DOH) regulates noise from fixed mechanical equipment and construction activities. State DOH noise regulations are expressed in maximum allowable noise limits rather than DNL (see Reference 4). Although they are not directly comparable to noise criteria expressed in DNL, State DOH noise limits for single family residential lands equate to approximately 55 DNL. For multifamily residential, commercial, and resort lands, the State DOH noise limits equate to approximately 60 DNL. For light and heavy industrial lands, the State DOH noise limits equate to approximately 76 DNL. Construction activities, which are typically noisier than the State DOH noise limits, are regulated through the issuance of permits for allowing excessive construction noise during limited time periods.

CHAPTER IV. GENERAL STUDY METHODOLOGY

Existing traffic and background ambient noise level measurements were obtained in the project environs during March 2019. These readings were used to provide a basis for describing the existing noise environment in the project environs. Traffic noise measurements along Vineyard Boulevard and Maunakea Street were obtained at Locations A and B, respectively, as shown in Table 2. The locations of these two measurement sites are shown in Figure 1. Location A was at the second floor landing of an existing commercial building on the project site. Location B was at ground level fronting Maunakea Street.

Traffic noise calculations for the existing conditions as well as noise predictions for CY 2021 were performed using the Federal Highway Administration (FHWA) Traffic Noise Model Version 2.5 (Reference 5). Traffic data entered into the noise prediction model were: roadway and receiver locations; hourly traffic volumes, average vehicle speeds; estimates of traffic mix; and "Loose Soil" and "Pavement" propagation loss factors. The traffic data and forecasts for the project (References 6 and 7) were the primary sources of data inputs to the model. Hourly traffic volume and vehicle classification counts for Vineyard Boulevard provided by the State Department of Transportation, Highways Division (HDOT, References 8 and 9) were used to describe existing traffic volumes and traffic noise levels along Vineyard Boulevard. Appendix C summarizes the AM and PM peak hour traffic volumes for CY 2019 and 2021 which were available from the project's traffic study and the HDOT data for Vineyard Boulevard. For existing and future traffic along the streets surrounding the project site, it was assumed that the average noise levels, or Leq(h), during the PM peak traffic hour were approximately 1.0 greater than the 24-hour DNL, and during the AM peak traffic hour were equal to the 24-hour DNL. These assumptions were based on calculated traffic noise levels using the traffic and classification counts from References 8 through 9, which are shown graphically in Figure 3. In Figure 3, the HDOT hourly traffic volumes for April 18, 2018 were used in conjunction with the average hourly vehicle mixes developed from the HDOT April 17 and 18, 2019 classification data.

Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level and elevated receptors. Traffic noise levels were also calculated for future conditions with (Build Alternative) and without (No Build Alternative) the proposed project. Along Vineyard Boulevard, it was assumed that the addition of project traffic would not alter future traffic traffic noise levels along that roadway in 2021 or 2029. The forecasted changes in traffic noise levels over existing levels were calculated with and without the Halewai`olu Senior Residences Project, and noise impact risks evaluated. The relative contributions of the project's traffic to the total noise levels along the roadways surrounding the project site were also calculated, and an evaluation of possible traffic noise impacts was made.

Calculations of average exterior and interior noise levels from construction

TABLE 2

TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

LOCATION	Time of Day (HRS)	Ave. Speed (MPH)	Hourly Traffic Volume AUTO	M.TRUCK	H.TRUCK	Measured Leq (dB)	Predicted Leq (dB)
A. 180 FT from the centerline of Vineyard Boulevard (3/19/19)	0733 TO 0830	34	1,177	20	58	59.8 58.5*	
A. 180 FT from the centerline of Vineyard Boulevard (3/19/19)	0745 TO 0845	34	1,196	22	57	59.4	59.5
A. 180 FT from the centerline of Vineyard Boulevard (3/19/19)	0800 TO 0900	34	1,170	16	48	59.1	
A. 180 FT from the centerline of Vineyard Boulevard (3/19/19)	1515 TO 1615	40	1,482	13	21	59.8	
A. 180 FT from the centerline of Vineyard Boulevard (3/19/19)	1530 TO 1630	40	1,463	13	20	60.3 60.1*	60.0
A. 180 FT from the centerline of Vineyard Boulevard (3/19/19)	1545 TO 1645	40	1,471	11	15	59.9	

TABLE 2 (CONTINUED)

TRAFFIC AND BACKGROUND NOISE MEASUREMENT RESULTS

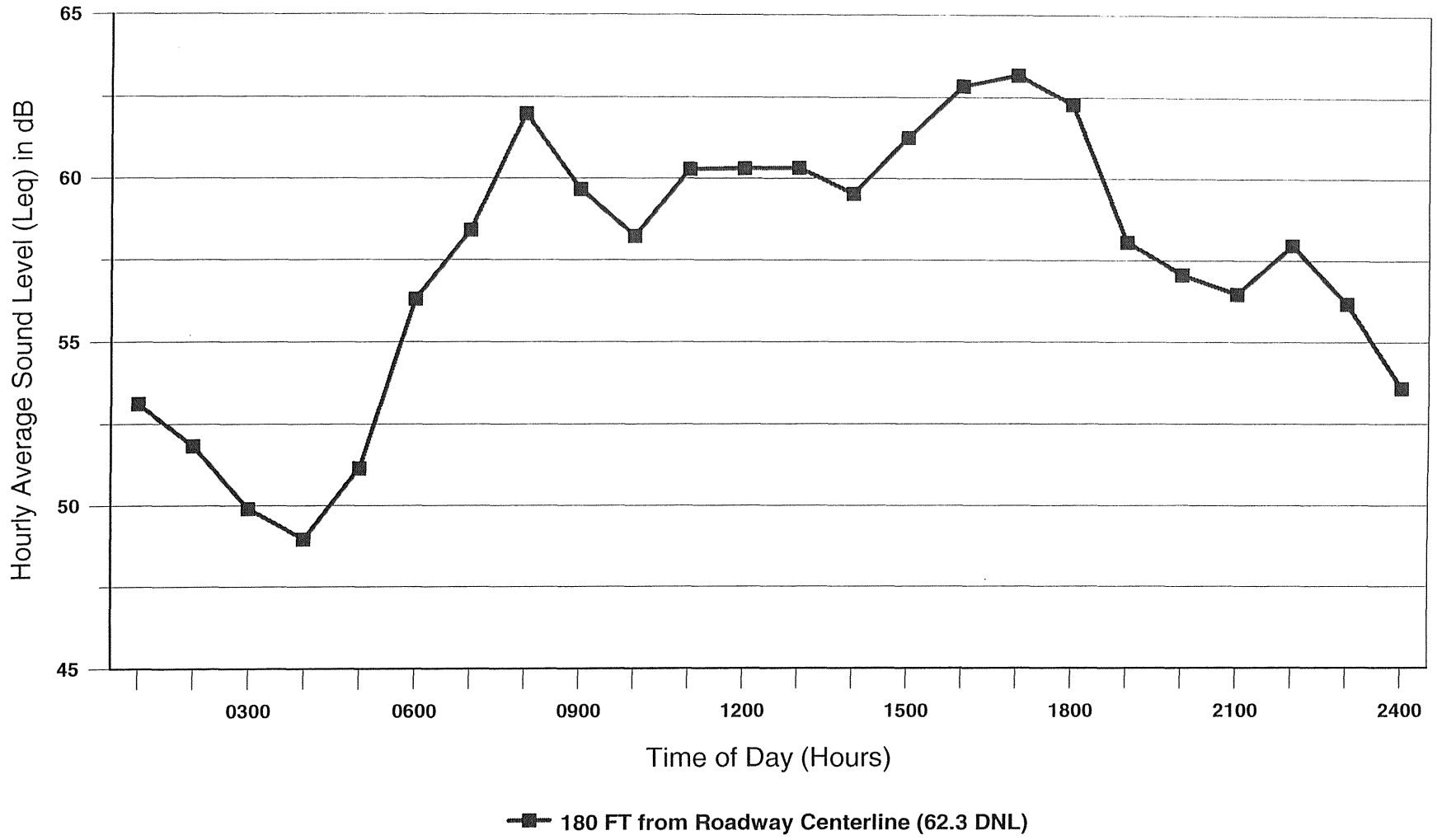
LOCATION	Time of Day (HRS)	Ave. Speed (MPH)	Hourly Traffic Volume -------- AUTO	M.TRUCK	H.TRUCK	Measured Leq (dB)	Predicted Leq (dB)
B. 34 FT from the centerline of Maunakea Street (3/28/19)	0730 TO 0830	31	360	6	4	62.0 **	62.1
B. 34 FT from the centerline of Maunakea Street (3/28/19)	1530 TO 1630	31	399	15	5	63.2	63.3

Notes:

* Measured traffic noise level with siren contribution removed.

** Noise contribution from refuse vehicle removed from traffic noise measurement.

FIGURE 3
HOURLY TRAFFIC NOISE LEVELS VS. TIME OF DAY
VINEYARD BLVD. BETWEEN AALA ST. AND RIVER ST.; 4/18/18 WITH 2-DAY AVE. MIX



activities were performed for typical naturally ventilated and air conditioned dwellings. Predicted noise levels were compared with existing background ambient noise levels, and the potential for noise impacts was assessed.

V. EXISTING ACOUSTICAL ENVIRONMENT

The major contributor to the existing background ambient noise levels within the project area are traffic along Vineyard Boulevard. The typical hourly variations in noise levels within the immediate project area are controlled by motor vehicle traffic along Vineyard Boulevard. Although a 100+ foot buffer exists between the project site and Vineyard Boulevard, minimal noise shielding exists on the mauka side of the project site. Traffic noise levels tend to be lowest during the early morning hours between 3:00 and 4:00 AM, and tend to be highest during the AM and PM peak commuting hours. Figures 4 and 5 present the measured variations of traffic noise levels obtained at Location A during the AM and PM peak traffic hours, respectively. Figures 6 and 7 present the measured variations of traffic noise levels obtained at Location B during the AM and PM peak traffic hours, respectively.

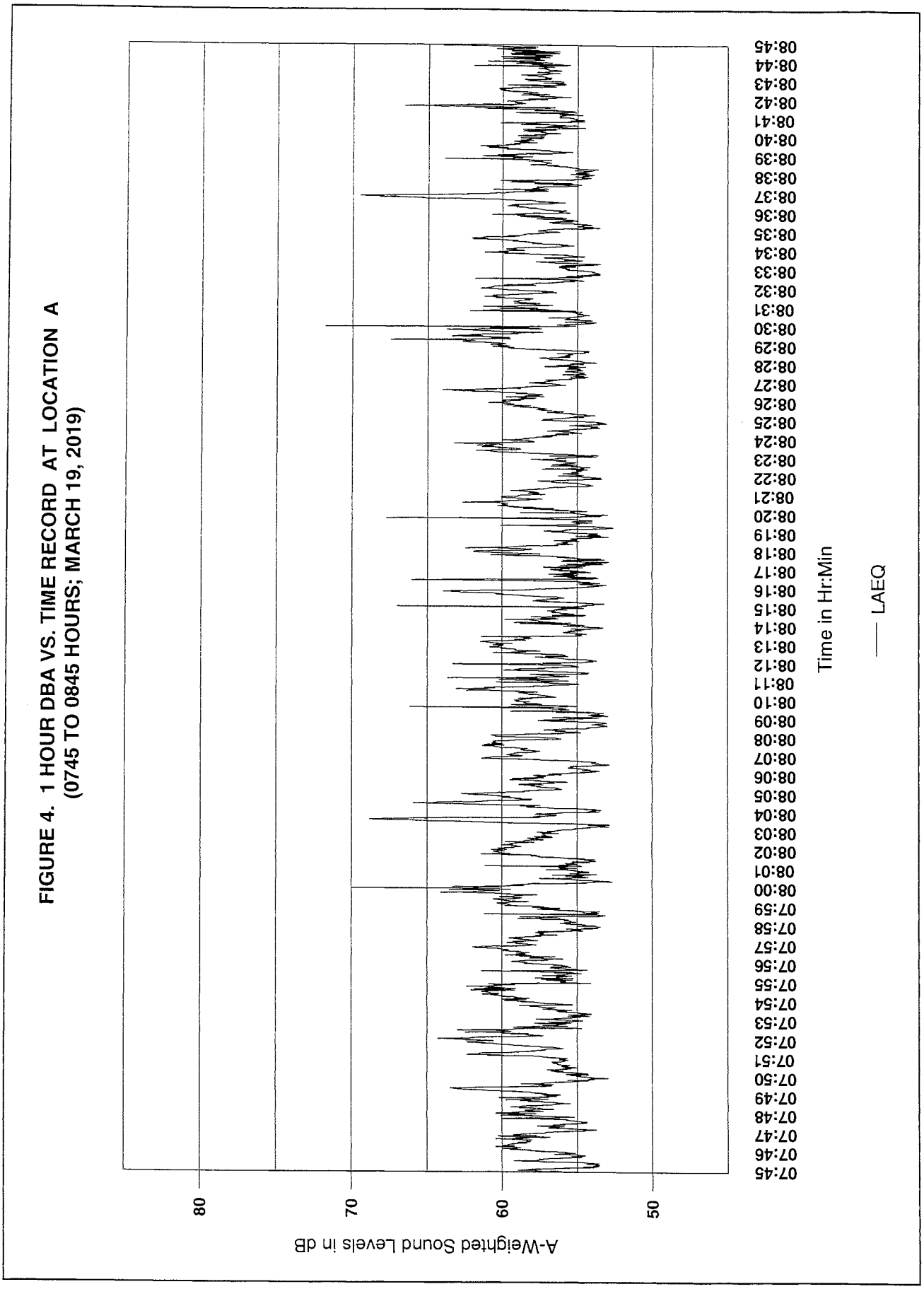
The existing AM or PM peak hour traffic volumes and their noise contributions at 50, 75, and 100 feet setback distances from the centerlines of the roadways servicing the proposed Halewai`olu Senior Residences Project are shown in Appendix C and Table 3. The corresponding setback distances from the roadways' centerlines to their corresponding 65, 70, and 75 DNL traffic noise contours for ground level receptors are shown in Table 4. Based on the results shown in Tables 3 and 4, as well as the measured sound levels at Locations A and B, it was concluded that existing background noise levels in the project environs currently do not exceed 65 DNL at ground level on the project site or at existing buildings along River Street, North Kukui Street, and Maunakea Street. The existing traffic noise levels at essentially all existing buildings which front Vineyard Boulevard probably exceed 65 DNL.

At low and mid-rise receptor locations which are partially shielded from distant traffic noise, existing background ambient noise levels can be lower due to the noise shielding effects of the buildings. Noise reductions of 5 to 15 dBA can be expected from these noise shielding effects.

Table 5 presents the calculations of existing traffic noise levels in DNL at various locations on the project site and at the various faces of the proposed Halewai`olu Senior Residences tower for various receptor elevations up to 144 feet above ground level. The beneficial effects of shielding from existing buildings, as well as the additive noise contributions from the adjoining streets, are included in the existing sound level calculations shown in Table 5. Figure 8 depicts the various receptor locations of Table 5 in relationship to the various faces of the planned Halewai`olu Senior Residences Project buildings.

As indicated in Table 5, the existing noise levels at the proposed faces of the proposed tower building are highest on the Vineyard Boulevard (north or mauka) side, and are lowest on the south (or makai) side. Existing traffic noise levels at the high elevations on the east, west, and south faces (without the tower structure in place) are currently less than 65 DNL, and are expected to decrease following construction of the

FIGURE 4. 1 HOUR DBA VS. TIME RECORD AT LOCATION A
(0745 TO 0845 HOURS; MARCH 19, 2019)



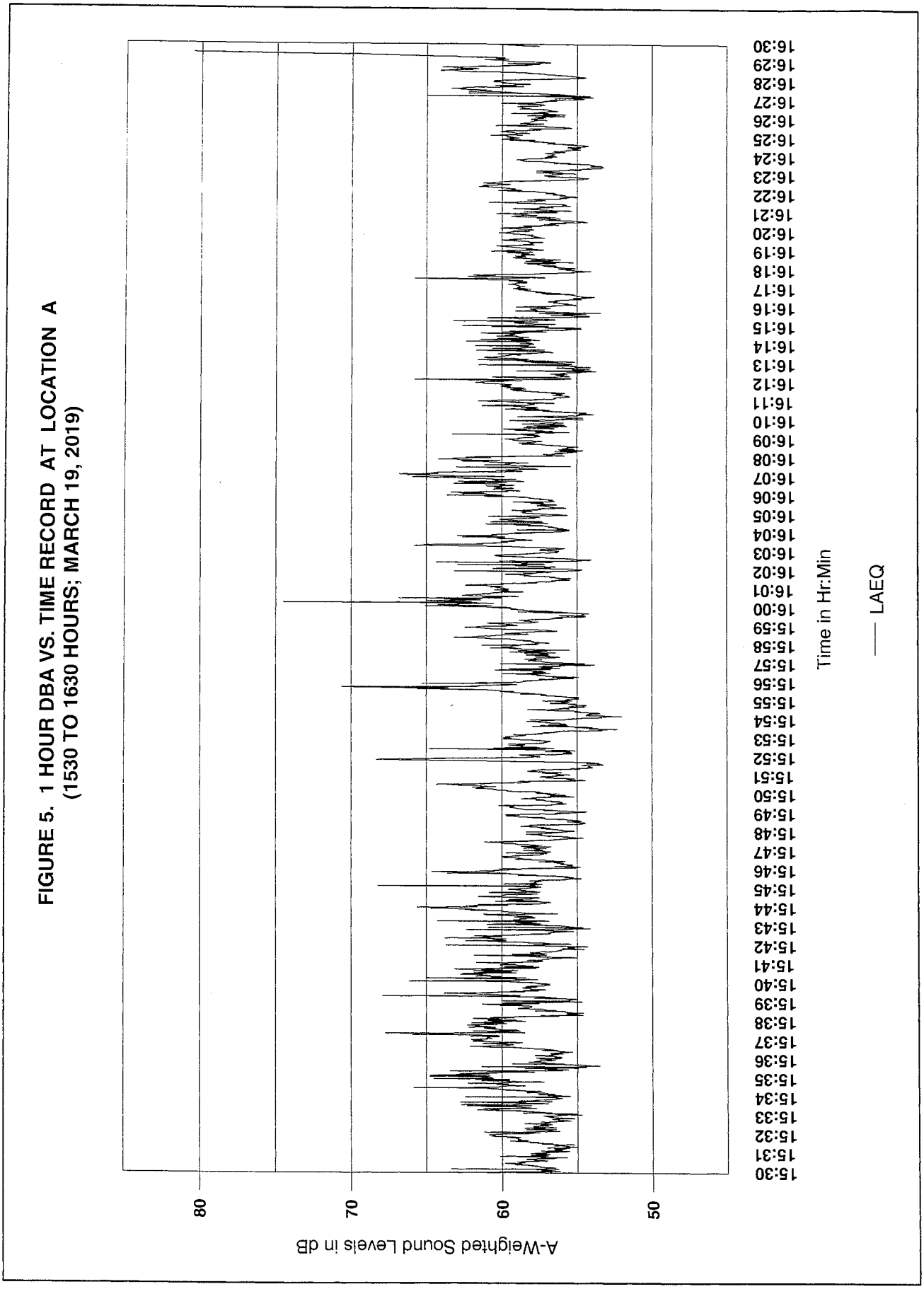


FIGURE 5. 1 HOUR DBA VS. TIME RECORD AT LOCATION A
(1530 TO 1630 HOURS; MARCH 19, 2019)

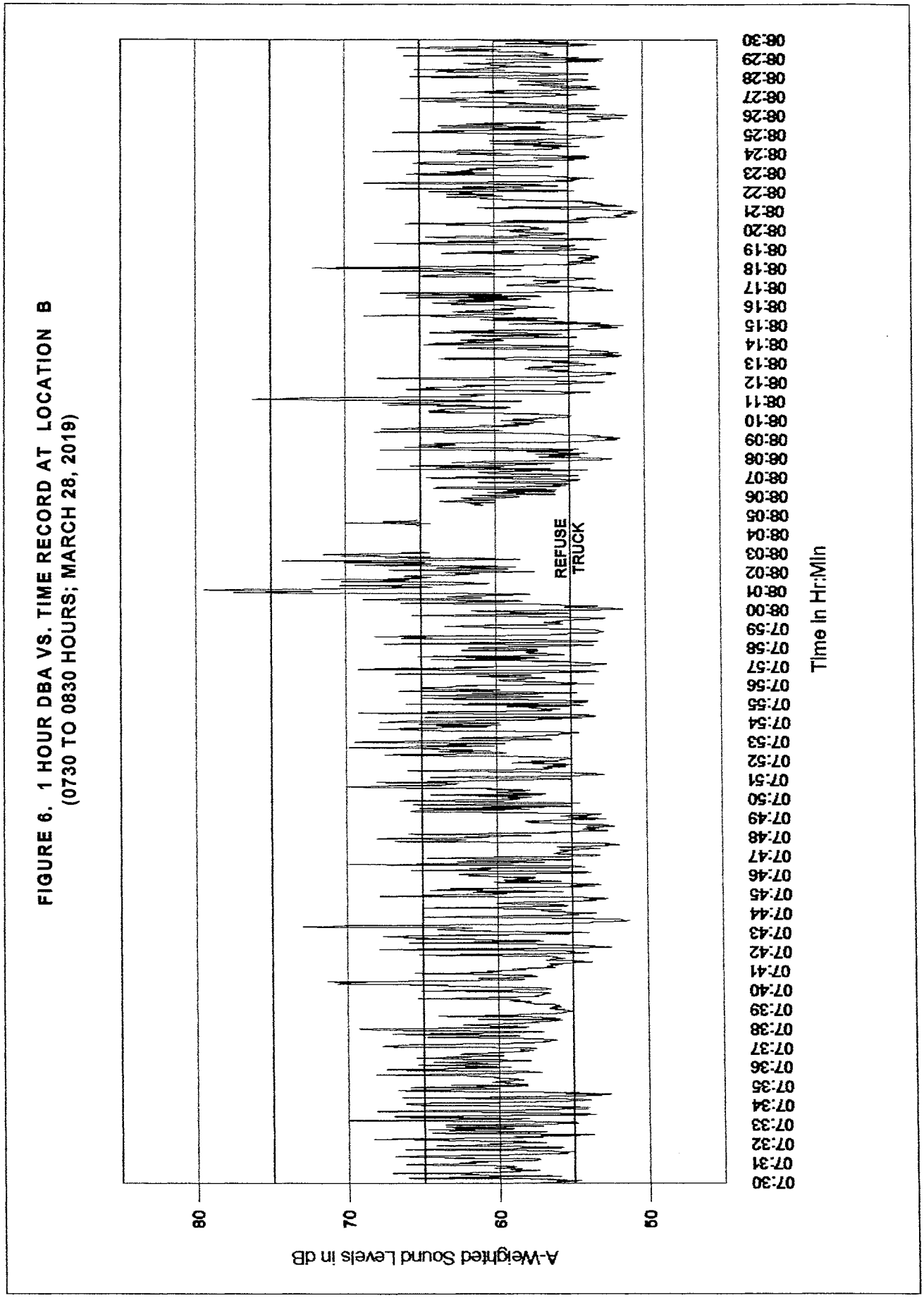


FIGURE 6. 1 HOUR DBA VS. TIME RECORD AT LOCATION B
(0730 TO 0830 HOURS; MARCH 28, 2019)

FIGURE 7. 1 HOUR DBA VS. TIME RECORD AT LOCATION B
(1530 TO 1630 HOURS; MARCH 28, 2019)

TABLE 3

EXISTING (CY 2019) TRAFFIC VOLUMES AND NOISE LEVELS ALONG ROADWAYS IN PROJECT AREA (AM OR PM PEAK HOUR)

LOCATION	SPEED (MPH)	TOTAL VPH	****** VOLUMES (VPH) ******** AUTOS	M TRUCKS	H TRUCKS	50' Leq	75' Leq	100' Leq
Vineyard Blvd., PM	40	1,880	1,739	70	71	73.5	70.5	68.8
Maunakea St. N. of N. Kukui St., PM	31	562	535	20	7	62.6	60.9	59.6
Maunakea St. S. of N. Kukui St., AM	31	657	639	11	7	62.8	61.0	59.7
N. Kukui St. W. of River St., AM	31	424	412	7	5	60.9	59.1	57.9
N. Kukui St. Between River & Maunakea St., AM	31	427	415	7	5	61.0	59.2	57.9
N. Kukui St. E. of Maunakea St., PM	31	591	563	21	7	62.8	61.1	59.8
River St. N. of N. Kukui St., PM	31	34	33	1	0	49.4	47.7	46.5

TABLE 4

EXISTING AND CY 2021 DISTANCES TO 65, 70, AND 75 DNL CONTOURS

STREET SECTION	65 DNL SETBACK (FT) EXISTING	65 DNL SETBACK (FT) CY 2021	70 DNL SETBACK (FT) EXISTING	70 DNL SETBACK (FT) CY 2021	75 DNL SETBACK (FT) EXISTING	75 DNL SETBACK (FT) CY 2021
Vineyard Boulevard	161	166	46	48	36	37
Maunakea St. North of N. Kukui St.	22	25	< 12	< 12	< 12	< 12
Maunakea St. South of N. Kukui St.	30	31	< 12	< 12	< 12	< 12
N. Kukui St. West of River St.	20	21	< 12	< 12	< 12	< 12
N. Kukui St. Between River and Maunakea Streets	20	21	< 12	< 12	< 12	< 12
N. Kukui St. East of Maukanke St.	23	26	< 12	< 12	< 12	< 12
River St. North of N. Kukui St.	< 12	< 12	< 12	< 12	< 12	< 12

Notes:

(1) All setback distances are from the roadways' centerlines.
(2) See Tables 3 and 6 for traffic volume, speed, and mix assumptions.
(3) Setback distances are for ground level receptors.
(4) "Pavement" conditions assumed along all roadways.

TABLE 5

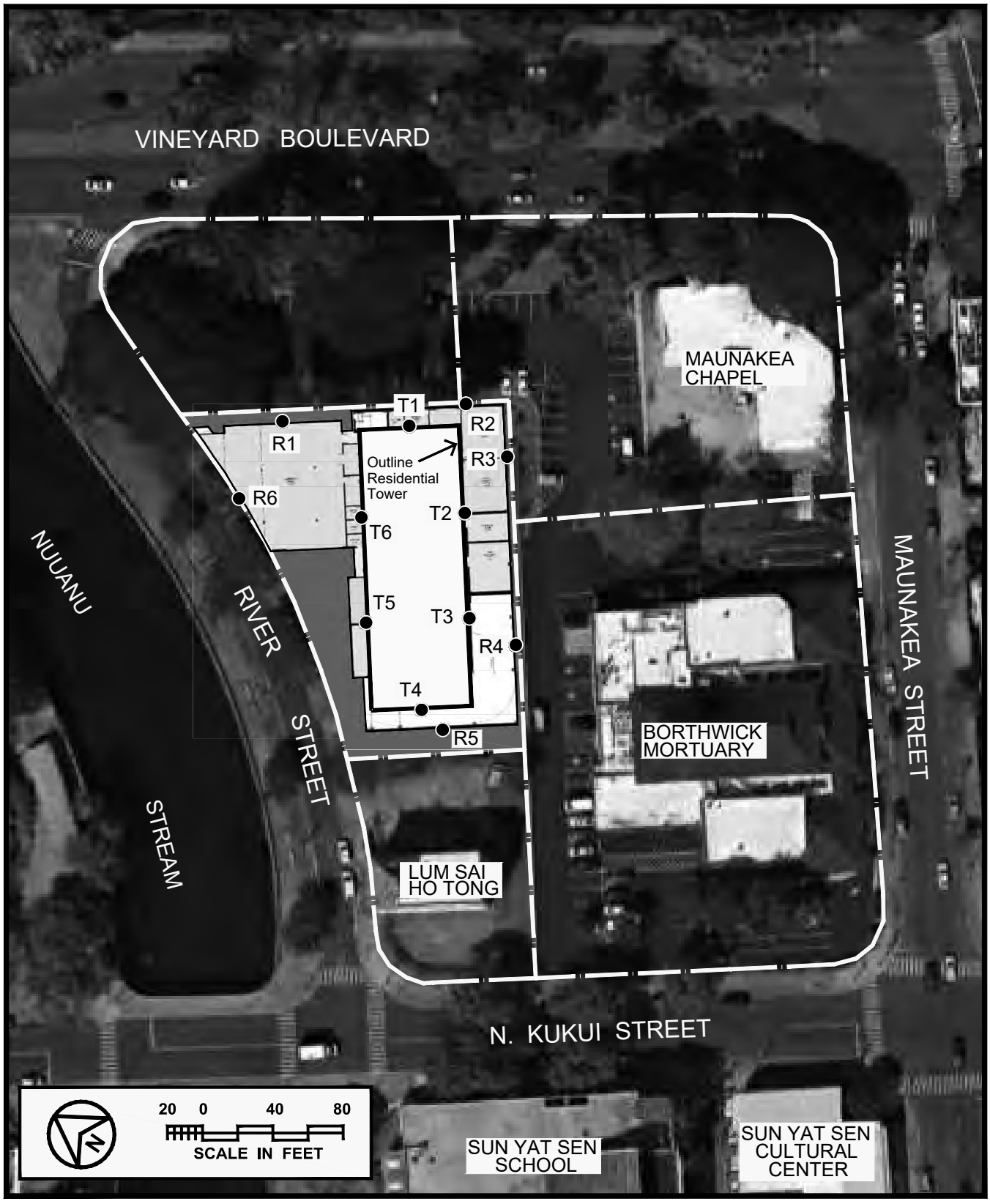
EXISTING AND CY 2021 TRAFFIC NOISE LEVELS
(VARIOUS ELEVATIONS, DNL)

RECEPTOR LOCATION	SETBACK DIST. FROM EXIST. C/L	RECEPTOR ELEVATION	EXISTING (CY 2019) DNL	FUTURE (CY 2021) BUILD DNL
R1 Mauka	167 FT from Vineyard Blvd.	0 FT Above Ground	60	60
R1 Mauka	167 FT from Vineyard Blvd.	40 FT Above Ground	65	65
R2 Mauka	159 FT from Vineyard Blvd.	0 FT Above Ground	60	60
R2 Mauka	159 FT from Vineyard Blvd.	40 FT Above Ground	65	65
R3 DH	189 FT from Vineyard Blvd.	0 FT Above Ground	58	54
R3 DH	189 FT from Vineyard Blvd.	40 FT Above Ground	64	63
R4 DH	212 FT from N. Kukui St.	0 FT Above Ground	54	50
R4 DH	212 FT from N. Kukui St.	40 FT Above Ground	62	60
R5 Makai	185 FT from N. Kukui St.	0 FT Above Ground	53	49
R5 Makai	185 FT from N. Kukui St.	40 FT Above Ground	62	57
R6 Ewa	19 FT from River St.	0 FT Above Ground	57	58
R6 Ewa	19 FT from River St.	40 FT Above Ground	64	61
T1 Mauka	171 FT from Vineyard Blvd.	0 FT Above Ground	60	42
T1 Mauka	171 FT from Vineyard Blvd.	40 FT Above Ground	65	65
T1 Mauka	171 FT from Vineyard Blvd.	48 FT Above Ground	65	65
T1 Mauka	171 FT from Vineyard Blvd.	88 FT Above Ground	65	65
T1 Mauka	171 FT from Vineyard Blvd.	128 FT Above Ground	65	64
T1 Mauka	171 FT from Vineyard Blvd.	144 FT Above Ground	65	64
T2 DH	221 FT from Vineyard Blvd.	0 FT Above Ground	57	46
T2 DH	221 FT from Vineyard Blvd.	40 FT Above Ground	63	58
T2 DH	221 FT from Vineyard Blvd.	48 FT Above Ground	64	61
T2 DH	221 FT from Vineyard Blvd.	88 FT Above Ground	64	61
T2 DH	221 FT from Vineyard Blvd.	128 FT Above Ground	64	61
T2 DH	221 FT from Vineyard Blvd.	144 FT Above Ground	64	61
T3 DH	281 FT from Vineyard Blvd.	0 FT Above Ground	55	47
T3 DH	281 FT from Vineyard Blvd.	40 FT Above Ground	62	58
T3 DH	281 FT from Vineyard Blvd.	48 FT Above Ground	63	59
T3 DH	281 FT from Vineyard Blvd.	88 FT Above Ground	63	61
T3 DH	281 FT from Vineyard Blvd.	128 FT Above Ground	63	61
T3 DH	281 FT from Vineyard Blvd.	144 FT Above Ground	63	61

TABLE 5 (CONTINUED)

EXISTING AND CY 2021 TRAFFIC NOISE LEVELS
(VARIOUS ELEVATIONS, DNL)

RECEPTOR LOCATION	SETBACK DIST. FROM EXIST. C/L	RECEPTOR ELEVATION	EXISTING (CY 2019) DNL	FUTURE (CY 2021) BUILD DNL
T4 Makai	186 FT from N. Kukui St.	0 FT Above Ground	53	35
T4 Makai	186 FT from N. Kukui St.	40 FT Above Ground	62	54
T4 Makai	186 FT from N. Kukui St.	48 FT Above Ground	62	54
T4 Makai	186 FT from N. Kukui St.	88 FT Above Ground	62	56
T4 Makai	186 FT from N. Kukui St.	128 FT Above Ground	62	55
T4 Makai	186 FT from N. Kukui St.	144 FT Above Ground	62	54
T5 Ewa	283 FT from Vineyard Blvd.	0 FT Above Ground	53	44
T5 Ewa	283 FT from Vineyard Blvd.	40 FT Above Ground	62	56
T5 Ewa	283 FT from Vineyard Blvd.	48 FT Above Ground	63	57
T5 Ewa	283 FT from Vineyard Blvd.	88 FT Above Ground	63	60
T5 Ewa	283 FT from Vineyard Blvd.	128 FT Above Ground	63	60
T5 Ewa	283 FT from Vineyard Blvd.	144 FT Above Ground	63	60
T6 Ewa	223 FT from Vineyard Blvd.	0 FT Above Ground	56	46
T6 Ewa	223 FT from Vineyard Blvd.	40 FT Above Ground	63	54
T6 Ewa	223 FT from Vineyard Blvd.	48 FT Above Ground	64	59
T6 Ewa	223 FT from Vineyard Blvd.	88 FT Above Ground	64	61
T6 Ewa	223 FT from Vineyard Blvd.	128 FT Above Ground	64	61
T6 Ewa	223 FT from Vineyard Blvd.	144 FT Above Ground	64	61



CONCEPTUAL PROJECT FOOTPRINT AND NOISE RECEPTOR LOCATIONS WITHIN PROJECT

FIGURE 8

tower due to noise shielding effects from the tower.

Existing traffic noise levels on the mauka face of the proposed tower are currently less than 65 DNL, and should also decrease following construction of the tower due to noise shielding effects from the tower of traffic noise sources along Vineyard Boulevard, and River, North Kukui, and Maunakea Streets.

CHAPTER VI. FUTURE NOISE ENVIRONMENT

Predictions of future traffic noise levels were made using the traffic volume assignments of References 6 and 7 for CY 2021 with and without the proposed project. The future projections of non-project and project traffic volumes for the No Build and Build Alternatives are shown in Appendix C.

Table 6 contains the CY 2021 traffic volumes and noise levels at 50, 75, and 100 feet from the roadways' centerlines for the Build Alternative during the AM or PM peak hour. Table 4 contains the setback distances to the 65, 70, and 75 DNL contours for CY 2021 under the Build Alternative. Table 5 presents the predicted future traffic noise levels on the project site for the Build Alternative. Future average vehicle speeds and traffic mixes along all roadways were assumed to be identical to those used for CY 2019 (see Table 3). Although not shown in the tables, CY 2029 traffic volume forecasts for Vineyard Boulevard were also used to predict the CY 2029 traffic noise levels along Vineyard Boulevard. Assuming average vehicle speeds and traffic mixes remain unchanged, the predicted CY 2029 traffic noise levels along Vineyard Boulevard were 0.5 DNL higher than those shown for CY 2021. This 0.5 DNL increase may also be applied to the CY 2021 DNL values shown on the mauka face of the proposed tower building in Table 5, which will increase from 65 to 66 DNL by CY 2029.

In CY 2021, the dominant traffic noise sources in the immediate project area will continue to be traffic noise from Vineyard Boulevard. This situation will continue to occur with or without the proposed project.

Table 7 presents the predicted increases in future traffic noise levels associated with non-project and project related traffic by CY 2021. The traffic noise contributions from the Halewai`olu Senior Residences Project have been separated from the non-project contributions in Table 7. The predicted increases in traffic noise from the Halewai`olu Senior Residences project traffic should not exceed 0.2 dB (or DNL) along the street sections shown in Table 7.

Calculations of future traffic noise levels following project build-out in CY 2021 and at the faces of the proposed Halewai`olu Senior Residences tower building were performed as shown in Table 5. The receptor locations where the calculations were performed are shown in Figure 8. As indicated in Table 5, traffic noise levels at all locations on the faces of the proposed tower building are not expected to exceed 65 DNL by CY 2021. The traffic noise reduction effects resulting from noise shielding by the tower building are apparent in Table 5, where future traffic noise level contributions from Vineyard Boulevard on the east, west, and south building faces are expected to be reduced.

As indicated in Table 5, future traffic noise levels at all of the residential units of the project should not exceed 65 DNL by CY 2021, and after adding the 0.5 DNL additional increase between CY 2021 and 2029, the 65 DNL FHA/HUD threshold will only be exceeded at any unit on the mauka face of the tower by CY 2029.

TABLE 6

FUTURE (CY 2021) TRAFFIC VOLUMES AND NOISE LEVELS ALONG ROADWAYS IN PROJECT AREA (AM OR PM PEAK HOUR, BUILD)

LOCATION	SPEED (MPH)	TOTAL VPH	****** VOLUMES (VPH) ******** AUTOS	M TRUCKS	H TRUCKS	50' Leq	75' Leq	100' Leq
Vineyard Blvd., PM	40	1,940	1,794	73	73	73.7	70.7	69.0
Maunakea St. N. of N. Kukui St., PM	31	617	588	22	7	63.0	61.2	60.0
Maunakea St. S. of N. Kukui St., AM	31	702	683	11	8	63.0	61.3	60.0
N. Kukui St. W. of River St., AM	31	450	438	7	5	61.1	59.3	58.1
N. Kukui St. Between River & Maunakea St., AM	31	455	443	7	5	61.1	59.3	58.1
N. Kukui St. E. of Maunakea St., PM	31	644	613	23	8	63.2	61.5	60.2
River St. N. of N. Kukui St., PM	31	53	50	2	1	52.7	51.0	49.8

TABLE 7

CALCULATIONS OF PROJECT AND NON-PROJECT TRAFFIC NOISE CONTRIBUTIONS (CY 2021) (DNL)

STREET SECTION	NOISE LEVEL INCREASE DUE TO: NON-PROJECT TRAFFIC	PROJECT TRAFFIC
Vineyard Boulevard	0.2	0.0
Maunakea St. North of N. Kukui St.	0.3	0.0
Maunakea St. South of N. Kukui St.	0.3	0.0
N. Kukui St. West of River St.	0.2	0.0
N. Kukui St. Between River and Maunakea Streets	0.1	0.0
N. Kukui St. East of Maukanke St.	0.3	0.1
River St. North of N. Kukui St.	3.1	0.2

CHAPTER VII. DISCUSSION OF PROJECT-RELATED NOISE IMPACTS AND POSSIBLE MITIGATION MEASURES

Traffic Noise. Noise impacts at existing noise sensitive receptors from existing and future traffic with or without the project are not expected to be discernible. At all roadways surrounding the project site, except for River Street, predicted increases in future traffic noise levels by CY 2021 are less than 0.5 DNL, with project traffic noise contributions being 0.1 DNL or zero. Along River Street, existing traffic noise levels are very low, and the 3.1 to 3.3 DNL increase anticipated by CY 2021 will result in future traffic noise levels below 55 DNL. Based on these results, off-site traffic noise mitigation measures should not be required as a result of the proposed project.

At future noise sensitive receptor locations within the new project building, exceedances of the 65 DNL standard should not occur by 2021. Although mitigation measures are not required by CY 2021, traffic noise mitigation measures may still be desired by some residents in the tower building, particularly those which face Vineyard Boulevard. Traffic noise mitigation measures in the form of closure and air conditioning of the units would be acceptable, but the use of air conditioning in these living units may not be feasible due to recurring cost considerations. If exterior walls with minimum STC 45 rating, and operable exterior widows with minimum STC 35 glazing can be used at these affected units, it should be possible to meet the minimum 5 dB additional exterior-to-interior noise reduction requirement of FHA/HUD (see Reference 2) with operable windows approximately 17 percent opened. The use of sliding exterior windows or lanai doors would allow for more precise control of the ventilation openings for noise attenuation. If inclusion of these features are not cost prohibitive, it may be possible to meet the spirit of the FHA/HUD sound attenuation requirements at the naturally ventilated residential units.

By CY 2029, the FHA/HUD 65 DNL standard could be exceeded by 0.4 DNL at any tower residences with natural ventilation openings located on the mauka face of the tower. All residences located at least one unit from the mauka corner units on the Ewa and Diamond Head faces of the tower should be acceptable with exterior noise levels not exceeding the 65 DNL threshold. If residential units must be located on mauka face of the tower building, the use of solid walls and/or fixed glazing on the mauka walls of those units should be adequate noise mitigation measures to strictly meet the FHA/HUD noise mitigation requirements. Alternately, the use of closure and air conditioning of those residential units' rooms with exterior walls on the mauka side of the tower may also be applied to meet the FHA/HUD noise mitigation requirements. Relocation of the tower's mauka wall by approximately 26 feet toward the south would be required to not exceed the 65 DNL FHA/HUD threshold by 2029.

Potential noise impacts from tire squeal within the project's parking structure should be minimized through the use of coarse finishes for the circulation driveway surfaces within the parking structure.

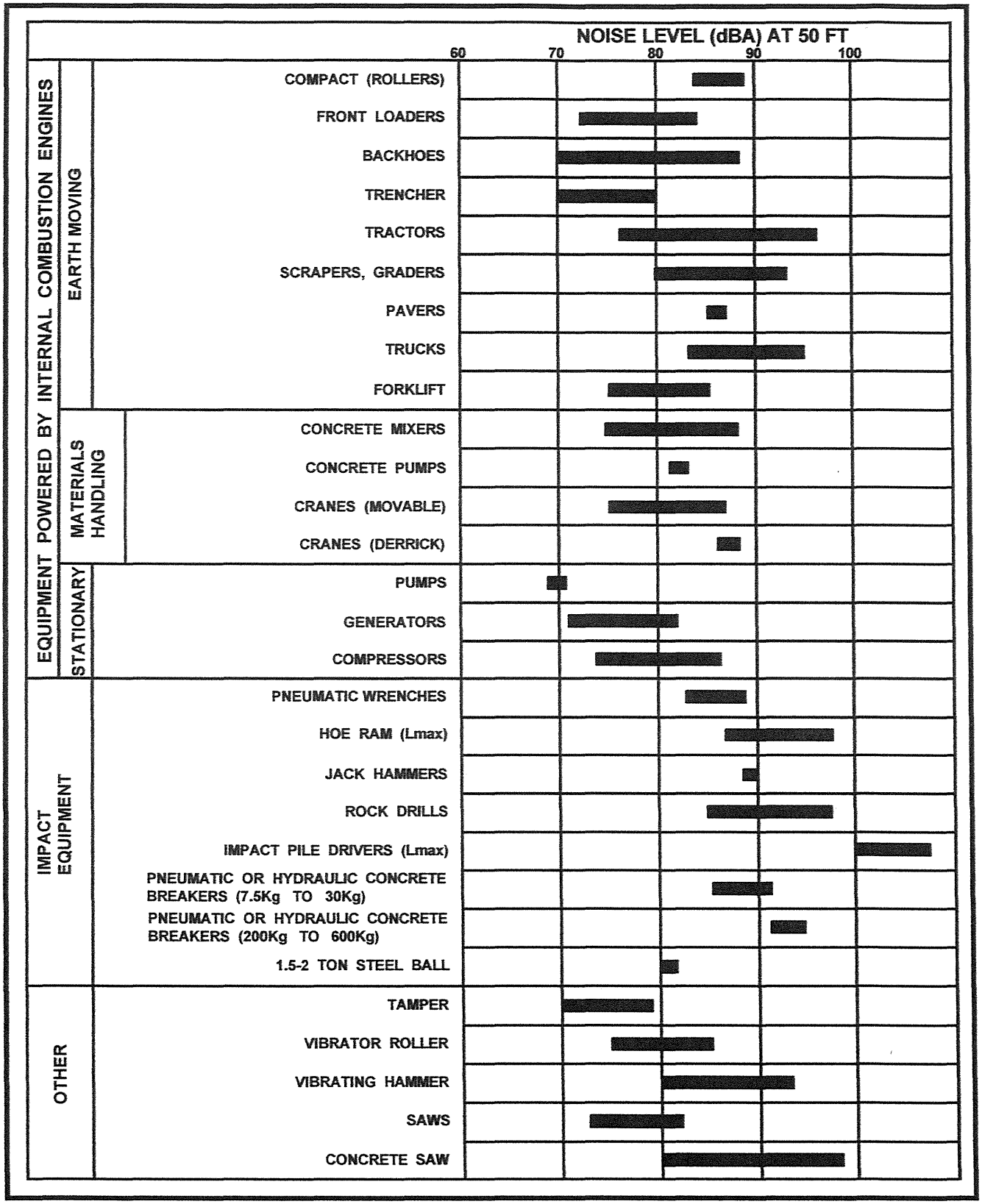
General Construction Noise. Audible construction noise will probably be unavoidable during the entire project construction period. The total time period for construction of the project is not known. It is expected that actual construction work will be moving from one location on the project site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Figure 9 depicts the range of noise levels of various types of construction equipment when measured at 50 feet distance from the equipment.

Typical levels of exterior noise from construction activity (excluding pile driving activity) at various distances from the job sites are shown in Figure 10. Figure 10 is useful for predicting exterior noise levels at short distances (within 100 feet) from the work when visual line of sight exists between the construction equipment and the receptor. Direct line-of-sight distances between the work areas and the closest neighboring receptors range from 40 feet to 300+ feet, with corresponding average noise levels of 88 to 69 dBA (plus or minus 5 dBA). For receptors along a cross-street, the construction noise level vs. distance curve of Figure 10 should be reduced by approximately 8 dBA when the work is occurring at the intersection with the cross street, and should be reduced by 15 dBA when work is occurring at least 100 feet from the intersection (and the visual line-of-sight is blocked by intervening buildings). Typical levels of construction noise inside naturally ventilated and air conditioned structures are approximately 10 and 20 dB less, respectively, than the levels shown in Figure 10.

Noise sensitive receptors who are predicted to experience the highest noise levels during construction activities are located at the Borthwick Mortuary and Lum Sai Ho Tong Temple. Predicted maximum construction noise levels at these buildings during the site preparation and earthwork phases of construction ranged from 88 to 86 dBA (plus or minus 5 dBA). The highest noise levels at existing residences during site preparation and building erection work are expected to occur at the existing Waena Apartments across Nuuanu Stream, where minimum buffer distances are moderately large (in the order of 200 feet). Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work, and due to the administrative controls available for regulation of construction noise. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

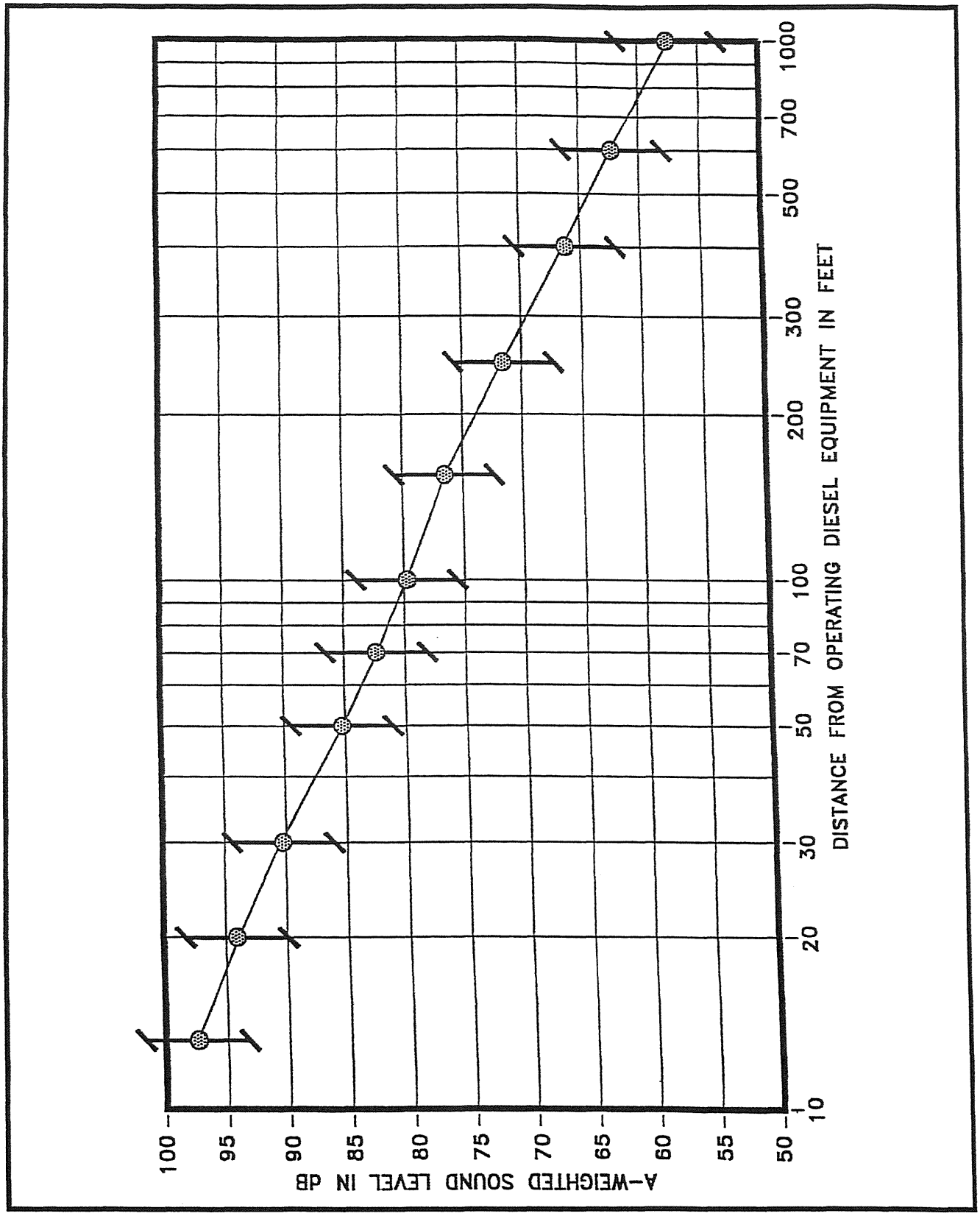
Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 feet distance), and due to the exterior nature of the work (excavation, grading, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job site.

Severe noise impacts are not expected to occur inside air conditioned structures which are beyond 70 to 450 feet from the project construction sites. Inside naturally



RANGES OF CONSTRUCTION EQUIPMENT NOISE LEVELS

FIGURE 9

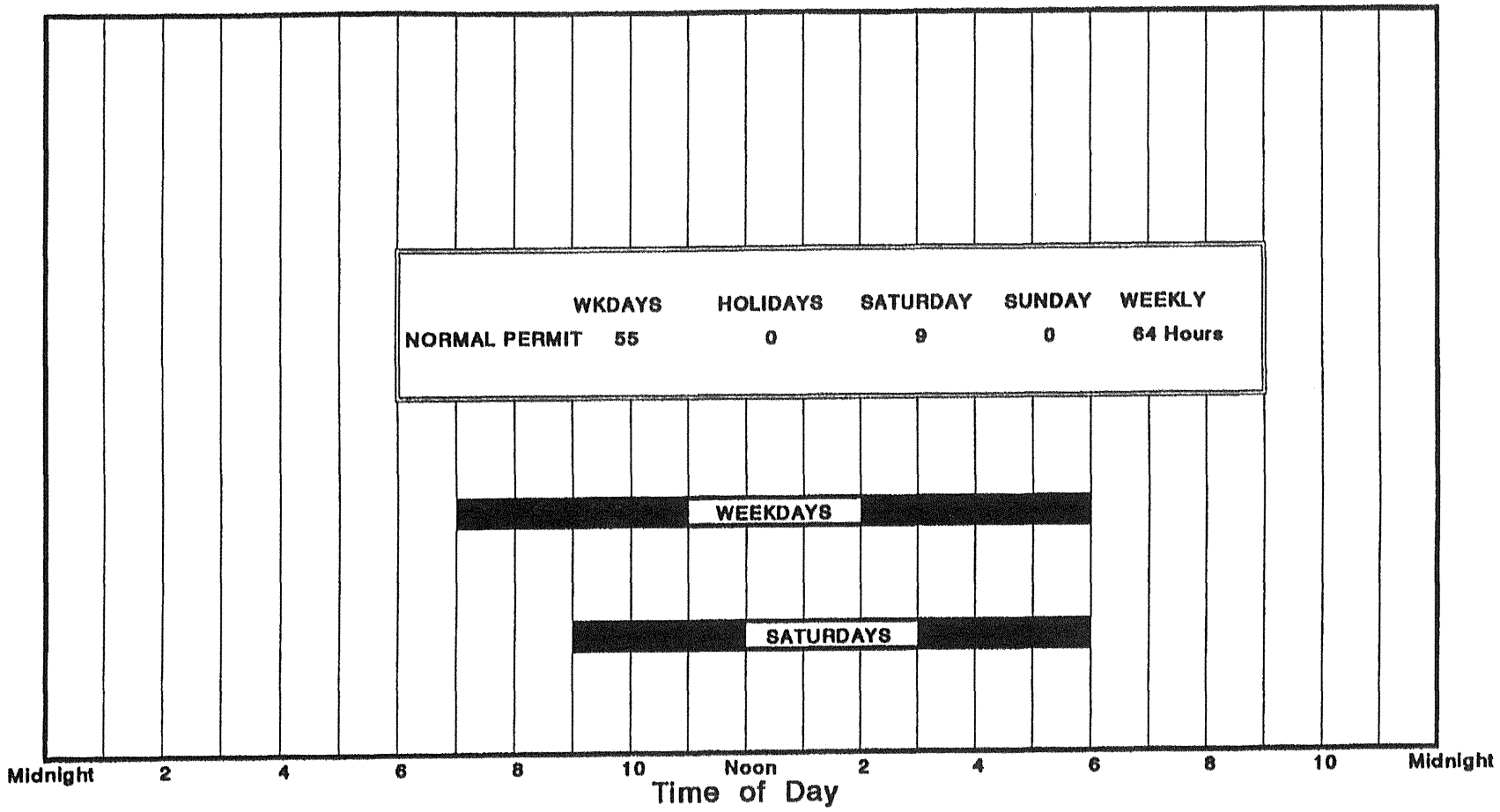


ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE 10

ventilated structures, interior noise levels (with windows or doors opened) are estimated to range between 73 to 55 dBA at 70 feet to 450 feet distances from the construction site. Closure of all doors and windows facing the construction site would generally reduce interior noise levels by an additional 5 to 10 dBA.

The incorporation of State Department of Health construction noise limits and curfew times, which are applicable throughout the State of Hawaii (Reference 4), is another noise mitigation measure which is normally applied to construction activities. Figure 11 depicts the normally permitted hours of construction, which are typically limited to the normal working hours. Noisy construction activities are not allowed on Sundays and holidays, during the early morning, and during the late evening and nighttime periods under the DOH permit procedures.



AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

FIGURE 11

APPENDIX A. REFERENCES

(1) "Guidelines for Considering Noise in Land Use Planning and Control;" Federal Interagency Committee on Urban Noise; June 1980.

(2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B;" U.S. Department of Housing and Urban Development; July 12, l979.

(3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety;" Environmental Protection Agency (EPA 550/9-74-004); March 1974.

(4) "Title 11, Administrative Rules, Chapter 46, Community Noise Control;" Hawaii State Department of Health; September 23, 1996.

(5) "FHWA Traffic Noise Model User's Guide;" FHWA-PD-96-009, DOT-VNTSC-FHWA-98-1, Federal Highway Administration; Washington, D.C.; January 1998 and Version 2.5 Upgrade (April 14, 2004).

(6) Existing and Future Traffic Turning Movements, Halewai`olu Senior Residences;" Fehr & Peers Transportation Consultants; April 2, 2019.

(7) Future (2021 and 2029) Traffic Volume Projections for Vineyard Boulevard, Halewai`olu Senior Residences;" Fehr & Peers Transportation Consultants; April 3, 2019.

(8) April 17 & 18, 2018, Hourly Traffic Counts at Station #B72009800073, Vineyard Boulevard Between Aala St. and River St.; Hawaii State Department of Transportation; March 15, 2019.

(9) April 17 & 18, 2018, Hourly Classification Counts at Station #B72009800073, Vineyard Boulevard Between Aala St. and River St.; Hawaii State Department of Transportation; March 15, 2019.

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APPENDIX B

EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E.....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "LepN" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq, is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

TABLE I

A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

	TERM	SYMBOL
1.	A-Weighted Sound Level	L_A
2.	A-Weighted Sound Power Level	L_{WA}
3.	Maximum A-Weighted Sound Level	L_{max}
4.	Peak A-Weighted Sound Level	L_{Apk}
5.	Level Exceeded x% of the Time	L_x
6.	Equivalent Sound Level	L_{eq}
7.	Equivalent Sound Level over Time (T) (1)	$L_{eq(T)}$
8.	Day Sound Level	L_d
9.	Night Sound Level	L_n
10.	Day-Night Sound Level	L_{dn}
11.	Yearly Day-Night Sound Level	$L_{dn(Y)}$
12.	Sound Exposure Level	L_{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(1)}$). Time may be specified in non-quantitative terms (e.g., could be specified a $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78,

TABLE II

RECOMMENDED DESCRIPTOR LIST

	TERM	A-WEIGHTING	ALTERNATIVE[1] A-WEIGHTING	OTHER[2] WEIGHTING	UNWEIGHTED
1.	Sound (Pressure)[3] Level	L_A	L_{pA}	L_B, L_{pB}	L_p
2.	Sound Power Level	L_{WA}		L_{WB}	L_W
3.	Max. Sound Level	L_{max}	L_{Amax}	L_{Bmax}	L_{pmax}
4.	Peak Sound (Pressure) Level	L_{Apk}		L_{Bpk}	L_{pk}
5.	Level Exceeded x% of the Time	L_x	L_{Ax}	L_{Bx}	L_{px}
6.	Equivalent Sound Level	L_{eq}	L_{Aeq}	L_{Beq}	L_{peq}
7.	Equivalent Sound Level[4] Over Time(T)	$L_{eq(T)}$	$L_{Aeq(T)}$	$L_{Beq(T)}$	$L_{peq(T)}$
8.	Day Sound Level	L_d	L_{Ad}	L_{Bd}	L_{pd}
9.	Night Sound Level	L_n	L_{An}	L_{Bn}	L_{pn}
10.	Day-Night Sound Level	L_{dn}	L_{Adn}	L_{Bdn}	L_{pdn}
11.	Yearly Day-Night Sound Level	$L_{dn(Y)}$	$L_{Adn(Y)}$	$L_{Bdn(Y)}$	$L_{pdn(Y)}$
12.	Sound Exposure Level	L_S	L_{SA}	L_{SB}	L_{Sp}
13.	Energy Average Value Over (Non-Time Domain) Set of Observations	$L_{eq(e)}$	$L_{Aeq(e)}$	$L_{Beq(e)}$	$L_{peq(e)}$
14.	Level Exceeded x% of the Total Set of (Non-Time Domain) Observations	$L_{x(e)}$	$L_{Ax(e)}$	$L_{Bx(e)}$	$L_{px(e)}$
15.	Average L_x Value	L_x	L_{Ax}	L_{Bx}	L_{px}

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,.....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Leq(1). Time may be specified in non-quantitative terms (e.g., could be specified as Leq(WASH) to mean the washing cycle noise for a washing machine.

APPENDIX C

SUMMARY OF BASE YEAR AND YEAR 2021
TRAFFIC VOLUMES DURING AM AND PM PEAK HOURS

ROADWAY LANES	******** CY 2019 ******		CY 2021 (NO BUILD)		*** CY 2021 (BUILD) ****	
	AM	PM	AM	PM	AM	PM
Vineyard Boulevard (WB)	674	900	695	928	695	928
Vineyard Boulevard (EB)	906	980	935	1,012	935	1,012
Two-Way	1,580	1,880	1,630	1,940	1,630	1,940
River St. N. of N. Kukui St. (NB)	22	34	30	50	30	53
N. Kukui St. W. of River St. (WB)	64	93	70	100	70	101
N. Kukui St. W. of River St. (EB)	360	240	380	260	380	261
Two-Way	424	333	450	360	450	362
N. Kukui St. Between River & Maunakea St. (WB)	83	90	95	115	95	118
N. Kukui St. Between River & Maunakea St. (EB)	344	220	360	235	360	235
Two-Way	427	310	455	350	455	353
N. Kukui St. E. of Maunakea St. (WB)	99	188	120	210	120	211
N. Kukui St. E. of Maunakea St. (EB)	439	403	470	430	472	433
Two-Way	538	591	590	640	592	644
Maunakea St. N. of N. Kukui St. (NB)	236	372	250	400	250	400
Maunakea St. N. of N. Kukui St. (SB)	168	190	190	210	194	217
Two-Way	404	562	440	610	444	617
Maunakea St. S. of N. Kukui St. (NB)	409	431	430	460	430	461
Maunakea St. S. of N. Kukui St. (SB)	248	164	270	180	272	183
Two-Way	657	595	700	640	702	644

Appendix H

Biological Resources Survey

Robert W. Hobdy

March 2019

BIOLOGICAL RESOURCES SURVEY

for the

HALEWAI'OLU SENIOR RESIDENCES

HONOLULU, O'AHU

by

Robert W. Hobdy
Environmental Consultant
Kokomo, Maui
March 2019

Prepared for:
Michaels Development

BIOLOGICAL RESOURCES SURVEY
HALEWAI'OLU SENIOR RESIDENCES
HONOLULU, OAHU HAWAII

INTRODUCTION

The Halewai′olu Senior Residences Project is located at 1331 River Street in Honolulu, TMK (1) 1-7-060:012, on 0.618 acres of land (see Figure 1). This biological resource study was initiated by Michaels Development for the project situated on City and County of Honolulu land.

SITE DESCRIPTION

This 0.618 acre project area lies within an urban setting in the Chinatown area of Honolulu. The property includes a dilapidated two-story residential structure and an asphalt parking lot. A few trees and ornamental plants grow along the perimeter in small grassy planters. The lower Nu′uanu Stream channel is located across River Street. The entire project area is level and at an elevation of about 16 feet. The soil is characterized as Ewa Silty Clay Loam, Shallow, 0-2% slopes (EmA) (Foote et al, 1972), which is a well-drained soil lying over a 20-50 inch deep limestone substrate. Annual rainfall averages 30 inches with most occurring during the winter months.

SURVEY OBJECTIVES

This report summarizes the findings of a biological resources survey of the proposed Halewai′olu Senior Residences Project which was conducted in March 2019. The objectives of the survey were to:

1. Document what plant and animal species occur on the property or may likely occur in the existing habitat.

2. Document the status and abundance of each species.

3. Determine the presence or likely occurrence of any native flora and fauna species, particularly any that are federally listed as Threatened or Endangered. If such species occur, identify what features of the habitat may be essential for these species.

4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used, selecting routes to cover the entire area and all habitat types. Areas most likely to harbor native or rare plants were more intensively examined. Notes were made on plant species, distribution and abundance as well as on terrain and substrate.

DESCRIPTION OF THE VEGETATION

The vegetation consisted of a few small to medium sized trees in planter areas around the perimeter of the parking area. A variety of grasses and urban weeds grow beneath these plants and are subject to periodic mowing.

A total of 45 plant species were recorded on the project area. Nine of these were of uncommon occurrence: plains bluestem (*Bothriochloa bladhii*), common sandbur (*Cenchrus echinatus*), swollen fingergrass (*Chloris barbata*), Bermuda grass (*Cynodon dactylon*), oleander (*Neriu oleander*), straggler daisy (*Calyptocarpus vialis*), pink tecoma (*Tabebuia heterophylla*), Geiger tree (*Cordia sebestina*) and false mallow (*Malvastrum coromandelianum*). The remaining thirty-six species were all of rare occurrence.

No native plant species were found on the project area.

DISCUSSION AND RECOMMENDATIONS

All of the plants growing on the project area were not native to Hawaii and were either ornamental trees, shrubs or grasses planted into the landscape, or were adventitious weeds. None of these are of any special conservation concern. No federally Endangered, Threatened or otherwise rare native plants were recorded, and no special native plant habitats were found either (USFWS, 2019).

Because of the above existing conditions, it has been determined that there is little of botanical concern in the project area, and that the anticipated disturbances associated with the proposed redevelopment work are not expected to have a significant negative impact on the botanical resources in this part of O′ahu.

It is recommended, however, that coastal and lowland native plant species might be incorporated into future landscape designs.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within three groups: Ferns, Monocots and Dicots. Taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999) and Staples & Herbst (2005), and the Ferns are in accordance with Palmer (2003).

For each species, the following information is provided:

1. Scientific name with author citation.

2. Common English or Hawaiian name.

3. Bio-geographical status. The following symbols are used:

   endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.

   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   Polynesian introduction = plants introduced to Hawai'i in the course of Polynesian migrations and prior to western contact.

   non-native = all those plants brought to the islands intentionally or accidentally after western contact.

4. Abundance of each species within the project area:

   abundant = forming a major part of the vegetation within the project area.

   common = widely scattered throughout the area or locally abundant within a portion of it.

   uncommon = scattered sparsely throughout the area or occurring in a few small patches.

   rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
FERNS			
POLYPODIACEAE (Polypody Fern Family)			
Phymatosorus grossus (Langsd. & Fisch.) Brownlie	laua'e	non-native	rare
Platycerium bifurcatum (Cav.) C.Chr.	staghorn fern	non-native	rare
MONOCOTS			
ARECACEAE (Palm Family)			
Sabal mexicanus Martius	Mexican sabal palm	non-native	rare
ASPARAGACEAE (Asparagus Family)			
Dracaena marginata Lamarck	marginata "tricolor"	non-native	rare
ASPHODELACEAE (Asphodel Family)			
Aloe vera (L.) Burm. f.	common aloe	non-native	rare
CYPERACEAE (Sedge Family)			
Cyperus gracilis R. Br.	McCoy sedge	non-native	rare
Cyperus rotundus L.	nut sedge	non-native	rare
POACEAE (Grass Family)			
Bothriochloa bladhii (Retz.) S.T. Blake	plains bluestem	non-native	uncommon
Cenchrus echinatus L.	common sandbur	non-native	uncommon
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	uncommon
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	uncommon
Digitaria ciliaris (Retz.) Koeler	Henry's crabgrass	non-native	rare
Eleusine indica (L.) Gaertn.	wiregrass	non-native	rare
Eragrostis amabilis (L.) Wight & Arnott	Japanese lovegrass	non-native	rare
Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass	non-native	rare
Sporobolus diander (Retz.) P. Beauv.	Indian dropseed	non-native	rare
Urochloa distachya (L.) T.Q. Nguyen	tropical signal grass	non-native	rare
DICOTS			
AMARANTHACEAE (Amaranth Family)			
Amaranthus viridis L.	slender amaranth	non-native	rare
APOCYNACEAE (Dogbane Family)			
Nerium oleander L.	oleander	non-native	uncommon
ARALIACEAE (Ginseng Family)			
Schefflera actinophylla	octopus tree	non-native	rare
ASTERACEAE (Sunflower Family)			
Calyptocarpus vialis Less.	straggler daisy	non-native	uncommon
Conyza bonariensis (L.) Cronq.	hairy horseweed	non-native	rare
Cyanthillium cinereum (L.) H. Rob.	little ironweed	non-native	rare
Emilia fosbergii Nicolson	red pualele	non-native	rare
Synedrella nodiflora (L.) Gaertn.	nodeweed	non-native	rare
Tridax procumbens L.	coat buttons	non-native	rare
BIGNONIACEAE (Bignonia Family)			
Catalpa longissima (Jacq.) Dumont de Courset	yokewood	non-native	rare
Tabebuia berteroi A.P. de Candolle	Hispaniolan trumpet tree	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Tabebuia heterophylla (A.P. de Candolle) Britton	pink tecoma	non-native	uncommon
BORAGINACEAE (Borage Family)			
Cordia sebestena L.	geiger tree	non-native	uncommon
BRASSICACEAE (Mustard Family)			
Lepidium virginicum L.	pepperwort	non-native	rare
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea obscura (L.) Ker-Gawl.	obscure morning glory	non-native	rare
FABACEAE (Pea Family)			
Alysicarpus vaginalis (L.) DC.	alyce clover	non-native	rare
Delonix regia (Bojer ex Hook.) Raf.	royal poinciana	non-native	rare
MALVACEAE (Mallow Family)			
Ceiba pentandra (L.) Gaertn.	kapok tree	non-native	rare
Malvastrum coromandelianum (L.) Garcke	false mallow	non-native	uncommon
Sida ciliaris L.	bracted fanpetals	non-native	rare
MORACEAE (Mulberry Family)			
Ficus microcarpa L.f.	Chinese banyan	non-native	rare
Ficus religiosa L.	Bo tree	non-native	rare
NYCTAGINACEAE (Four-o'clock Family)			
Boerhavia coccinea Mill.	scarlet spiderling	non-native	rare
OLEACEAE (Olive Family)			
Noronhia emarginata (Lamarck) Poiret	Madagascar olive	non-native	rare
PORTULACACEAE (Purslane Family)			
Portulaca oleracea L.	pig weed	non-native	rare
Talinum fruticosum (L.) Juss	fameflower	non-native	rare
RUTACEAE (Rue Family)			
Murraya paniculata (L.) W.Jack	mock orange	non-native	rare
VERBENACEAE (Verbena Family)			
Citharexylum spinosum L.	fiddlewood	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through fauna survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails, tracks, scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Endangered ʻōpeʻapeʻa or Hawaiian hoary bat (*Lasiurus semotus*) in the area.

RESULTS

MAMMALS

No mammals were seen in the project area during two site visits. While not seen, the following non-native mammals could occur here occasionally: domestic dogs (*Canis familaris*), domestic cats (*Felis catus*), mongoose (*Herpestes auropunctatus*), rats (*Rattus* spp.) and mice *(Mus domesticus*). Taxonomy and nomenclature follow Tomich (1986).

An evening survey was conducted with the use of a bat detector (Batbox IIID) set to the frequency of 27,0000 Hertz that the ʻōpeʻapeʻa are known to emit when echolocating for nocturnal flying insect prey. No bat activity was detected with the use of this device.

BIRDS

Bird life was modest in the diversity of species observed but fairly well represented in individuals recorded. Taxonomy and nomenclature follow American Ornithologists' Union (2019). Two native species and two non-native species were observed during two site visits. The two non-native species, the zebra dove (*Geopelia striata*) and the common pigeon (*Columba livia*), were both common in and around the project area.

The manu o kū or white tern (*Gygis alba rothschildi*) were seen regularly flying above the project area in small numbers and were judged to be uncommon. This tern is indigenous tin Hawaii as well as in many islands in the Pacific. Two indigenous migratory kōlea or Pacific golden-plovers (*Pluvialis fulva*) were seen as individuals in the project area and were judged to be rare.

INSECTS

There were almost no insects found on this concrete and asphalt dominated project area. Just one non-native species was recorded, the dung fly (*Musca sorbens*). Taxonomy and nomenclature follows Nishida et al, (1992).

DISCUSSION AND RECOMMENDATIONS

The Halewai′olu Senior Residences Project area, as it presently exists, consists of one dilapidated two-story concrete multi-residential structure surrounded by an asphalt parking lot and a small amount of peripheral landscaping. This sterile environment discourages many types of wildlife from utilizing the site. All mammals, birds and insects were poorly represented. Only a few hardy species, adapted to human activities, were observed. Just two species of indigenous native birds were seen.

The kōlea is a migratory bird that spends its summers breeding and raising its young on arctic tundra, then flies south to spend its winters on Pacific islands. Many thousands winter in Hawaii where they can be found in almost all habitats from sea level to mountain tops. Kōlea are quite common here and carry no special Endangered or Threatened protected status.

The manu o kū is an indigenous seabird that is found on many Pacific islands and atolls. Many breed and nest in the Papahānaumokuākea Marine Monument on these remote atolls. Prior to 1959 these white terns were not known to breed in the main Hawaiian islands. That year the first pairing was found at Koko Head here on O′ahu. For many years they were found to be rare here. But, their numbers have been growing and in the last two decades they have been increasing in numbers and spreading around O′ahu. They can now be seen regularly in greater Honolulu, flying among tall buildings and landing in trees. They have now successfully adapted to an urban environment. Several were seen flying above the project area. These terns carry no special Protected, Endangered or Threatened status.

No protected waterbird, the ae′o or Hawaiian stilt (*Himantopus mexicanus knudseni*), ′alae ke′oke′o or Hawaiian coot (*Fulica alai*), ′alae ′ula or common moorhen (*Gallinula chloropus sandvicensis*) or the koloa or Hawaiian duck (*Anas wyvlliana*) were seen during the survey and no suitable wetland habitat occurs on the project area.

Hawaiian petrels (*Pterodroma phaeopygia sandwichensii*) and Newell's shearwaters (Puffinus newelli), (collectively known as seabirds) may transit over the project area when flying between the ocean and nesting sites in the mountains during their breeding season (March through November). Fatalities to these seabirds resulting from collisions with artificial structures that extend above the surrounding vegetation have been documented in Hawai′i where high densities of transiting seabirds occur. Additionally, artificial lighting such as floodlighting for construction work can adversely impact seabirds by causing disorientation which may result in collision with utility lines, buildings, fences and vehicles. Fledgling seabirds are especially affected by artificial lighting and have a tendency to exhaust themselves while circling the light sources and become grounded. Too weak to fly, these birds become vulnerable to predation by predators such as mongoose, cats and dogs. These threats can be minimized by the shielding of any outdoor lighting so that the light is visible only from below.

No other recommendations regarding wildlife are deemed necessary.

Because of the above existing conditions, it has been determined that there is little of wildlife concern in the project area, and that the anticipated disturbances associated with the proposed redevelopment work are not expected to have a significant negative impact on the wildlife resources in this part of O′ahu.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within three groups: Mammals, Birds and Insects. For each species the following information is provided:

1. Common name.

2. Scientific name.

3. Bio-geographical status. The following symbols are used:

   endemic = native only to Hawai′i; not naturally occurring anywhere else in the world.

   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   non-native = all those animals brought to Hawai′i intentionally or accidentally after western contact.

   migratory = spending a portion of the year in Hawai′i and a portion elsewhere. In Hawai′i the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.

4. Abundance of each species within the project area:

   abundant = many flocks or individuals seen throughout the area at all times of day.

   common = a few flocks or well scattered individuals throughout the area.

   uncommon = only one flock or several individuals seen within the project area.

   rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS - none			
BIRDS			
CHARADRIIDAE (Plover Family)			
Pluvialis fulva Gmelin	Pacific golden plover	indigenous	rare
COLUMBIDAE (Dove Family)			
Columba livia Gmelin	pigeon	non-native	common
Geopelia striata L.	zebra dove	non-native	common
STERNIDAE (Tern Family)			
Gygis alba rothschildi Sparrman	manu o kū	indigenous	uncommon
INSECTS			
Order DIPTERA - flies			
MUSCIDAE (Housefly Family)			
Musca sorbens Wiedemann	dung fly	non-native	rare

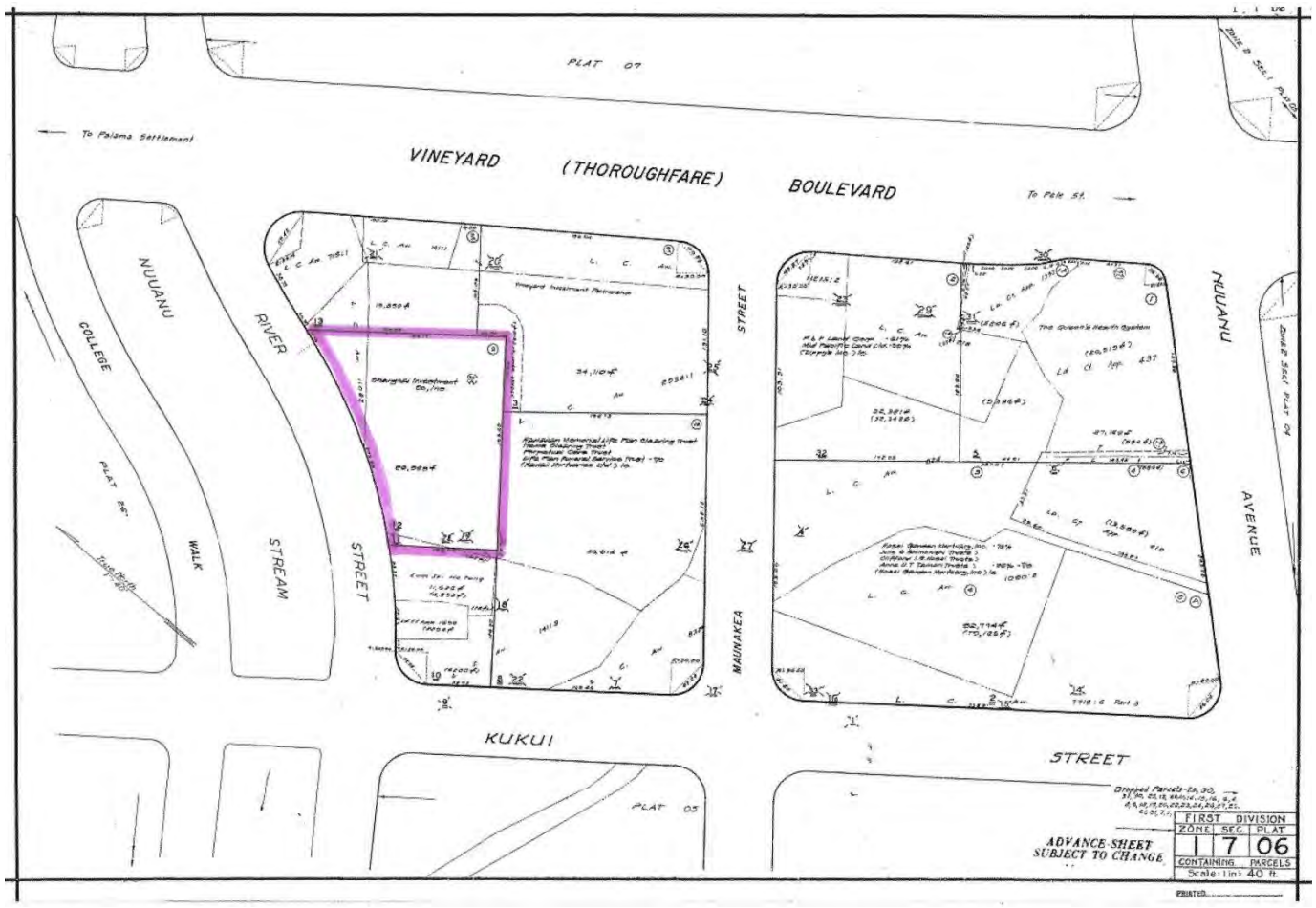

Figure 1. Halewai'olu Senior Residences project area.

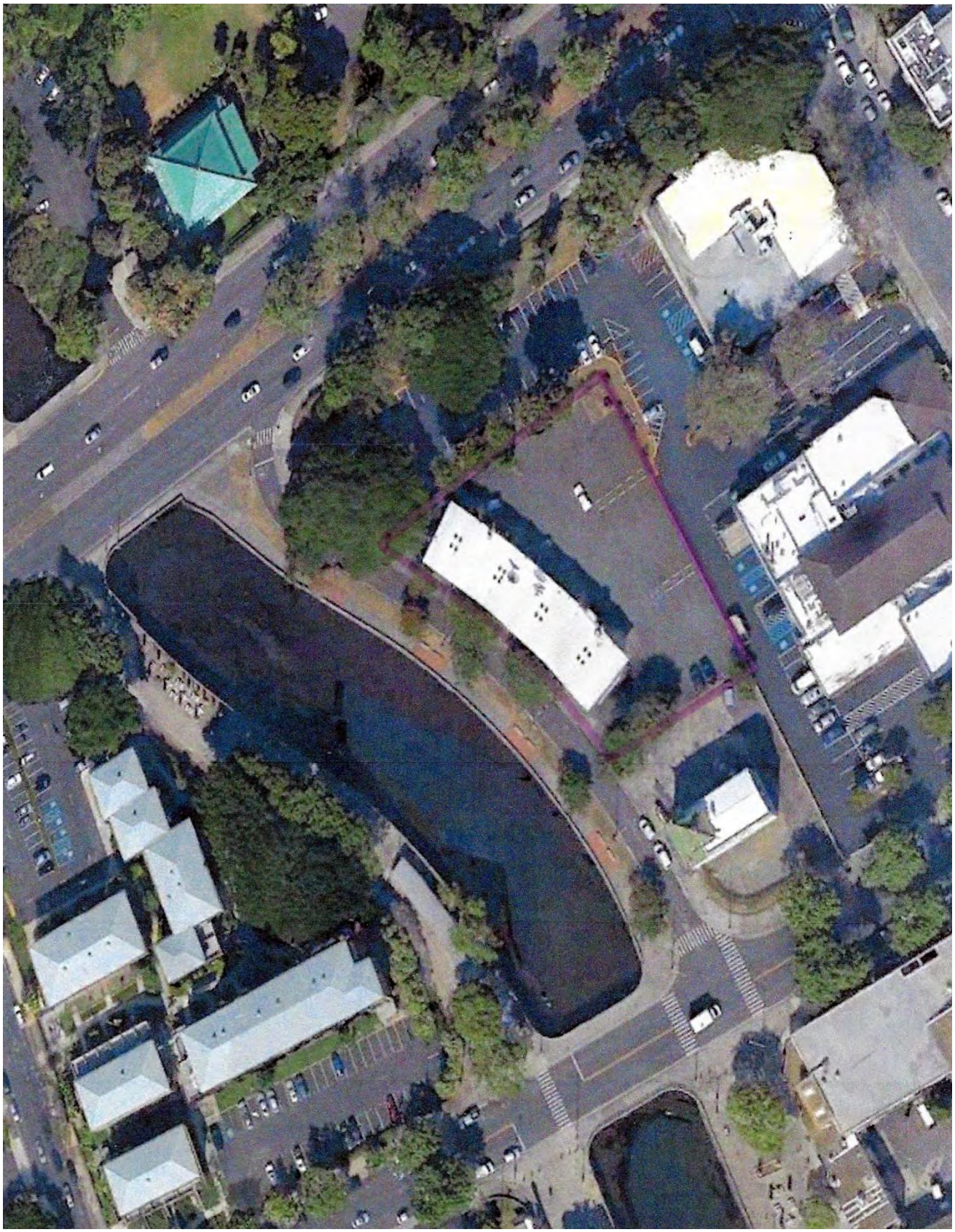

Figure 2. Halewai′olu Senior Residences Project Area

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Appendix J

U.S. Fish and Wildlife Service – Informal Consultation
July 26, 2019

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai‘i 96850

In Reply Refer To:
01EPIF00-2019-I-0399

July 26, 2019

Ms. Cheryl Tanabe
City and County of Honolulu
Department of Budget and Fiscal Services
925 Dillingham Boulevard, Room 240
Honolulu, Hawai‘i 96817

Subject: Informal Consultation for the Proposed Halewai‘olu Senior Residences, River Street, Honolulu, O‘ahu

Dear Ms. Tanabe:

The U.S. Fish and Wildlife Service (Service) received your letter on July 22, 2019, requesting our concurrence with your determination that the proposed demolition and construction of the Halewai‘olu senior residences, located on River Street in Honolulu, O‘ahu, may affect, but is not likely to adversely affect the federally endangered Hawaiian petrel (*Pterodroma sandwichensis*), threatened Newell’s shearwater (*Puffinus auricularis newelli*), endangered Hawai‘i DPS band-rumped storm-petrel (*Oceanodroma castro*) (hereafter collectively referred to as Hawaiian seabirds); endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*); endangered Hawaiian stilt (*Himantopus mexicanus knudseni)*, endangered Hawaiian gallinule (*Gallinula galeata sandvicensis*), endangered Hawaiian coot (*Fulica alai*), and endangered Hawaiian duck (*Anas wyvilliana*) (hereafter collectively referred to as Hawaiian waterbirds). Our findings and recommendations in this consultation are based on your letter and other information available to us. Our response is in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq*.).

Project Description

The proposed construction project is located on the island of O‘ahu and consists of approximately 0.62 acres (26,925 square feet) of property on River Street in Chinatown, Honolulu. Construction of the proposed project would encompass the entire 0.62-acre project site, including potential staging and stockpile areas. No night work is expected, and no in-water work is proposed for this project. The purpose of this project is to provide affordable housing for senior citizens in the Chinatown community. The project involves the demolition of an existing two-story structure, and construction of a new 17-floor housing facility. The new facility will include one and two bedroom units, and are earmarked for seniors earning 80% of the area median income or below.

Avoidance and Minimization Measures

The following avoidance and minimization measures will become enforceable, in addition to compliance with the project plans, throughout the project timeframe:

a. Trimming of trees greater than 15-feet tall will not occur between June 1 and September 15, and barbed wire will not be used for fencing.
b. All outdoor lights shall be fully sheilded so that the bulb can only be seen from below bulb height and used when needed, and automatic motion sensors shall be installed or turned off when human activity is not occuring in the lighted area. The prosposed project will take place during daylight hours.
c. Erosion control for earth distrubing activities will be employed to ensure that sediments are not delivered to drainages or waterways as a result of the proposed activity.
d. All project proponents present at the construction site will be informed of potential endangered species that may occur within or transit through the project area and that any intentional physical interactions with identified endangered species will be explicitly prohibited.
e. Any incidental take will be immediately reported to the Service.

Effects Analysis

Hawaiian seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Nighttime construction is not anticipated for this project. If nighttime work becomes necessary, construction will be avoided during seabird fledgling season and any outdoor lighting used during construction will be sensor activated or turned off. While fallout from ESA listed seabirds on the island of O‘ahu does occur, an increase in light pollution in urban Honolulu will be indisinguishable as a result of this project, and is not likely to increase seabird fallout. Because night construction is not planned, disorientation and subsequent fallout due to nighttime lighting is not probable, and therefore discountable. Because effects from the action are discountable, the proposed project is not likely to adversely affect Hawaiian seabirds.

Hawaiian hoary bat

The Hawaiian hoary bat may roost and leave their young pups unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season (June 1 through September 15), there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. You have indicated that any woody plants or trees greater than 15 feet will not be removed or disturbed during pup rearing season. By implementing these conservation measures, it is not probable that Hawaiian hoary bat pups would be in tree unable to fly or move away, and therefore, the impacts proposed project are discountable. Additionally, a bat detector placed at the project site by an environmental consultant, was not able to confirm the presence of bats in the area. Because impacts from the proposed project are discountable, we concur with your determination that the proposed project may affect, but is not likely to adversely affect the Hawaiian hoary bat.

Hawaiian waterbirds
Hawaiian waterbirds are found in fresh and brackish-water marshes and natural or man-made ponds. Hawaiian stilts may also be found wherever ephemeral or persistent standing water may occur. If there is driving of heavy machinery or the placement of construction materials in areas where Hawaiian waterbird nests or chicks occur, there is a risk that adults could be disturbed and fly off the nest leaving them exposed to predation or nest failure. Also, there is a risk if chicks are not seen, not able to fly, and potentially crushed. The project site does occur near the concrete chanelized Nu‘uanu stream, but this area is not suitable habitat for Hawaiian waterbirds, and their occurence in the project area has not been observed. It is not probable that Hawaiian waterbird nests or chicks would be crushed as a result of the proposed project, as they are not known to occur within the project area. Therefore, the impacts are discountable. Because impacts from the proposed project are discountable, we concur with your determination that the proposed project may affect, but is not likely to adversely affect the Hawaiian waterbirds.

Summary
Based upon the information you provided, also with the implementation of the aforementioned avoidance and minimization measures impacts from the proposed project are discountable. Therefore, the Service concurs with your determination that the proposed action may affect, but is not likely to adversely affect Hawaiian seabirds, Hawaiian hoary bats, and Hawaiian waterbirds. Unless the project description changes, or new information reveals that the action may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed action, no further action pursuant to section 7 of the ESA is necessary.

We appreciate your efforts to conserve protected species. If you have questions regarding this letter, please contact Narrissa Spies, Fish and Wildlife Biologist (phone: 808-792-9400, email: Narrissa_Spies@fws.gov). When referring to this project in correspondence or emails, please include the following reference number: 01EPIF00-2019-I-0399.

Sincerely,

Island Team Manager
O‘ahu, Kaua‘i, Northwestern Hawaiian Islands, and American Samoa

cc: Noelle Wright, R.M. Towill Corporation
Sandra Pfund, City & County of Honolulu
Sharon Har, Halewai‘olu Development, LLC

Appendix K

Preliminary Engineering Report
Gray, Hong, Nojima & Associates, Inc.
April 23, 2019

HALEWAI'OLU SENIOR RESIDENCES

Preliminary Engineering Report

TMK: 1-7-006:012
Honolulu, Oahu, Hawaii

April 23, 2019 (*DRAFT*)

PREPARED FOR:

The Michaels Development Company
Pacific Guardian Center
Mauka Tower
737 Bishop Street, Suite 1520
Honolulu, HI 96813

Gray • Hong • Nojima & Associates, Inc.
CONSULTING ENGINEERS
201 Merchant Street, Suite 1900 / Honolulu, HI 96813 / Phone: (808) 521-0306 / Fax: (808) 531-8018

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LIST OF ATTACHMENTS

Civil Attachment C-1	Location Map and Site Plan
Civil Attachment C-2	Existing Site Plan
Civil Attachment C-3	Honolulu Board of Water Supply Letter dated March 7, 2019
Civil Attachment C-4	Existing Utilities
Civil Attachment C-5	Conceptual Grading and Utilities Plan
Civil Attachment C-6	Department of Planning & Permitting Approved Sewer Connection Application dated January 29, 2019
Electrical Attachment E-1	Correspondence with Utility Companies (Hawaiian Electric Co. and Hawaiian Telcom)

Chapter 1 – INTRODUCTION

1.1 INTRODUCTION

A new affordable housing community located in the Chinatown area of Honolulu (refer to Attachments C-1 and C-2), is being proposed by The Michaels Development Company. The 0.62-acre parcel is presently owned by the City and County of Honolulu and will be developed as Halewai'olu Senior Residences. It will consist of approximately 156 one- and two-bedroom rental apartment units in an 18-story high-rise tower as shown in the conceptual rendering below (Photograph 1). Amenities include a rooftop garden, activity deck, courtyard, community center, covered tenant parking and guest parking, bicycle parking, laundry facilities, recycling center, solar hot water and solar photovoltaic energy for common areas.

The property is located at 1331 River Street (designated as TMK 1-7-006:012), between North Kukui Street and Vineyard Street. The site is currently occupied by a two-story office/retail building and paved parking lot, all which will be demolished as part of the project. This preliminary engineering report addresses both on-site and off-site infrastructure requirements, including roadways, drainage, sewer, water, electrical, telecommunications, cable television and roadway/area lighting system improvements necessary to support the development.



Photograph 1: Conceptual rendering of the proposed Halewai'olu Senior Residences

Chapter 2 – DESCRIPTION OF EXISTING INFRASTRUCTURE

2.1 ROADWAYS

Current access to the property is via two driveways off of River Street (Photographs 2 and 3). The driveways are asphalt concrete with concrete aprons. The northern driveway is approximately 12-feet wide; the southern driveway, approximately 24-feet wide. River Street is a one-way, single-lane road that is accessed via North Kukui Street and travels in the northeast direction, eventually connecting to North Vineyard Boulevard. It is an approximately 22-foot wide asphalt-concrete roadway with curb/gutters, bordered by a 21-foot wide concrete and grassed pedestrian walkway to the west and a 12-foot wide concrete sidewalk to the east. Metered street parking is available on the east side of the roadway. River Street and North Kukui Street are owned by the City and County of Honolulu while North Vineyard Boulevard falls under the jurisdiction of the State of Hawaii. All three are maintained by the City and County of Honolulu.



Photograph 2: Driveway access, north of property



Photograph 3: Driveway access, south of property

2.2 POTABLE WATER

The existing Board of Water Supply (BWS) potable water system consists of an 8-inch diameter water line which runs within River Street. There are currently nine water meter boxes located within the concrete sidewalk fronting the property. All water meter boxes are empty and appear to be abandoned. According to a letter from the BWS, dated March 7, 2019, there are four water laterals leading from the 8-inch water main serving the property (refer to Attachment C-3). One fire hydrant is located on the west-side of River Street, within the grassed planting area. Refer to Attachment C-4 for locations of existing utilities.

The letter from the BWS also states that "the existing water system is adequate to accommodate the domestic demands and offsite fire protection for the proposed development." However, the final decision on the availability of water will be confirmed at the time of the building permit application approval process.

2.3 WASTEWATER FACILITIES

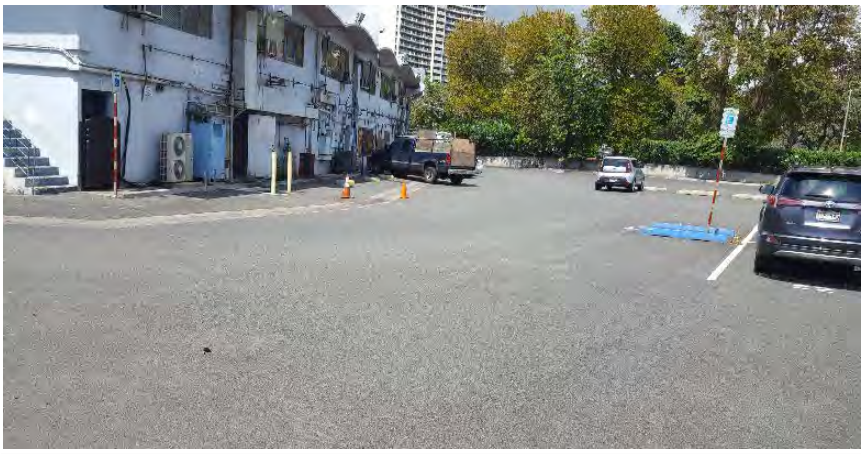
As indicated in the "Due Diligence Evaluation for Development of Halewaiolu Senior Residence" prepared by Community Planning and Engineering, Inc., dated October 2016, sanitary service will be available via an existing 12-inch sewer main located in River Street. The sewer main is owned and maintained by the City and County of Honolulu.

One 8-inch sewer lateral is provided from the sewer main to service the property (refer to Attachment C-4). The lateral is located approximately at the midpoint of the western boundary fronting River Street.

2.4 STORM WATER/DRAINAGE

2.4.1 EXISTING INFRASTRUCTURE

Currently, the 1331 River Street property is almost entirely covered by impervious asphalt surfaces. Storm water runoff from the property flows toward a concrete swale near the south driveway and into a catch basin on River Street. (Refer to Attachments C-2 and C-4, and Photographs 4 and 5.)



Photograph 4: Parking lot and concrete swale towards the left

The existing drainage system fronting the project site consists of concrete gutters running along both sides of River Street and curb inlets/catch basins located at the northwest boundary of the property and near the intersection of River Street and North Kukui Street, fronting the Lum Sai Ho Tong building. Underground 18-inch diameter reinforced concrete pipes run from the catch basins, under River Street, and discharge into Nuuanu Stream.



Photograph 5:
Concrete swale and drain pipe, makai driveway

2.4.2 FLOOD HAZARD

The project site is located in an area designated as Zone X on the Flood Insurance Rate Map (Map No. 15003C0354G dated January 19, 2011). Zone X is defined as "Areas determined to be outside the 0.2% annual chance floodplain."

2.5 ELECTRICAL AND COMMUNICATION FACILITIES

2.5.1 ELECTRICAL SYSTEM

There are underground Hawaiian Electric (HECO) ductlines routed along River Street, Maunakea Street, North Kukui Street and North Vineyard Boulevard. An existing 167 KVA, 120/240V, single phase, pad-mounted HECO transformer is located at the southern driveway and serves the existing property.

A HECO handhole located on the sidewalk next to the southern driveway distributes primary utility power to the property and will be the point of connection for the new residential community. Refer to Photograph 6 for location of existing HECO handhole.

2.5.2 TELECOMMUNICATIONS SYSTEM

Spectrum delivers telecommunications services to the property using the Hawaiian Telecom (HT) underground conduit system. Spectrum uses the HT pullbox located next to the southern driveway near the HECO handhole to deliver telephone and internet services. According to a will serve letter from Hawaiian Telcom (HT) documented in September 27, 2016, HT has existing facilities and infrastructures in the area to provide telephone and high-speed internet services. See Attachment E-1 for the HT will serve letter. The HT pullbox will be the point of connection for both HT and Spectrum services. Refer to Photograph 6 for location of existing HT pullbox.



Photograph 6: HECO Handhole, HECO Transformer, and HT Pullbox

2.5.3 CABLE TELEVISION SYSTEM

Spectrum delivers telecommunications services to the property using the HT underground conduit system. Spectrum uses the HT pullbox located next to the southern driveway near the HECO handhole to deliver cable television services. According to their will serve letter mentioned above, HT has existing facilities and infrastructures in the area to provide digital television services (refer to Attachment E-1). The HT pullbox will be the point of connection for both HT and Spectrum services (refer to Photograph 6 for location of existing HT pullbox).

Chapter 3 – PROJECTED FUTURE DEMANDS

3.1 POTABLE WATER

Potable Water Demand (*Water System Standards*, 2002)

Total Number of Units = 156 multifamily units (130 1-bedroom, 26 2-bedroom units)

Average Daily Demand per unit = 400 gallons/unit

Average Daily Demand = 156 units x 400 gallons/unit = 62,400 gallons/day (GPD)

Maximum Daily Demand = 1.5 x 62,400 = 93,600 GPD

Peak Hour = 3.0 x 62,400 = 187,200 GPD

Fire Flow = 2,000 GPM @ 2-hour duration

3.2 WASTEWATER FLOWS

Wastewater design flows will computed be based on the *Wastewater System Design Standards, City and County of Honolulu (July 2017)* as follows:

Number of Units = 156 multifamily units

Person/Multifamily = 2.8 persons/unit

Number of Persons = 156 x 2.8 = 716.8 persons

Average Daily per Capita Flow = 70 gallons per capita per day (GPCD)

Base Sanitary Flow = 716.8 x 70= 50,176 GPD

Maximum Flow Factor = 2.5

Peak Base SanitaryFlow = 2.5 x 50,176 = 125,440 GPD

Groundwater Infiltration = 35 GPCD x 716.8 persons = 25,088 GPD

Average Dry Weather Flow = 50,176 + 25,088 = 75,264 GPD

Peak Dry Weather Flow = 125,440 + 25,088 = 150,528 GPD

Wet Weather Infiltration/Inflow = 3,000 GPD/acre x 0.62 acre = 1,860 GPD

Design Flow = 150,528 + 1,860 = 152,388 GPD = 0.15 MGD

3.3 STORM WATER RUNOFF

In accordance with the City and County of Honolulu's *Rules Relating to Storm Drainage Standards*, dated August 2017 , the rational formula was used to compute storm water runoff for the developed site for areas less than 100 acres as follows:

Q = C x I x A, cubic feet/second (CFS)

C = Runoff coefficient

I = Rainfall intensity, inches/hour

A = Area, acres

T_m = 10 years (no sump or tailwater effect)

Rainfall Intensity, I_{10} = 2.32 inches/hour, 10 year 1-hour rainfall (per NOAA Atlas 14)

Runoff Coefficient, C = 0.85 for apartment/business area

Time of Concentration, Tc = 7.5 minutes (380 feet at 1.0% slope, paved surface)

CF = 2.5 (Correction Factor for rainfall intensity duration equal to Tc)

Area, A = 0.62 acres, total property area

$Q_{10} = C \times (I_{10} \times CF) \times A = 0.85 \times (2.32 \times 2.5) \times 0.62 = 3.06$ CFS

3.4 STORM WATER QUALITY

Project Site Basic Information:

Property Area = 26,925 square feet = 0.62 acres (from Tax Map Key)

Other estimated areas based on WRNS Architectural Drawings (Consolidated Application, dated 2/9/18):

- Pervious Area = 1,720 square feet
- Impervious Area = 94%
- Roof Area (including parking areas) = 15,780 SF or 0.36 acres

In accordance with the City and County of Honolulu Administrative Rules, Title 20, Department of Planning and Permitting, Chapter 3, *Rules Relating to Water Quality* (the "Rules"), the project is defined as Priority B1. Priority B1 projects are defined as "any new Development and Redevelopment project that results in 5,000 square feet or greater of Impervious Surface area that may have significant water quality impacts due to its location or associated land use activities" (Rules §20-3-48(a)(2)).

Post-construction storm water requirements for Priority B1 projects are as follows (Rules §20-3-49(b)):

- Retain on-site by Infiltration, Evapotranspiration or Harvest/Reuse, as much as the Water Quality Volume or "WQV" as feasible, with appropriate Low Impact Development (LID) Retention Post-Construction Treatment Control BMPs.
- Biofilter the remaining portion of the WQV that is not retained on-site with appropriate LID Biofiltration Post-Construction Treatment Control BMPs as much as feasible.
- If it is demonstrated to be Infeasible to retain and/or biofilter the WQV by criteria in the Rules §20-3-63, one of the following alternative compliance measures is required:
  1) Treat (by detention, filtration, or settling) and Discharge with appropriate Alternative Compliance Post-Construction Treatment Control BMPs, any portion of the WQV that is not retained on-site or biofiltered.
  2) Retain or biofilter at an offsite location, the volume of runoff from a non-tributary drainage area equivalent to the difference between the Project's WQV and the amount retained on-site or biofiltered.

In accordance with the Rules §20-3-63 *Feasibility Criteria*, infiltration BMPs are likely to be deemed infeasible for this site due to low infiltration rates, a seasonally high groundwater table (approximately +3.0 feet MSL), and the proximity of any proposed infiltration measures to the proposed building's footprint and/or existing property lines. Harvest/Reuse BMPs are also considered infeasible due to the demand being inadequate to reuse the required volume of water.

It is anticipated that biofiltration will be accomplished via a vegetated biofilter (aka bioretention filter) based on the current architectural site plan. In accordance with §20-3-58 *Treatment Control BMPs numeric sizing criteria* of the Rules, water quality volume (WQV) will be calculated as follows:

For Vegetated Biofilters:

WQV = P x A x C x 3630/43,560 (acre-feet)

P = design storm runoff depth, inches = 1.5 inches

A = total drainage area, acres

C = volumetric runoff coefficient = .05 + (0.009 x I)

I = percentage impervious cover, expressed as percentage (0 to 100%)

Therefore, WQV = 1.5 x 0.62 x [0.05 + (0.009 x 93.6)] x 3630
= 3,013 CF
= 0.07 acre-ft

3.5 PROPOSED ROADWAYS/DRIVEWAYS

As mentioned in Section 2.1, access to the development shall be from River Street, via North Kukui Street. The proposed driveway into the property shall be approximately in the same location as the existing southeastern driveway. This driveway will be widened from 24 feet to approximately 36 feet in width and will provide two-way traffic circulation. The driveway will be constructed of asphalt concrete pavement with a concrete driveway apron. The other existing driveway closer to the Vineyard Boulevard side of the property will no longer be required as part of the new development, thus, it will be removed.

No other modifications or improvements are planned to this portion of River Street nor to the intersections at Vineyard Boulevard / River Street or North Kukui Street / River Street. A bike path is proposed along the Ewa side of River Street, running parallel to Nuuanu Stream where the current pedestrian pathway is located.

3.6 CONCEPTUAL GRADING AND UTILITY PLAN

As mentioned previously, the proposed development is an 18-story high-rise affordable housing rental for seniors. Conceptual grading and utilities layouts are shown on Attachment C-5. Site grading is expected to be minimal, providing adequate pipe cover over the proposed utilities and positive draining away from the building following the existing site drainage concept.

Preliminary geotechnical recommendations have been provided by Geolabs, Inc. (January 17, 2017) as follows. Based on the site's existing topography, it is anticipated that minimal grading work will be required. It is assumed that construction of the building's foundations and elevator pits will require some excavation and backfill. Due to the soft and/or loose lagoonal soils underlying the site, placement of new fills will likely induce consolidation of the onsite material. It

is therefore recommended that new fill be placed as soon as practical to allow for ground settlement to occur prior to start of construction improvements.

The existing BWS potable water system will be utilized to provide fire and domestic water services for the development. An 8-inch compound water meter will be provided in the concrete sidewalk area fronting the development and will connect to the existing water main in River Street via a new 8-inch underground pipe. New underground 8-inch pipe will also be utilized onsite to provide water flow into the proposed development. The water system will be design in accordance with the *Water System Standards, 2002.*

As mentioned previously, sanitary service will be available via an existing 12-inch sewer main located in River Street. It is anticipated that a new 8-inch sewer lateral will be constructed to service the development. The lateral will lead from a sewer service cleanout located within the proposed courtyard area to an existing sewer manhole located within River Street.

Much of the developed site will be under the roofline of the proposed building. It is estimated that approximately 94% of the site will be impervious surfaces of either paved or roof topped areas. Stormwater shall be collected via rooftop drains and directed towards the makai side of the property, where it shall be then be collected by an onsite drainage system consisting of a series of drain inlets, biofiltration cells and underground drainage pipes. It is anticipated that the onsite underground drainage pipes will range in size from 8 to 12 inches in diameter and will connect to an existing catch basin located in River Street.

3.7 PROPOSED ELECTRICAL AND COMMUNICATION IMPROVEMENTS

3.7.1 OFFSITE IMPROVEMENTS

Electrical System

Depending on the property demand load, offsite Hawaiian Electric Company (HECO) underground ductlines and circuits may need to be upgraded, according to a will serve letter from HECO documented in September 29, 2016. This will include extending new underground conduits, installing new handholes and manholes, and upsizing primary utility conductors. See Attachment E-1 for the HECO will serve letter.

Telecommunications System

Offsite telecommunication system improvements will include extending new underground conduits, installing new pullboxes, handholes and manholes, and supplementing the existing underground support structure, depending on the size of the development. The site will be provisioned with fiber optic cables to deliver telephone and high-speed internet services. If Spectrum were to secure fiber optic services to the property, Hawaiian Telephone (HT) will first need to approve of their use of the HT underground conduit system through an application process.

Digital Television System

Offsite telecommunication system improvements will include extending new underground conduits, installing new pullboxes, handholes and manholes, and supplementing the existing underground support structure, depending on the size of the development. The site will be provisioned with fiber optic cables to deliver digital television services. If Spectrum were to secure

fiber optic services to the property, HT will first need to approve of their use of the HT underground conduit system through an application process.

Public Roadway Lighting System

Public Roadway Lighting improvements are not anticipated for this project.

3.7.2 ONSITE IMPROVEMENTS

Electrical System

The existing HECO transformer will be demolished and a new transformer vault will be located within the new building footprint. The HECO handhole will be relocated to avoid being in the path of the new driveway. From the handhole, new underground conduits and cabling will be extended to the demarcation point as identified by HECO.

Telecommunications System

New underground conduits and fiber optic cabling will be extended as required from the HT pullbox to the demarcation point as identified by the service providers. Interface Engineering will provide the telecommunications requirements within the building. The pullbox will be upgraded depending on the design of the project and the quantity of facilities required for provisioning the site.

Cable Television System

New underground conduits and fiber optic cabling will be extended as required from the HT pullbox to the demarcation point as identified by the service providers. The pullbox will be upgraded depending on the design of the project and the quantity of facilities required for provisioning the site.

Area Lighting System

Building-mounted exterior lighting and parking structure lighting will be provided.

Photovoltaic System

Photovoltaic System is not anticipated for this project.

Electric Vehicle Charging System

Electric Vehicle Charging System will be provided within the building footprint.

Chapter 4 – CONFIRMATION OF INFRASTRUCTURE REQUIREMENTS

4.1 WATER

The Honolulu Board of Water Supply has confirmed that the existing water system is adequate to accommodate the proposed residential development (see Attachment C-3 for BWS letter dated March 7, 2019).

4.2 SEWER

A Sewer Connection Permit for the proposed development has been issued by the City and County of Honolulu, Department of Planning & Permitting (see Attachment C-6 for approved Sewer Connection Application dated January 29, 2019).

Chapter 5 – REFERENCES

City & County of Honolulu, Department of Planning and Permitting, *Storm Drainage Standards*, August 2017.

City & County of Honolulu, Department of Planning and Permitting, *Rules Relating to Water Quality*, July 14, 2017 (effective December 24, 2018).

City & County of Honolulu, Department of Environmental Services, Wastewater System *Design Standards, City and County of Honolulu*, Volume I, July 2017.

City & County of Honolulu, *Administrative Rules, Title 20, Department of Planning and Permitting, Chapter 3, Rules Relating to Water Quality,* adopted August 16, 2016, amended July 14, 2017.

State of Hawaii, *Water System Standards,* 2002.

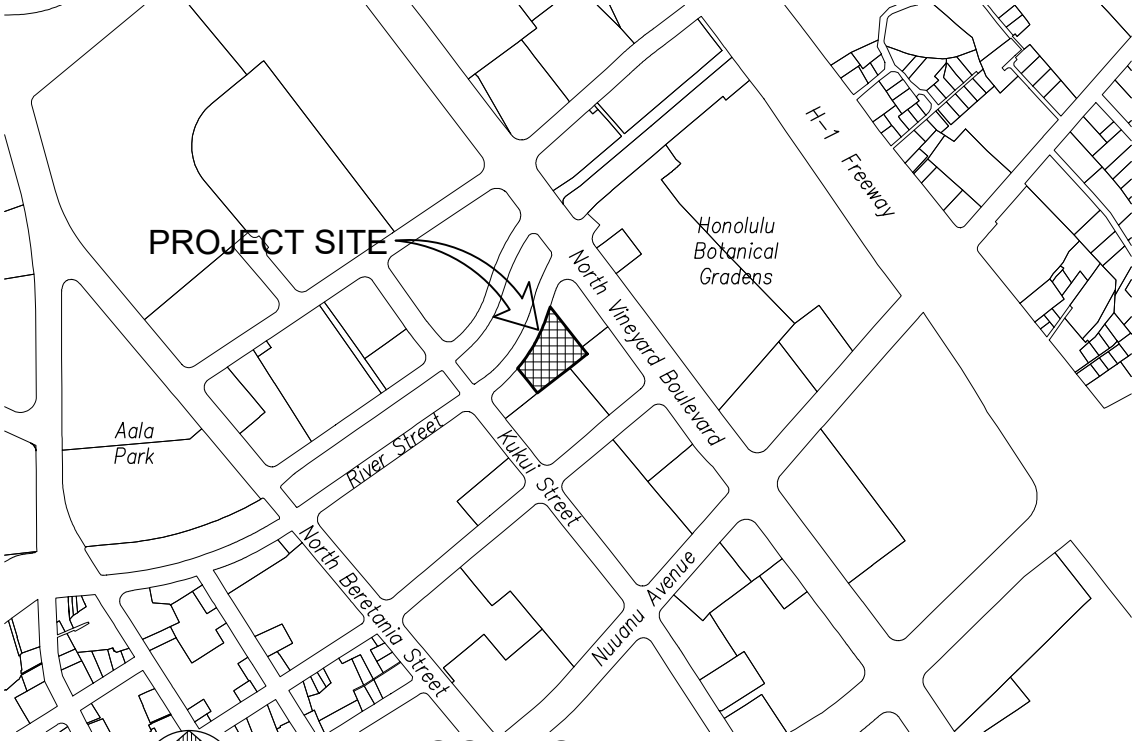
Community Planning and Engineering, *Due Diligence Evaluation for Development of Halewaiolu Senior Residence*, October 2016.

Geolabs, Inc., *Preliminary Geotechnical Engineering Exploration, Halewai'olu Senior Residences, 1333 River Street, Honolulu, Oahu, Hawaii,* January 17, 2017.

CIVIL ATTACHMENT C-1

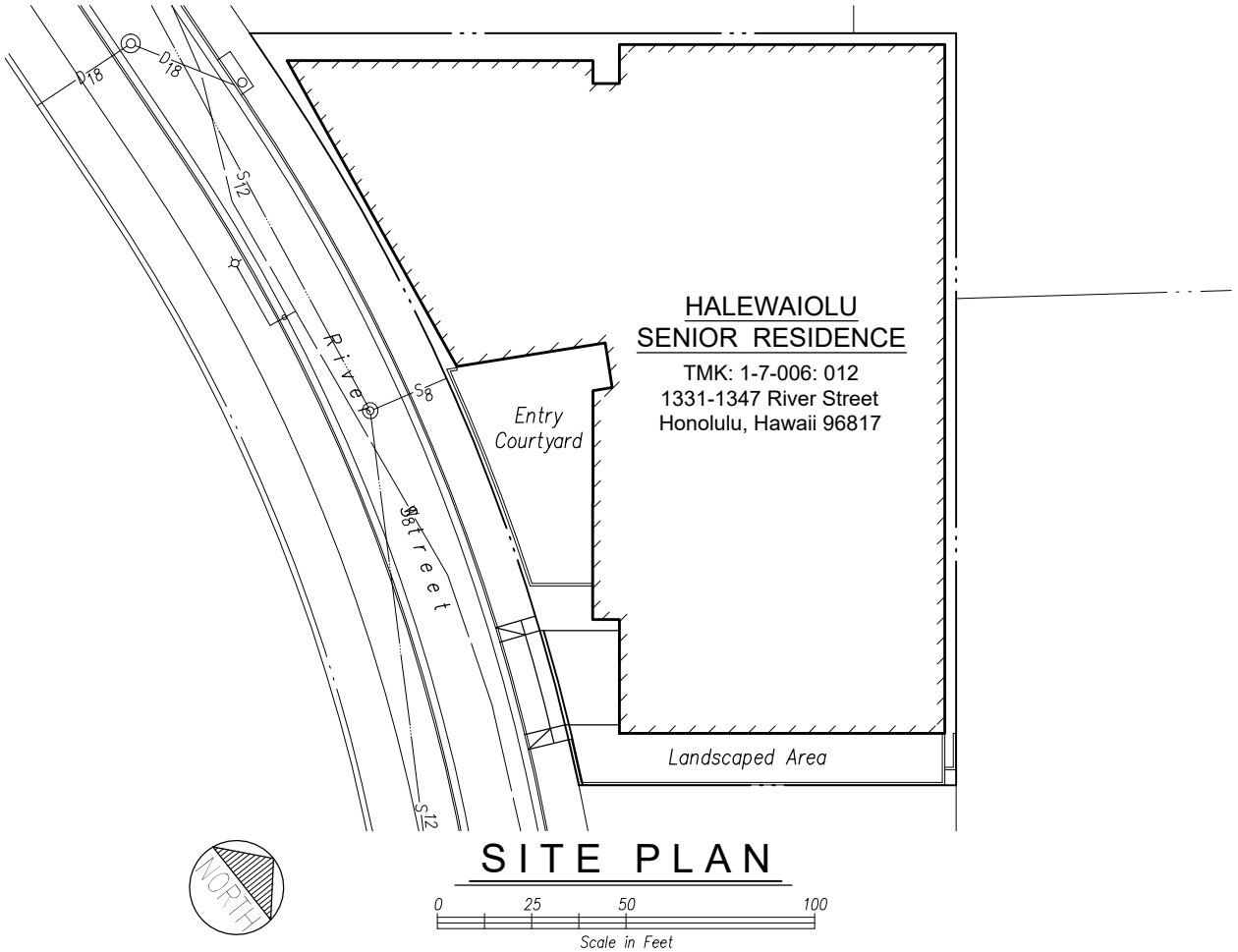
Location Map and Site Plan

Gray · Hong · Nojima & Associates, Inc.
CONSULTING ENGINEERS



LOCATION MAP

Not to Scale



SITE PLAN

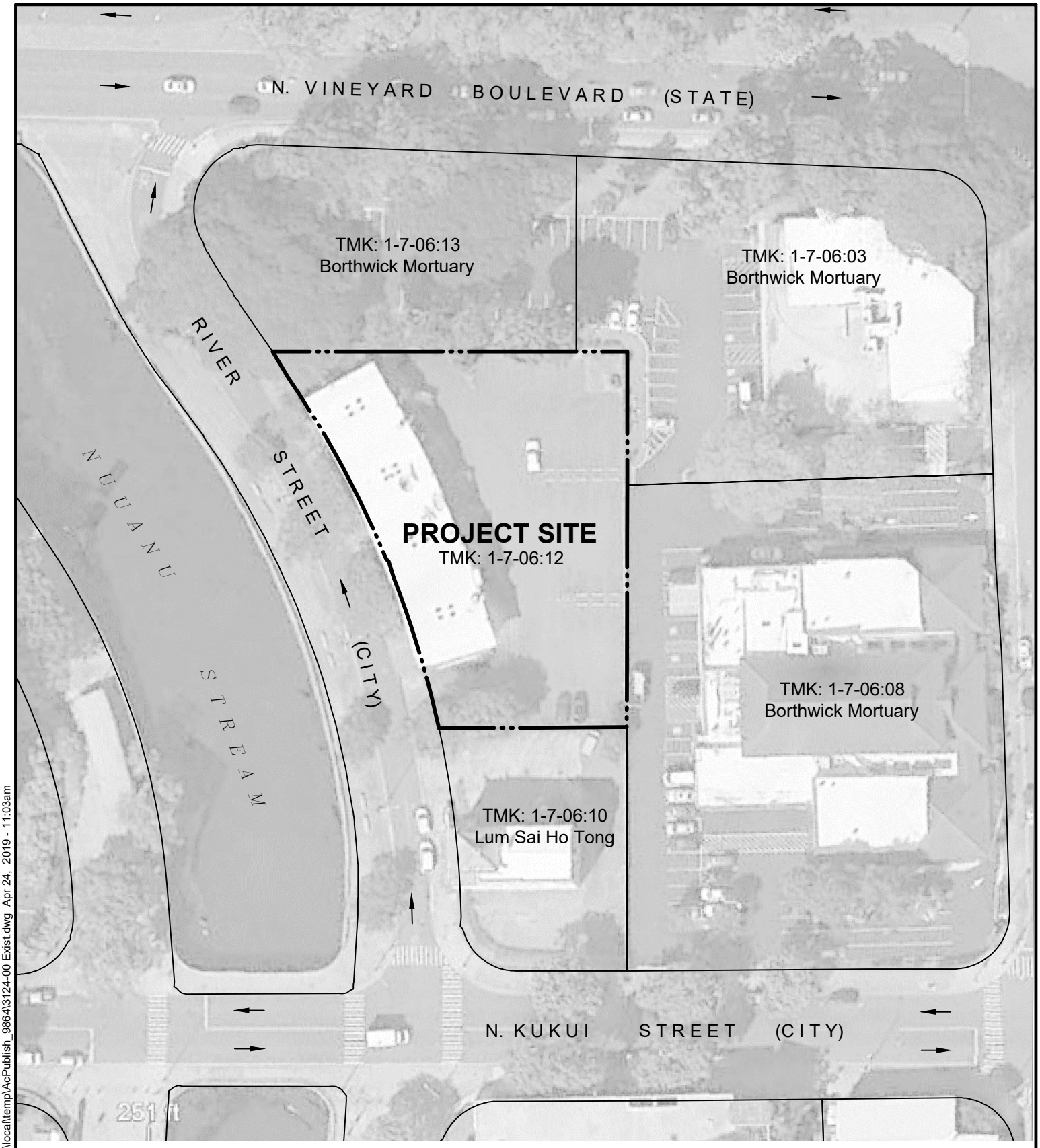
CAD DRAWING: 3124-00 Location	Gray• Hong• Nojima & Associates, Inc.	HALEWAIOLU SENIOR RESIDENCE	ATTACHMENT
DATE: APRIL 2019	CONSULTING ENGINEERS	HONOLULU, OAHU, HAWAII	C-1
SCALE: NONE	201 Merchant Street, Suite 1900 Honolulu, Hawaii 96813 Telephone: (808) 521-0306 Fax: (808) 531-8018	LOCATION MAP & SITE PLAN	
PROJECT #: 3124-00			

Drawing name: P:\3124-00 Halewaiolu Sr Residences\3124-00 DOCS\Reports\PER\CAD or Working Files\3124-00 Location.dwg Apr 24, 2019 - 11:32am

CIVIL ATTACHMENT C-2

Existing Site Plan

Gray · Hong · Nojima
& Associates, Inc.
CONSULTING ENGINEERS



NORTH

LEGEND:

DIRECTION OF TRAFFIC

PROPERTY LINE

CAD DRAWING: 3124-00 Exist DATE: APRIL 2019 SCALE: NONE PROJECT #: 3124-00	Gray• Hong• Nojima & Associates, Inc. CONSULTING ENGINEERS 201 Merchant Street, Suite 1900 Honolulu, Hawaii 96813 Telephone: (808) 521-0306 Fax: (808) 531-8018	HALEWAIOLU SENIOR RESIDENCE HONOLULU, OAHU, HAWAII EXISTING SITE PLAN	ATTACHMENT C-2

Drawing name: C:\Users\gavinm\appdata\local\temp\AcPublish_9864\3124-00 Exist.dwg Apr 24, 2019 - 11:03am

CIVIL ATTACHMENT C-3

Honolulu Board of Water Supply Letter,
dated March 7, 2019

Gray · Hong · Nojima
& Associates, Inc.
CONSULTING ENGINEERS

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

March 7, 2019

KIRK CALDWELL, MAYOR

BRYAN P. ANDAYA, Chair
KAPUA SPROAT, Vice Chair
KAY C. MATSUI
RAY C. SOON
MAX J. SWORD

ROSS S. SASAMURA, Ex-Officio
JADE T. BUTAY, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer

Ms. Sheryl E. Nojima
Gray, Hong, Nojima & Associates, Inc.
201 Merchant Street, Suite 1900
Honolulu, Hawaii 96813-2926

Dear Ms. Nojima:

Subject: Your Letter Dated January 29, 2019 Requesting Water Availability to the Proposed Halewaiolu Affordable Senior Residence, Located at 1331-1347 River Street – Tax Map Key: 1-7-006: 012

Thank you for your email regarding the proposed 156-unit affordable housing rental for seniors.

The existing water system is adequate to accommodate the domestic demands and offsite fire protection to the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (BWS) reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

Water conservation measures are recommended for all proposed developments. These measures include low flow plumbing fixtures, utilization of non-potable water for irrigation using rain catchment and chiller/air handler condensate, cooling tower conductivity meters and water softening recycling systems, drought tolerant plants, xeriscape landscaping, efficient irrigation systems and the use of Water Sense labeled ultra-low-flow water fixtures and toilets.

High-rise buildings with booster pumps will be required to install water hammer arrestors or expansion tanks to reduce pressure spikes and potential main breaks in our water system.

The BWS has suspended fire flow tests on fire hydrants as a water conservation measure. However, you may use the following calculated flow data for Fire Hydrant No. M00308 located along River Street:

Static Pressure	80 psi
Residual Pressure	69 psi
Flow	2,000 gpm

The data are based on the existing water system, and the static pressure represents the theoretical pressure at the point of calculation with the reservoir full and no demands on the water system. The static pressure is not indicative of the actual pressure in the field. Therefore, in order to determine the flows that are available to the site, you will have to determine the actual field pressure by taking on-site pressure readings at various times of the day and correlating that field data with the above hydraulic design data.

The map showing the location of the fire hydrant is attached.

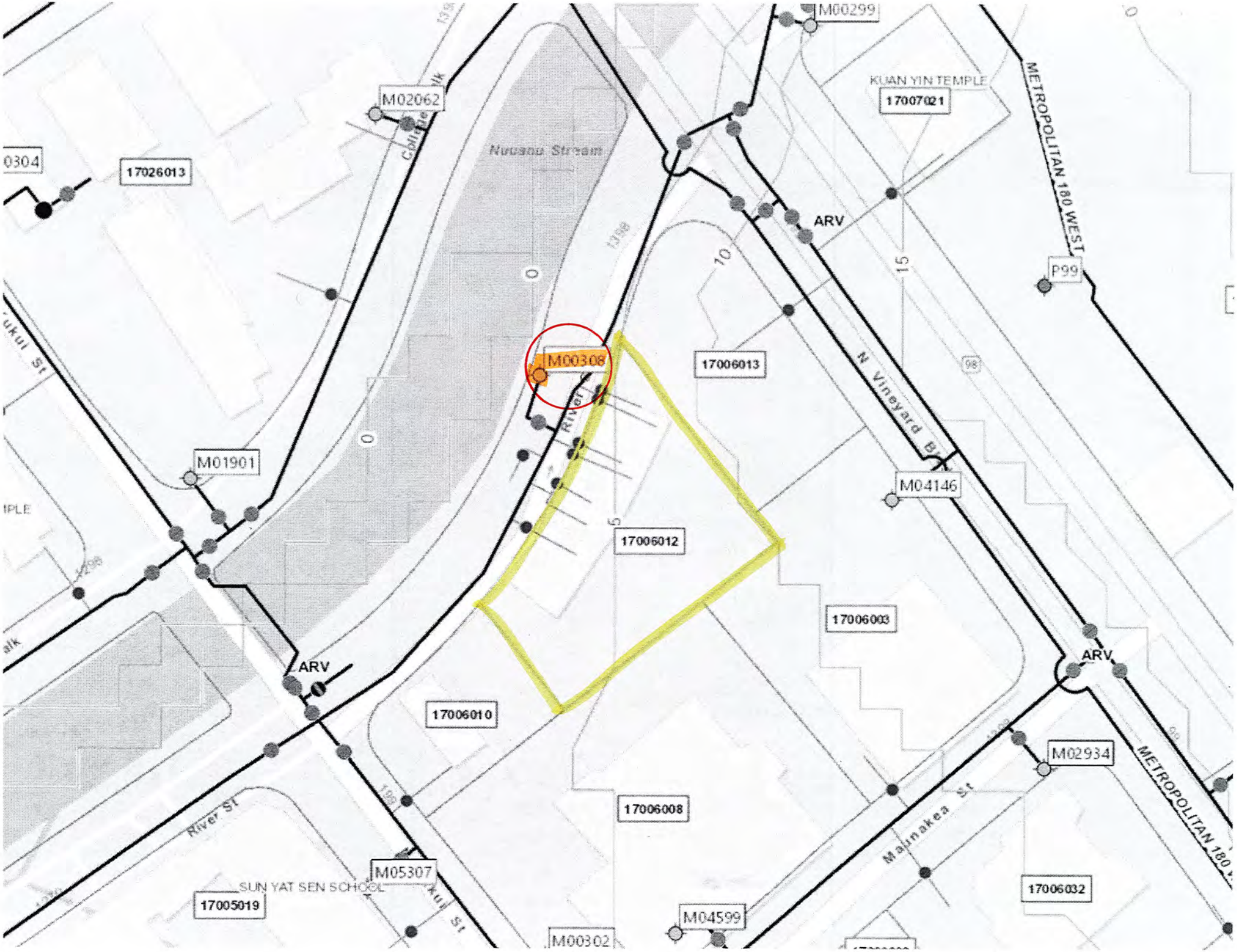
The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

Attachment


M00299
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METROPOLITAN 180 WEST
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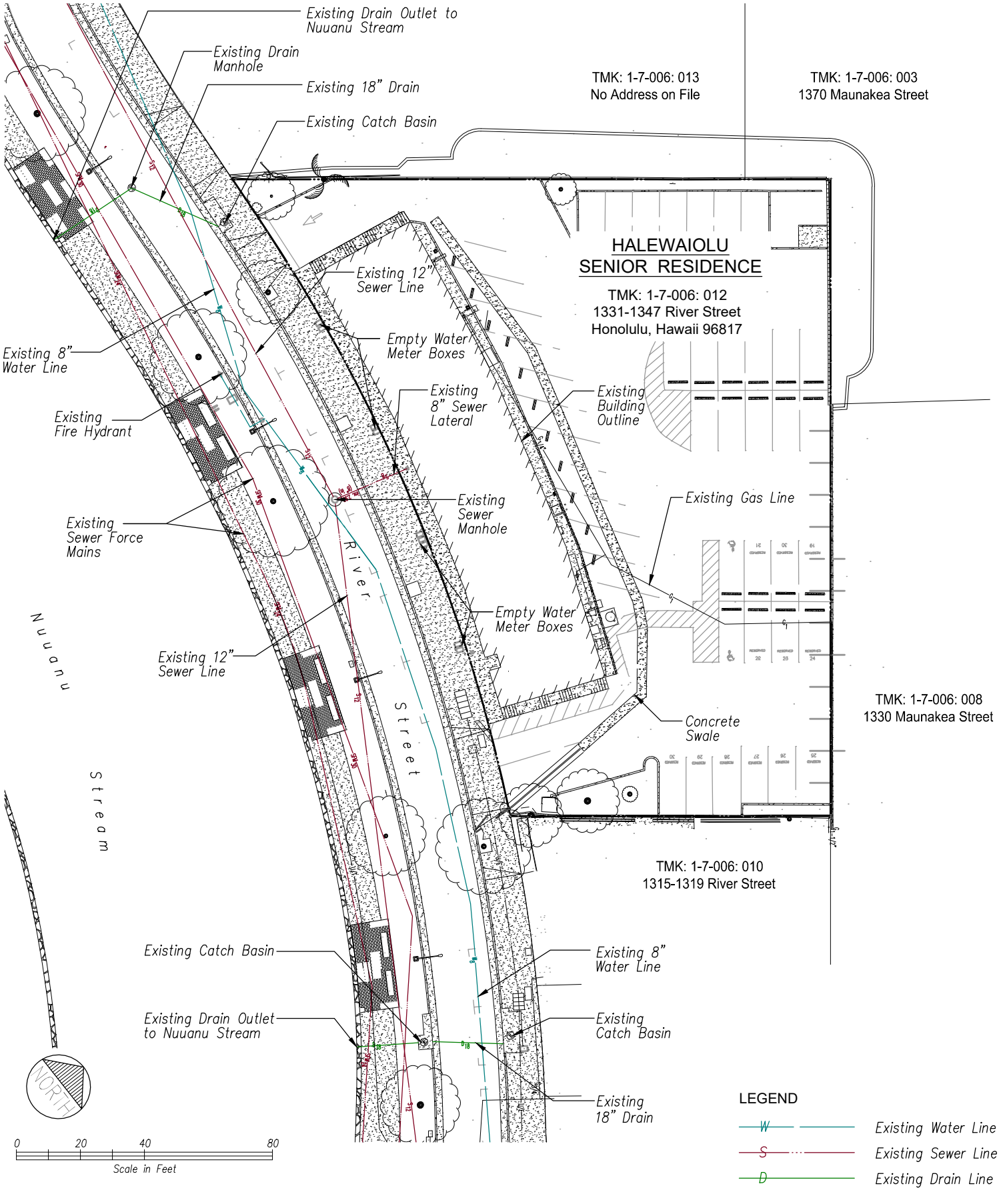
N Vineyard Blvd
M01901
M04146
17006012
17006003
ARV
ARV
17006010
M02934
17006008
River St
Maunakea St
M05307
SUN YAT SEN SCHOOL
17005019
17006032
M04599
M00302

CIVIL ATTACHMENT C-4

Existing Utilities

Gray · Hong · Nojima
& Associates, Inc.
CONSULTING ENGINEERS



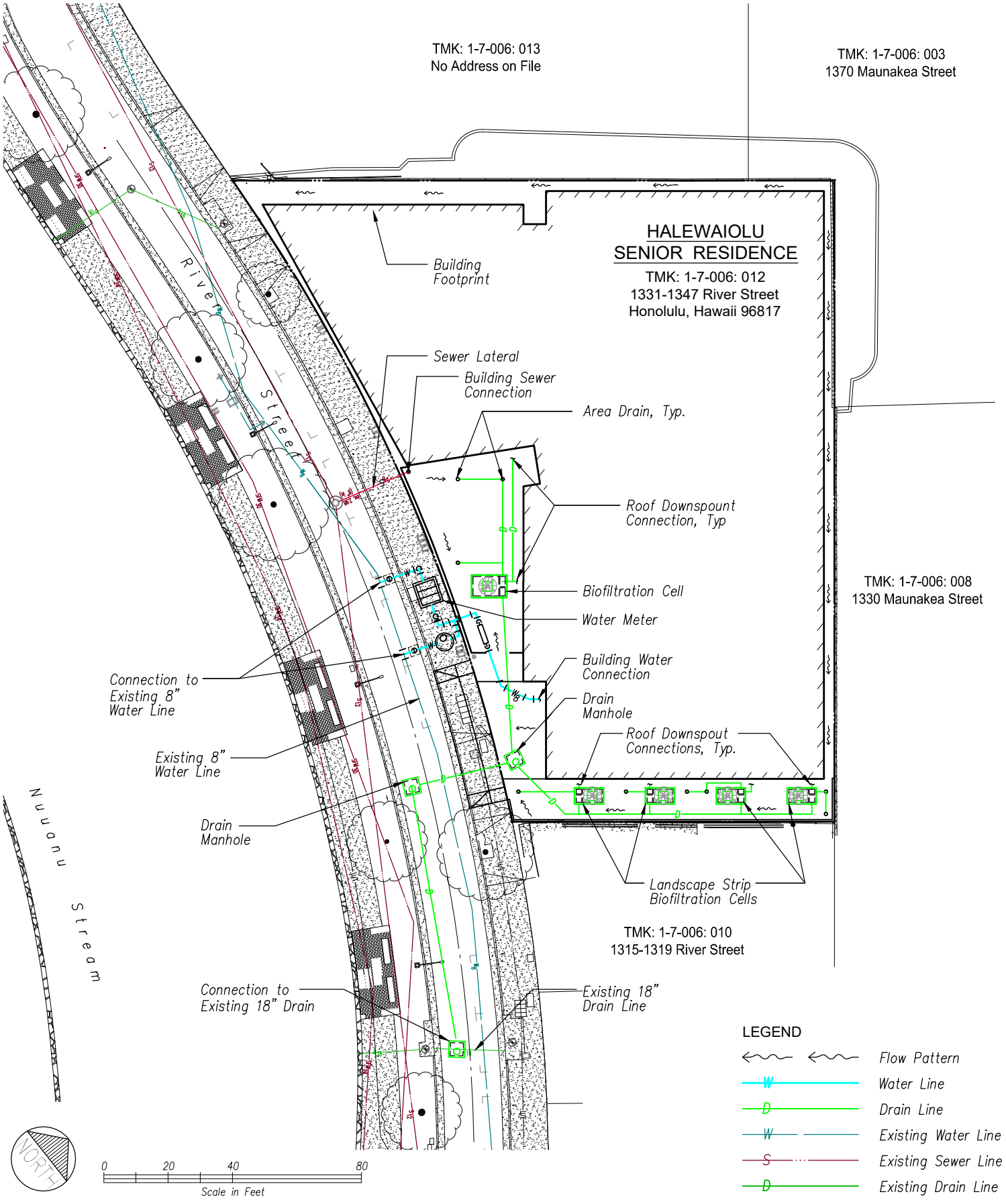
Drawing name: C:\Users\gavinm\appdata\local\temp\AcPublish_9864\3124-00 X-Utility.dwg Apr 25, 2019 - 8:51am

CAD DRAWING: 3124-00 X-Utility	Gray• Hong• Nojima & Associates, Inc.	HALEWAIOLU SENIOR RESIDENCE	ATTACHMENT
DATE: APR 2019	CONSULTING ENGINEERS	HONOLULU, OAHU, HAWAII	C-4
SCALE: AS SHOWN	201 Merchant Street, Suite 1900 Honolulu, Hawaii 96813 Telephone: (808) 521-0306 Fax: (808) 531-8018	EXISTING UTILITIES	
PROJECT #: 3124-00			

ATTACHMENT C-5

Conceptual Grading and Utilities Plan

Gray · Hong · Nojima
& Associates, Inc.
CONSULTING ENGINEERS



Drawing name: P:\3124-00 Halewaiolu Sr Residences\3124-00 DOCS\Reports\PER\CAD or Working Files\3124-00 P-Utility.dwg Apr 25, 2019 - 9:01am

CAD DRAWING: 3124-00 P-Utility DATE: APR 2019 SCALE: AS SHOWN PROJECT #: 3124-00	Gray• Hong• Nojima & Associates, Inc. CONSULTING ENGINEERS 201 Merchant Street, Suite 1900 Honolulu, Hawaii 96813 Telephone: (808) 521-0306 Fax: (808) 531-8018	HALEWAIOLU SENIOR RESIDENCE HONOLULU, OAHU, HAWAII CONCEPTUAL GRADING AND UTILITIES PLAN	ATTACHMENT C-5

ATTACHMENT C-6

Department of Planning and Permitting
Approved Sewer Connection Application,
Dated January 29, 2019

Gray · Hong · Nojima
& Associates, Inc.
CONSULTING ENGINEERS

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET * HONOLULU, HAWAII 96813
Phone: (808) 768-8209 * Fax: (808) 768-4210

SEWER CONNECTION APPLICATION

APPLICATION NO.: **2019/SCA-0111** STATUS: **Approved**

DATE RECEIVED: **01/29/2019** IWDP APP. NO.:

PROJECT NAME: **2019/SCA-0111 Halewaiolu Senior Residence**

$722,467.20
Estimated Wastewater System Facility Charge*

LOCATION:

Zone	Section	Plat	Parcel
1	7	006	012

1331 RIVER ST Honolulu / Kapalam **26,925** Sq. Ft.

SPECIFIC LOCATION: **1331 - 1347 River Street**

APPLICANT: **Gray Hong Nojima & Associates Inc.**
ATTN. Sheryl Nojima
201 Merchant Street Suite 1900
Honolulu, HI 96813-2926

DEVELOPMENT TYPE: **Dwelling, Multi-family** SEWER CONNECTION WORK DESIRED:

OTHER USES:

NON-RESIDENTIAL AREA: s.f. APPROXIMATE DATE OF CONNECTION:

PROPOSED UNITS	EXISTING UNITS	UNITS TO BE DEMOLISHED
No. of New Units: **156**	No. of Existing Units: **0**	No. of Units to be Demolished: **0**
Studios:	Studios:	Studios:
1-Bedroom: **130**	1-Bedroom:	1-Bedroom:
2-Bedroom: **26**	2-Bedroom:	2-Bedroom:
3-Bedroom:	3-Bedroom:	3-Bedroom:
4-Bedroom:	4-Bedroom:	4-Bedroom:
5-Bedroom:	5-Bedroom:	5-Bedroom:
6-Bedroom:	6-Bedroom:	6-Bedroom:

REMARKS

APPROVAL DATE: **01/29/2019**

EXPIRATION DATE: **01/28/2021**

Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval of plans.
** Applicable WSFC shall be collected at the prevailing rate in accordance with ROH 1990, Chapter 14, Sections 14-10.3, 14-10.4, 14-10.5 and Appendix 14-D.*

REVIEWED BY: ***Keith Miyashiro***

Site Development Division, Wastewater Branch

ExternalID: **064576002-001** JobId: **64576002**

ELECTRICAL ATTACHMENT E-1

Correspondence with Utility Companies

(Hawaiian Electric Co., Hawaiian Telcom)

Gray · Hong · Nojima
& Associates, Inc.
CONSULTING ENGINEERS

RECEIVED
OCT - 3 2016
Ronald N.S. Ho & Assoc., Inc.

September 29, 2016

SKS ___	DT ___	SS ___
GF ___	SJI ___	SL ___
AM ___	JS ___	BHS ___
BJO ___	RK ___	GTN ___
KKO ___	RS ___	AN ___
IK ___	CC ___	GDT ___
BHK ___	CA ___	SNS ___
RY ___	MT ___	JO ___
CMC ___	MK2	EHW ___
AD ___	___	RTS ___

PROJECT # _____
DATE: _____
___ FILE ___ ACTION
___ INFO ___ TRASH

Mr. Masaru Kawaharada
Ronald N.S. Ho & Associates
2153 N. King Street #201
Honolulu, HI. 96819

Dear Mr. Kawaharada:

Re: Halewai'olu Senior Affordable Housing Development
1331 River Street, Honolulu HI

This is in response to your request for a "Will Serve" letter for the above project location.

We have existing distribution circuits on River Street and Kukui Street that could potentially be used to serve your future project. Please keep in mind that these circuits may need to be upgraded depending on the size of this project's load. At this time, we do not have sufficient information and detailed plans to make this determination.

We request that you keep us informed on the status of your project. As soon as you have detailed plans, please create a Service Request with us, and be sure to allow sufficient time for us to work on the project.

Please let us know if we can be of assistance in any other way. Should you have any questions, please call me at 543-7590.

Sincerely,

Eric Shimono
Sr. Engineer
Planning & Design Division
Customer Installation Dept.

ES/GF:ks

Hawaiian Telcom

September 27, 2016

Ronald N. S. Ho & Associates, Inc.
2153 North King Street #201
Honolulu, Hawaii 96819-4554
Attention: Mr. Masaru Kawaharada

Dear Mr. Kawaharada:

Subject: **Halewaiolu Senior Affordable Housing Due Diligence**
Hawaiian Telcom Will Serve Request

In response to your email dated September 13, 2016, we have determined that Hawaiian Telcom will serve the proposed project site from its Alakea Central Office located on Bishop Street.

The existing facilities and infrastructure in the vicinity of this parcel have sufficient capacity for the proposed development. Any related distribution systems throughout the development may also require underground conduits, pullboxes, handholes and manholes. Hawaiian Telcom specifications require 2- or 4-inch conduits, 2'x 4' or 3'x 5' pullboxes, 4'x 6' handholes, and 5'x 10' manholes. The types and amounts will be dependent upon the design of the development.

The Developer's off-site and on-site improvement costs to provide service to the project site will include supplementing the existing underground support structures and/or extending new underground support structures. The responsibility of the costs belongs to the Developer.

Potential service connection points to the project are along River Street. The site will be provisioned with fiber optic cable that will provide access to Hawaiian Telcom's phone, high speed internet and digital television services.

If you have any questions or require assistance in the future on this project, please call me at 546-7761.

Sincerely,

Les Loo
Network Engineer - Outside Plant Engineering
Network Engineering & Planning

File

Appendix L

Hazardous Materials Assessment Survey
Ford & Associates, Inc.
April 12, 2019

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Hazardous Materials Assessment Survey

Halewaiolu Residences
1331-1347 River Street
Honolulu, Oahu, Hawaii

FAI Project Number 19-1439

April 12, 2019

Prepared for:

Halewaiolu Senior Development, LLC
Mauka Tower, Pacific Guardian Center
737 Bishop Street, Suite 1520
Honolulu, Oahu, Hawaii 96813

Prepared by:

Ford & Associates, Inc.
928 Nuuanu Avenue, Suite 505
Honolulu, HI 96817
808.426.6927

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2.2 DESCRIPTION OF OTHER HAZARDOUS MATERIALS ASSESSMENT 3
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3 Analytical Results of Lead Paint Sampling

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2 Confirmed ACM - First Floor
3 Confirmed ACM - Second Floor
4 Confirmed ACM - Roof

Photographs

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B Laboratory Analytical Reports for Lead Paint Sampling
C Hawaiian Electric Letter

1.0 INTRODUCTION

Halewaiolu Senior Development, LLC (HSD) retained Ford & Associates, Inc. (FAI) to provide a hazardous materials assessment survey for the Halewaiolu Residences Project Site, located at 1331-1347 River Street, in Honolulu, Oahu, Hawaii (the "project site"). The project site consists of a two-story multi-tenant commercial structure on grade. Entry and exit driveways are to the south and north of the structure, with an open parking lot to the rear (east).

The purpose of this project was to conduct a hazardous materials assessment survey of interior and exterior portions of the project site prior to the future planned redevelopment activities. This survey included the collection and laboratory analyses of bulk samples of suspect asbestos-containing materials (ACM) and lead-based paint (LBP). In addition, FAI conducted a visual assessment for materials-containing lead (MCL) (i.e., lead vent shields), and fluorescent light fixtures to assess for the presence of suspect polychlorinated biphenyl (PCB)-containing lighting ballasts and mercury-containing fluorescent light bulbs. Furthermore, FAI visually identified other potentially hazardous environmental concerns present which will impact the future planned redevelopment activities. The roof of the project structure and exterior site areas were included in the survey.

On March 14, 2019, Mr. Todd Sakuda and Mr. Don Gacusan, representatives with FAI, conducted a walkthrough assessment and sampling of the project site. Mr. Sakuda and Mr. Gacusan are certified by the State of Hawaii Department of Health (DOH) and accredited by the United States Environmental Protection Agency (EPA) as Asbestos Building Inspectors (Certification Nos.: HIASB-0361 and HIASB-3137, respectively). In addition, Mr. Sakuda and Mr. Gacusan are certified by the DOH and accredited by the EPA as a Lead-Based Paint Risk Assessor and Lead-Based Paint Inspector (Certification Nos. PB-0281 and PB-0805, respectively). Site access was provided by Mr. Richard Char with Hawaiian Properties Limited.

During the assessment, FAI conducted a visual assessment of the project site and noted areas where friable and non-friable materials suspected of containing asbestos were located. A friable material is one which, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

FAI collected representative bulk samples of suspect ACM and paint chip samples of suspect LBP observed throughout interior and exterior portions of the project site. FAI also visually assessed for other potential hazardous materials and units throughout the project site.

2.0 SAMPLING AND ANALYSIS ASSESSMENT

On March 14, 2019, FAI conducted the walkthrough assessment and sampling of the project site. FAI's assessment resulted in the identification, bulk sample collection, and laboratory analyses of suspect hazardous materials throughout the project site.

Bulk samples collected for asbestos analysis and paint samples collected for lead analysis were cataloged, packaged, and shipped to NVL Laboratories Inc. (NVL), an American Industrial Hygiene

Association (AIHA), National Voluntary Laboratory Accreditation Program (NVLAP), and Environmental Lead Laboratory Accreditation Program (ELLAP)-accredited laboratory located in Seattle, Washington.

The following sections describe the sampling and analytical procedures for the collection of suspect-ACM and LBP, and the visual assessment to identify other potentially hazardous materials.

2.1 DESCRIPTION OF ASBESTOS ASSESSMENT

During the assessment, a total of 40 types of suspect ACM were identified, and 141 samples were collected from the project site.

These materials included:

- Painted plaster interior wall and ceiling
- Various colored 4-inch vinyl cove base with associated mastic/adhesive (six types)
- Various ceramic wall and floor tile with associated grout (three types)
- Gypsum wallboard systems with associated joint compound and tape (two types)
- Various colored door caulking (two types)
- Various sized and designed vinyl floor tiles (VFT) and vinyl sheet flooring (VSF) with associated mastics (15 types/variations)
- Various acoustical ceiling panels (two types)
- Various colored sink undercoating (three types)
- White thermoplastic olefin (TPO) roofing system
- White roof coating over black asphaltic roof coating
- Roof penetration and protrusion mastic/sealant
- Roof-top duct seam sealant
- Asphalt concrete (AC) pavement

During the assessment, suspect ACM samples were collected from the project site using hand tools, including chisels, hammers, razor knives, and a core sampler for base roofing materials. Extracted samples were approximately 1- by 1-inch in size and were collected down to the underlying substrates, placed in sealed container, and labeled with unique sample numbers.

The EPA and State of Hawaii Department of Health (DOH) define ACM as materials that contain greater than one percent (1%) asbestos fibers. In accordance with Hawaii Administrative Rules (HAR) Title 11, Chapter 501, Standard for Demolition and Renovation, a minimum of three (3) samples of every homogenous suspect material was collected, per building, per floor, for laboratory analysis. Suspect materials sampled and analyzed are described in Table 2, located behind the Tables tab.

Samples were analyzed for asbestos content using EPA Method 600R-93/116 polarized light microscopy (PLM) for determining asbestos fibers in bulk materials. The analytical laboratory reports are included in Appendix A.

2.2 DESCRIPTION OF LEAD PAINT AND MATERIALS CONTAINING LEAD ASSESSMENT

During the current survey, supplemental paint samples were collected from painted surfaces throughout the interior and exterior of the project site. Paint chips were collected using hand tools, including chisels and razor scrapers. To collect the paint samples, the painted surface (including all sublayers) was scraped down to the underlying substrate (approximately 2- by 2-inches in size), the removed paint chips/shavings were placed in sealed plastic containers, and labeled with unique sample numbers.

The EPA, United States Housing and Urban Development (HUD), and DOH define paint or other surface coatings as LBP when it contains 0.5% or more lead by weight or equal to or greater than one milligram per square centimeter (mg/cm^2). The results for this assessment are reported in % by wt. Paint sample descriptions and locations are presented in Table 3, located behind the *Tables* tab.

The paint samples were analyzed for total lead content using the EPA Method 7000B Atomic Adsorption Spectrometry (AAS). The analytical laboratory reports are included in Appendix B.

In addition, FAI performed a visual assessment of the project site for other materials that may contain lead, such as lead vent shields commonly used in roofing construction, which will be impacted during the future planned redevelopment activities.

2.2 DESCRIPTION OF OTHER HAZARDOUS MATERIALS ASSESSMENT

The following subsections describe other potentially hazardous materials assessed.

2.2.1 Polychlorinated Biphenyls Assessment

FAI disassembled and visually inspected representative, readily accessible fluorescent lighting fixtures throughout the project site to assess for the presence of suspect PCB-containing lighting ballasts.

PCB waste generated in the State of Hawaii must be shipped to an approved waste depository facility located in the United States mainland for final disposal.

2.2.2 Mercury-Containing Material Assessment

FAI inspected the fluorescent lighting fixtures for suspect mercury-containing fluorescent lamps/bulbs. Mercury-containing light lamps/bulbs and/or mercury-containing materials are considered universal waste under Hawaii Administrative Rule (HAR) 11-273 and are managed in accordance with the 40 Code of Federal Regulations (CFR) Part 273. However, the DOH strongly encourages such lamps to be recycled, where feasible.

2.2.3 Other Potentially Hazardous Materials

FAI conducted a visual assessment of readily accessible equipment and units that may contain hazardous material components. FAI assessed areas and existing equipment for potential hazardous material and environmental concerns, and recorded field observations and/or available information.

3.0 SURVEY RESULTS

3.1 RESULTS OF ASBESTOS ASSESSMENT

The survey resulted in the collection of 141 total bulk samples of suspect ACM from the project site that will be impacted during the future planned redevelopment activities. The suspect ACM samples from the current survey were shipped to NVL for Polarized Light Microscopy (PLM) analysis.

Based on the laboratory results, FAI confirmed nine materials that contain asbestos above the regulatory level of 1%. The confirmed ACM include the following:

First Floor

- Approximately 1,850 square feet (SF) of black mastic, located beneath existing VFT in the Uptown Café dining room, office, and Hanagasa Inn dining room
- Approximately 250 SF of light brown mastic beneath 4-by 4-inch blue and white ceramic wall tile, located throughout the Uptown Café, men's restroom
- Approximately five SF of inaccessible sink undercoating (assumed ACM), located in the Uptown Café, dining room, service counter

Second Floor

- Approximately 5,400 SF of 9-by 9-inch brown VFT, located throughout all second-floor suites and hallways
- Approximately 520 linear feet (LF) of 4-inch brown vinyl cove base, located throughout second floor baseboards in suites 204, 205, 207, 212, 213, 215 (restroom included), and 216 (restroom only)
- Approximately five SF of remnant black mirror mastic, located on the restroom door in Suite 205
- Approximately 12,200 SF of painted interior wall plaster, located throughout the second-floor interior walls and partitions

Roof

- Approximately 30 SF of black sealant, located throughout roof penetrations and protrusions
- Approximately 750 SF of black coating beneath white roof coating, located throughout the west side, lower eyebrow roof (awning)

Because the confirmed and assumed ACM will be disturbed during the future planned redevelopment activities, these materials must be properly removed and disposed prior to general demolition/construction activities. A licensed asbestos abatement contractor should conduct the removal and disposal work under the supervision of a qualified industrial hygiene professional.

This asbestos assessment was limited to readily accessible portions of the project site under the conditions present during FAI's site assessment. FAI conducted a thorough assessment; however, additional suspect ACM may exist underground or behind permanent structures such as fixed walls, solid ceilings, or inaccessible/sealed pipe chases. If additional suspect ACM are discovered during the renovation/demolition activities, additional sampling and analysis of the suspect ACM should be conducted.

Table 2, located behind the *Table* tab, show suspect ACM descriptions, locations, analytical results, and sample identification (ID) numbers. Materials confirmed as ACM are described in Table 1, also located behind the *Tables* tab. Estimated affected areas are identified on Figures 2 through 4, located behind the *Figures* tab. Photographs of the confirmed and presumed ACM are presented in the photo log, located behind the *Photographs* tab.

3.2 RESULTS OF LEAD-BASED PAINT ASSESSMENT

The surveys resulted in the collection of 14 total paint samples of suspect LBP from the project site that will be impacted during the future planned redevelopment activities.

Based on laboratory results, none of the paint samples contained lead concentrations above the EPA/HUD regulatory level of 0.5% lead by weight, which defines LBP.

However, seven paint samples reported lower concentrations of lead below the EPA/HUD LBP threshold. Therefore, these paint sample results are considered lead-containing paint (LCP). These paint sample results are shown with an asterisk (*) next to the result on Table 3, located behind the *Tables* tab.

The identified LCPs were observed ranging from poor to good condition with varying degrees of delamination. Although these paints do not meet the EPA/HUD definition of LBP, contractors and subcontractors must follow the OSHA lead standards 29 Code of Federal Regulation (CFR) 1910.1025 (General Industry Standard) and 29 CFR 1926.62 (Construction Standard) when workers have a potential to be exposed to any amount of lead during work activities (i.e., cutting, drilling, sanding, grinding, etc.).

The remaining seven paint sample results were reported below the laboratory reporting limit (RL) and are considered not to contain lead. No special handling or disposal will be required when disturbing these paints.

Table 3, located behind the *Tables* tab, presents all previous and current paint sample descriptions, locations, analytical results, and sample ID numbers.

3.3 RESULTS OF OTHER HAZARDOUS MATERIALS ASSESSMENT

The following subsections describe the field observation and/or sampling for other potentially hazardous materials assessed. FAI's observations are listed as follows:

3.3.1 Polychlorinated Biphenyls-Containing Units

FAI disassembled and visually inspected representative fluorescent lighting fixtures observed throughout the project site. During the assessment, FAI observed all of the inspected light ballasts labeled "No PCBs." However, FAI recommends that all fluorescent light ballasts be inspected prior to the planned demolition activities. All ballasts not displaying the "No PCBs" indication should be removed from the light fixture, placed in a State of Hawaii Department of Transportation (DOT)-approved waste container/drum, properly labeled, and disposed as PCB waste. PCB waste generated in the State of Hawaii must be shipped to an approved waste depository facility located in the Continental United States for final disposal.

In addition, FAI also observed high intensity discharge (HID) light fixtures located on the exterior of the building. These fixtures contain suspect PCB ballasts and should be inspected, removed, and properly disposed prior to the future planned redevelopment activities.

FAI also observed a pad-mounted Hawaiian Electric-owned electrical transformer located on the northwest corner of the project site, along the entry driveway. Based on a letter from Hawaiian Electric, the transformer is a non-PCB unit. A copy of the Hawaiian Electric letter is attached as Appendix C. If this transformer will be affected by the future planned redevelopment activities, the owner should provide Hawaiian Electric advance notice to decommission or relocate the unit prior to the planned redevelopment activities.

3.3.2 Mercury-Containing Materials

FAI also inspected the lighting fixtures for mercury-containing fluorescent bulbs. All fluorescent light bulbs/tubes should be considered mercury-containing, considered universal waste under Hawaii Administrative Rule (HAR) 11-273, and managed in accordance with the 40 Code of Federal Regulations (CFR) Part 273. Furthermore, DOH strongly encourages bulbs/lamps to be recycled, if possible.

In addition, FAI also observed high intensity discharge (HID) lamps throughout the warehouse ceiling and in select locations at the project site. These lamps should also be considered mercury-containing and be properly removed, recycled or disposed in accordance with current regulatory requirements.

3.3.3 Other Potentially Hazardous Materials

FAI assessed areas/equipment of potential concern, and recorded field observations and/or available information, as follows:

Chlorofluorocarbon (CFC)-Containing Air-Conditioning (AC) Units

FAI visually identified two pad-mounted, split-system air-conditioning (AC) units located on the rear of Uptown Café and a variety of window-mounted AC units located throughout the project building. Since these AC units will be affected by the future planned redevelopment activities, the CFC-containing units should be removed/purged/recycled prior to demolition of the abandoned units.

Ionizing Radiation Smoke Detectors

FAI visually observed ceiling-mounted smoke detectors located throughout the project building. Each of these smoke detectors contains a small radioactive source (typically Americium 241). Therefore, since these smoke detectors will be affected by the planned redevelopment activities, they should be removed, properly packaged, and disposed in accordance with current regulatory requirements.

Emergency Exit Light Fixtures

FAI visually observed a few emergency exit-light fixtures located at strategic locations throughout the project site. These light fixtures contain a rechargeable lead-acid battery and should be properly removed and disposed prior to the future planned redevelopment activities.

4.0 LIMITATIONS

This report is for the exclusive use of Halewaiolu Senior Development, LLC and no other party shall have any right to rely on any service provided by FAI without prior written consent. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment.

The services provided by FAI in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made. FAI will not distribute or publish this report without consent except as required by law or court order.



This report prepared by:_____

Todd Sakuda
Senior Project Manager



This report reviewed by:_____

Daniel P. Ford, PG., MBA
Principal Geologist

TABLES

Table 1
Confirmed Asbestos-Containing Materials
at
Halewaiolu Residence
1331-1347 River Street
Honolulu, Oahu, Hawaii

Ford & Associates Project No. 19-1439
Sample Collection Date: March 14, 2019

Building Material	Material Location	Asbestos Type & %	Material Type	AHERA type	Approximate Quantity
First Floor					
Black mastic beneath 12-by 12-inch gray VFT	Uptown Café, dining room, floor	Chrysotile 6-8%	M	5	800 SF
Black mastic beneath 12-by 12-inch beige striped VFT	Uptown Café, office, floor	Chrysotile 6-8%	M	5	100 SF
Light brown mastic beneath 4-by 4-inch blue and white ceramic wall tile	Uptown Café, men's restroom, walls	Chrysotile 3%	M	5	250 SF
Inaccessible sink undercoating	Uptown Café, service station, beneath counter sink	Assumed	M	5	5 SF
Black mastic beneath 12-by 12-inch beige VFT	Hanagasa Inn, dining room, floor	Chrysotile 4-5%	M	5	950 SF
Second Floor					
9-by 9-inch brown VFT	Throughout Suites 201 through 216 and restrooms, and hallway, floors	Chrysotile 5-8%	M	5	5,400 SF
4-inch brown cove base	Throughout Suites 204, 205, 207, 212, 213, 215 (restrooms included), 216 restroom (only), baseboards	Chrysotile 5-6%	M	5	520 LF
Remnant black mirror mastic	Throughout Suite 205, restroom door	Chrysotile 6-7%	M	5	5 SF
Painted interior wall plaster	Throughout Suites 201 through 216 and hallway, walls	Chrysotile 5%	S	5	12,200 SF

Table 1 (continued)

Building Material	Material Location	Asbestos Type & %	Material Type	AHERA type	Approximate Quantity
Roof					
Black sealant	Throughout roof, at penetrations and protrusions	Chrysotile 4%	M	5	30 SF
Black coating beneath white roof coating	Lower west side eyebrow roof (awning)	Chrysotile 2%	M	5	750 SF
Exterior - No Confirmed ACM was identified.					

Notes:

Material Type:

M = Miscellaneous Material **S** = Surfacing Material **TSI** = Thermal System Insulation

Asbestos Hazard Emergency Response Act (AHERA) Categories:

1. Damaged or significantly damaged Thermal System Insulation.
2. Damaged friable surfacing ACM.
3. Significantly damaged friable surfacing ACM.
4. Damaged or significantly damaged friable miscellaneous ACM.
5. ACM with potential for damage.
6. ACM with potential for significant damage.
7. Any remaining friable ACM or friable suspect ACM.

SF = Square Feet
LF = Linear Feet

Table 2
Analytical Results of Asbestos Sampling
at
Halewaiolu Residences
1331-1347 River Street
Honolulu, Oahu, Hawaii

Project No. 19-1439
Sample Collection Date: March 14, 2019

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
First Floor			
Painted wall and ceiling plaster / located throughout interior structural walls	Uptown Café, men's restroom, near sink	None Detected	HR-01
	Uptown Café, women's restroom, toilet	None Detected	HR-02
	Uptown Café, south doorway	None Detected	HR-03
2-by 4-foot fissured suspended ceiling panel / located throughout dining room	Uptown Café, near kitchen doorway	None Detected	HR-04
	Uptown Café, middle	None Detected	HR-05
	Uptown Café, left near wait station	None Detected	HR-06
2-by 2-foot "fire-resistant" suspended ceiling panel / located throughout bar	Uptown Café, right side	None Detected	HR-07
	Uptown Café, rear wall	None Detected	HR-08
	Uptown Café, left side	None Detected	HR-09
Painted gypsum wallboard with joint compound and tape /	Uptown Café, men's restroom vestibule	None Detected	HR-10
	Uptown Café, women's restroom vestibule	None Detected	HR-11
	Uptown Café, office, front wall	None Detected	HR-12
12-by 12-inch gray vinyl floor tile (VFT) with black mastic / located throughout dining room and half of the office	Uptown Café, dining room, near north entry door	None Detected (tile) **Chrysotile 7% (black mastic)**	**HR-13**
	Uptown Café, dining room, near south entry door	None Detected (tile) **Chrysotile 8% (black mastic)**	**HR-14**
	Uptown Café, dining room, near reception podium	None Detected (tile) **Chrysotile 6% (black mastic)**	**HR-15**
4-inch dark black cove base with white mastic / located on southeast entryway, baseboards	Uptown Café, doorway	None Detected	HR-16
	Uptown Café, wall across doorway	None Detected	HR-17
	Uptown Café, left wall	None Detected	HR-18

Table 2 (continued)

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
First Floor (continued)			
4-inch dark brown cove base with brown mastic / located in Uptown Café dining room, bar, and restroom entryways	Uptown Café, dining room, south wall	None Detected	HR-19
	Uptown Café, bar, rear wall	None Detected	HR-20
	Uptown Café, near men's restroom entryway	None Detected	HR-21
12-by 12-inch beige peel-n-stick VFT / located throughout the Uptown Café bar	Uptown Café, bar, rear right	None Detected	HR-22
	Uptown Café, bar, rear middle	None Detected	HR-23
	Uptown Café, bar, rear left	None Detected	HR-24
12-inch beige stripped VFT with black mastic / located in the Uptown Café office	Uptown Café, office, doorway	None Detected (tile) **Chrysotile 6% (black mastic)**	**HR-25**
	Uptown Café, office, rear	None Detected (tile) **Chrysotile 8% (black mastic)**	**HR-26**
	Uptown Café, office, left side	None Detected (tile) **Chrysotile 7% (black mastic)**	**HR-27**
1-inch brown ceramic floor tile with black grout / located throughout Uptown Café men's restroom floor	Uptown Café, men's restroom, doorway	None Detected	HR-28
	Uptown Café, men's restroom, doorway	None Detected	HR-29
	Uptown Café, men's restroom, doorway	None Detected	HR-30
4-by 4-inch blue ceramic wall tile with white grout and light brown mastic / located throughout Uptown Café men's restroom walls	Uptown Café, men's restroom, near doorway	None Detected (tile and grout) **Chrysotile 3% (light brown mastic)**	**HR-31**
	Uptown Café, men's restroom, near doorway	None Detected	HR-32
	Uptown Café, men's restroom, near doorway	None Detected	HR-33
6-by 6-inch red ceramic floor tile with black grout / located throughout the women's restroom and kitchen, floor	Uptown Café, kitchen, doorway	None Detected	HR-34
	Uptown Café, kitchen, doorway	None Detected	HR-35
	Uptown Café, women's restroom, doorway	None Detected	HR-36

Table 2 (continued)

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
First Floor (continued)			
4-by 4-inch pink ceramic wall tile with white grout / located throughout the women's restroom, lower walls (wainscot)	Uptown Café, women's restroom, doorway	None Detected	HR-37
	Uptown Café, women's restroom, doorway	None Detected	HR-38
	Uptown Café, women's restroom, doorway	None Detected	HR-39
Black undercoat / located throughout kitchen "stainless steel" counters	Uptown Café, kitchen, beneath counter	None Detected	HR-40
	Uptown Café, kitchen, beneath counter	None Detected	HR-41
	Uptown Café, kitchen, beneath counter	None Detected	HR-42
Painted wall and ceiling plaster / located on interior structural walls and ceiling	Mochi factory, north wall	None Detected	HR-43
	Mochi factory, middle ceiling	None Detected	HR-44
	Mochi factory, south wall	None Detected	HR-45
Painted gypsum wallboard with joint compound and tape / located throughout interior partition walls	Hanagasa Inn, near rear entryway	None Detected	HR-46
	Hanagasa Inn, rear of bar	None Detected	HR-47
	Hanagasa Inn, south wall	None Detected	HR-48
Painted wall plaster and ceiling / located throughout interior structural walls	Hanagasa Inn, bar	None Detected	HR-49
	Hanagasa, storage room	None Detected	HR-60
	Hanagasa, office	None Detected	HR-51
12-by 12-inch beige VFT with black mastic / located throughout the interior dining room, floor	Hanagasa Inn, dining room, south side	None Detected (tile) **Chrysotile 5% (black mastic)**	**HR-52**
	Hanagasa Inn, dining room, middle	None Detected (tile) **Chrysotile 5% (black mastic)**	**HR-53**
	Hanagasa Inn, dining room, north side	None Detected (tile) **Chrysotile 4% (black mastic)**	**HR-54**
6-by 6-inch beige ceramic floor tile with black grout / located throughout the men's restroom and entryway, floors	Hanagasa Inn, men's restroom, doorway	None Detected	HR-55
	Hanagasa Inn, men's restroom, doorway	None Detected	HR-56
	Hanagasa Inn, men's restroom, doorway	None Detected	HR-57

Table 2 (continued)

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
First Floor (continued)			
Black water-proof vapor barrier / located throughout the interior ceiling deck, above the suspended ceiling system	Hanagasa Inn, storage room, above the suspended ceiling	None Detected	HR-58
	Hanagasa Inn, storage room, above the suspended ceiling	None Detected	HR-59
	Hanagasa Inn, storage room, above the suspended ceiling	None Detected	HR-60
White caulking / located throughout doorframes	Hanagasa Inn, front doorway	None Detected	HR-61
	Hanagasa Inn, front doorway	None Detected	HR-62
	Hanagasa Inn, rear doorway	None Detected	HR-63
Black sink undercoat / located in Miki's florist, beneath sink	Miki's florist, sink, left wall	Chrysotile 6%	HR-64
	Miki's florist, sink, left wall	Chrysotile 8%	HR-65
	Miki's florist, sink, left wall	Chrysotile 5%	HR-66
Painted wall and ceiling plaster / located throughout	Miki's florist, interior, north wall	None Detected	HR-67
	Miki's florist, interior, south wall	None Detected	HR-68
	Miki's florist, interior, middle ceiling	None Detected	HR-69
Second Floor			
9-by 9-inch brown VFT with black mastic / located throughout interior, Suites 213 and 215, floors	Suite 213, Kats Optical	**Chrysotile 7% (tile)** None Detected (mastic)	**HR-70**
	Suite 213, Kats Optical	**Chrysotile 5% (tile)** None Detected (mastic)	**HR-71**
	Suite 215, Jun Shiatsu Seitai	**Chrysotile 8% (tile)** None Detected (mastic)	**HR-72**
4-inch brown cove base with tan mastic / located throughout interior, Suites 212 and 216, baseboards	Suite 212	**Chrysotile 5% (cove base)** None Detected (mastic)	**HR-73**
	Suite 212	**Chrysotile 5% (cove base)** None Detected (mastic)	**HR-74**
	Suite 216, Hironaka Assoc.	**Chrysotile 6% (cove base)** None Detected (mastic)	**HR-75**

Table 2 (continued)

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
Second Floor (continued)			
4-inch tan cove base with tan mastic / located throughout interior, Suites 212 and 216, baseboards	Suite 212	None Detected	HR-76
	Suite 212	None Detected	HR-77
	Suite 216, Hironaka Assoc.	None Detected	HR-78
Tan carpet mastic / located throughout interior, Suite 212, beneath carpet	Suite 212	None Detected	HR-79
	Suite 212	None Detected	HR-80
	Suite 212	None Detected	HR-81
12-by 12-inch beige VFT with black mastic over brown VFT / located throughout Suite 202 and 212 restrooms	Suite 212, restroom	None Detected	HR-82
	Suite 212, restroom	None Detected (tan tile and mastic) **Chrysotile 6% (brown tile)**	**HR-83**
	Suite 202, James Miyamoto	None Detected (tan tile and mastic) **Chrysotile 6% (brown tile)**	**HR-84**
12-by 12-inch beige peel-n-stick VT over 9-inch brown VFT with black mastic / located throughout Suite 213 restroom	Suite 213, Kats Optical, restroom	None Detected (beige tile and mastic) **Chrysotile 5% (brown tile)** None Detected (black mastic)	**HR-85**
	Suite 213, Kats Optical, restroom	None Detected (beige tile and mastic) **Chrysotile 6% (brown tile)** None Detected (black mastic)	**HR-86**
	Suite 213, Kats Optical, restroom	None Detected (beige tile and mastic) **Chrysotile 6% (brown tile)** None Detected (black mastic)	**HR-87**

Table 2 (continued)

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
Second Floor (continued)			
12-by 12-inch beige peel-n-stick square design VFT over 9-inch brown VFT with black mastic / located throughout Suite 207	Suite 207, M&M Electric Inc.	None Detected (beige tile and mastic) **Chrysotile 7% (brown tile)** None Detected (black mastic)	HR-88
	Suite 207, M&M Electric Inc.	None Detected (beige tile and mastic) **Chrysotile 5% (brown tile)** None Detected (black mastic)	HR-89
	Suite 207, M&M Electric Inc.	None Detected (beige tile and mastic) **Chrysotile 7% (brown tile)** None Detected (black mastic)	HR-90
12-by 12-inch brown peel-n-stick VFT / located throughout Suite 206 restroom	Suite 206, The Source, restroom	None Detected	HR-91
	Suite 206, The Source, restroom	None Detected	HR-92
	Suite 206, The Source, restroom	None Detected	HR-93
4-inch beige cove base with tan mastic / located throughout Suite 202 baseboards	Suite 202, James Miyamoto	None Detected	HR-94
	Suite 202, James Miyamoto	None Detected	HR-95
	Suite 202, James Miyamoto	None Detected	HR-96
12-by 12-inch tan peel-n-stick VFT / located throughout Suite 204	Suite 204, Beauty Salon	None Detected	HR-97
	Suite 204, Beauty Salon	None Detected	HR-98
	Suite 204, Beauty Salon	None Detected	HR-99
4-inch gray cove base with clear adhesive / located throughout Suite 204 restroom	Suite 204, Beauty Salon, restroom	None Detected	HR-100
	Suite 204, Beauty Salon, restroom	None Detected	HR-101
	Suite 204, Beauty Salon, restroom	None Detected	HR-102

Table 2 (continued)

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
Second Floor (continue)			
12-by 12-inch beige VFT with black mastic over white peel-n-stick VFT over 9-inch brown VFT with black mastic / located throughout Suites 208 and 210	Suite 208, Jerome Wallace	None Detected (beige white tile and mastic) **Chrysotile 5% (brown tile)** None Detected (black mastic)	**HR-103**
	Suite 208, Jerome Wallace	None Detected (beige tile and mastic) **Chrysotile 6% (brown tile)** None Detected (black mastic)	**HR-104**
	Suite 208, Jerome Wallace	None Detected (beige tile and mastic) **Chrysotile 7% (brown tile)** None Detected (black mastic)	**HR-105**
12-by 12-inch streaked VFT with black mastic / located throughout Suite 203	Suite 203, Honolulu Realty	None Detected	HR-106
	Suite 203, Honolulu Realty	None Detected	HR-107
	Suite 203, Honolulu Realty	None Detected	HR-108
6-by 6-inch beige ceramic floor tile with brown grout / located throughout hallway	Hallway, north doorway	None Detected	HR-109
	Hallway, north doorway	None Detected	HR-110
	Hallway, north doorway	None Detected	HR-111
Remnant black mirror mastic / located on restroom door	Suite 205, Toyoko Watanabe, restroom door	**Chrysotile 7%**	**HR-112**
	Suite 205, Toyoko Watanabe, restroom door	**Chrysotile 6%**	**HR-113**
	Suite 205, Toyoko Watanabe, restroom door	**Chrysotile 6%**	**HR-114**
Gray sink undercoat / located in Suite 205, beneath sink	Suite 205, Toyoko Watanabe, sink	None Detected	HR-115
	Suite 205, Toyoko Watanabe, sink	None Detected	HR-116
	Suite 205, Toyoko Watanabe, sink	None Detected	HR-117
White caulking / located throughout 2nd floor doorways	Suite 213, Kats Optical, doorway	None Detected	HR-118
	Suite 212, doorway	None Detected	HR-119
	Suite 215, Jun Shiatsu Seitai, doorway	None Detected	HR-120

Table 2 (continued)

Material Description / Location	Sampling Location	Asbestos Type & Percent (%)	Sample ID
Second Floor (continued)			
Painted wall plaster / located throughout 2nd floor, interior walls	Suite 203, south wall	**Chrysotile 5%**	**HR-121**
	Suite 212, east wall	None Detected	HR-122
	Suite 215, Jun Shiatsu Seitai, west wall	**Chrysotile 5%**	**HR-123**
Painted ceiling plaster / located throughout 2nd floor, interior ceilings	Suite 204, Beauty Salon, above doorway	None Detected	HR-124
	Suite 211, above doorway	None Detected	HR-125
	Suite 216, Hironaka & Assoc., above doorway	None Detected	HR-126
Roof			
White TPO roofing / located throughout deck	South side	None Detected	HR-127
	Middle	None Detected	HR-128
	North side	None Detected	HR-129
Black sealant / located throughout penetrations and protrusions	South side	None Detected	HR-130
	Middle	None Detected	HR-131
	North side	**Chrysotile 4%**	**HR-132**
Gray sealant / located throughout metal duct seams	Northeast side, on metal duct	None Detected	HR-133
	Northeast side, on metal duct	None Detected	HR-134
	Northeast side, on metal duct	None Detected	HR-135
White roof coating over black coating / located throughout the west side eyebrow roof	West eyebrow roof, north end	**Chrysotile 2% (black coating)**	**HR-136**
	West eyebrow roof, north end	**Chrysotile 2% (black coating)**	**HR-137**
	West eyebrow roof, north end	**Chrysotile 2% (black coating)**	**HR-138**
Exterior			
Black asphalt concrete (AC) pavement / located throughout driveways and rear parking lot	Driveway, south side	None Detected	HR-139
	Parking lot, middle	None Detected	HR-140
	Driveway, north side	None Detected	HR-141

Current Federal and State regulatory level of greater than 1% asbestos fibers defines asbestos-containing materials (ACM). **Bold** entries are confirmed ACM.

AC - Asphalt Concrete
TPO - Thermoplastic polyolefin
VFT - Vinyl Floor Tile

Table 3
Analytical Results of Lead Paint Sampling
at
Halewaiolu Residences
1331-1347 River Street
Honolulu, Oahu, Hawaii

Project No. 19-1439
Sample Collection Date: March 14, 2019

Paint Description / Location	Sampling Location	Lead Content (% by WT)	Sample ID
First Floor			
White paint / located throughout interior, gypsum board walls	Chikara Mochi, interior, north wall	<0.0064	HR-P01
Blue paint / located throughout interior/exterior, wooden doors and frames	Chikara Mochi, interior, front door	0.30*	HR-P02
Beige paint / located throughout interior, plaster walls and ceilings	Miki's Florist, interior, north wall	0.0052*	HR-P03
White paint / located throughout interior, columns and walls	Hanagasa Inn, interior, column, west side wall	<0.0050	HR-P04
Black paint (over white paint) / located throughout interior, wooden trim	Hanagasa Inn, interior, rear door trim	0.025*	HR-P05
Second Floor			
White paint / located throughout 2nd floor, interior, walls and ceilings	Suite 212, interior, north wall	<0.0052	HR-P06
White paint / located throughout 2nd floor, interior, doors and doorframes	Suite 212, entry door	0.014*	HR-P07
Exterior			
Yellow paint / located on exterior, parking bollards	Parking lot, rear of Uptown Café, on parking bollards	<0.0078	HR-P08
Blue paint / located on exterior, rear doors and doorframes	Miki's florist, exterior, rear doorframe	0.25*	HR-P09

Table 3 (continued)

Paint Description / Location	Sampling Location	Lead Content (% by WT)	Sample ID
Exterior (continued)			
Black paint (over gray paint) / located on exterior, stairway, handrails	Stairway, south side, on handrail	0.12*	HR-P10
Blue paint / located on exterior, stairway, threads and risers	Stairway, south side, on threading	0.056*	HR-P11
Yellow paint / located on exterior, parking lot, on parking stops	Parking lot, middle, on parking stop	<0.0054	HR-P12
Handicap blue / located on exterior, parking lot, on parking stops	Parking lot, middle, on parking stop	<0.015	HR-P13
White striping paint / located on exterior, parking lot, stalls	Parking lot, middle, on parking stalls	<0.0043	HR-P14

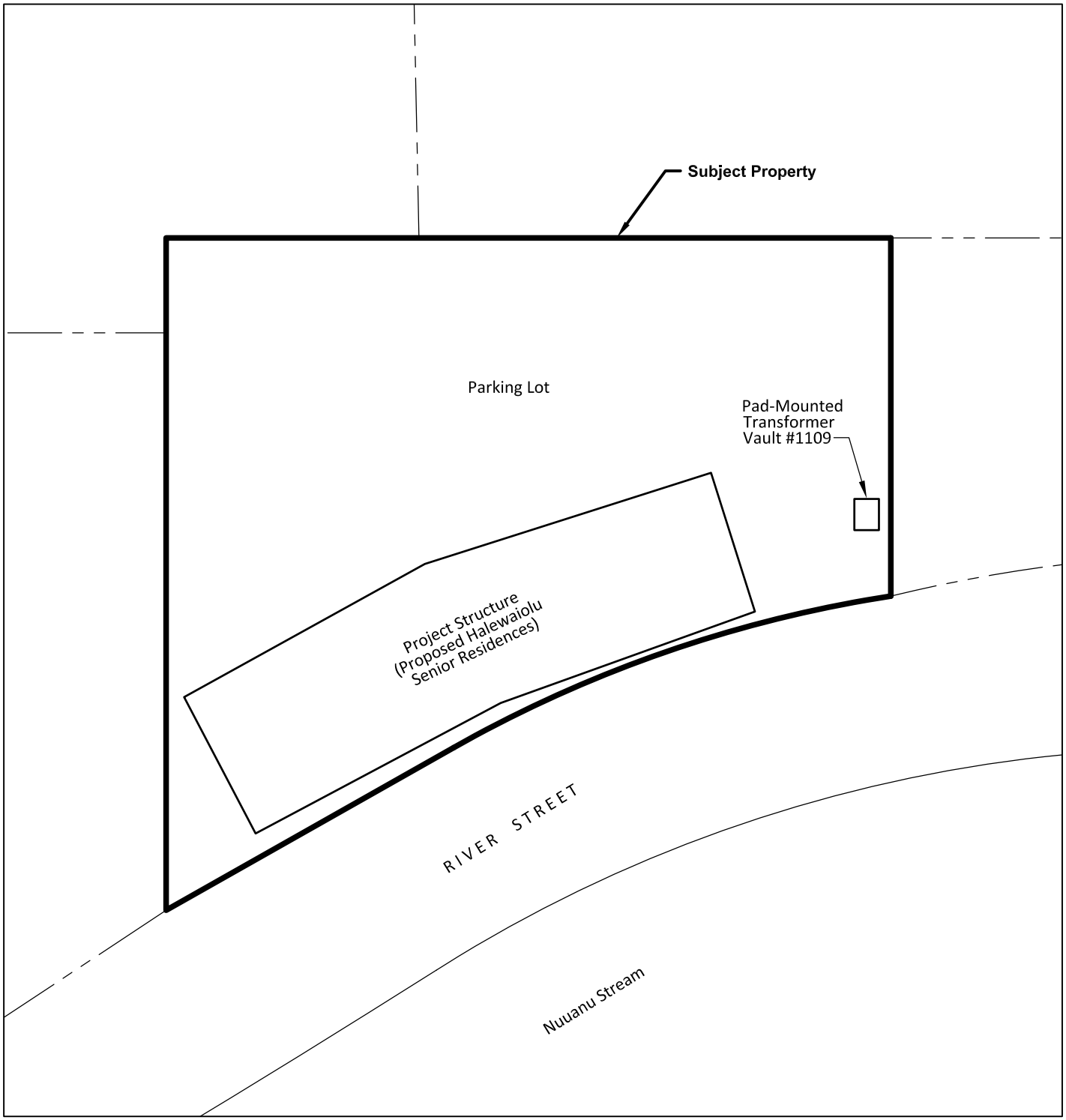
NOTES:

Occupational Safety and Health Administration (OSHA) regulations for worker protection apply to any paint with a detectable concentration of lead. None of the paints tested are considered lead-based paint (LBP).

* = Detectable concentration(s) of lead above the laboratory reporting limit (RL) but below the regulatory level of 0.5% lead by weight, which defines LBP. These lead-containing paints are subject to OSHA regulations.

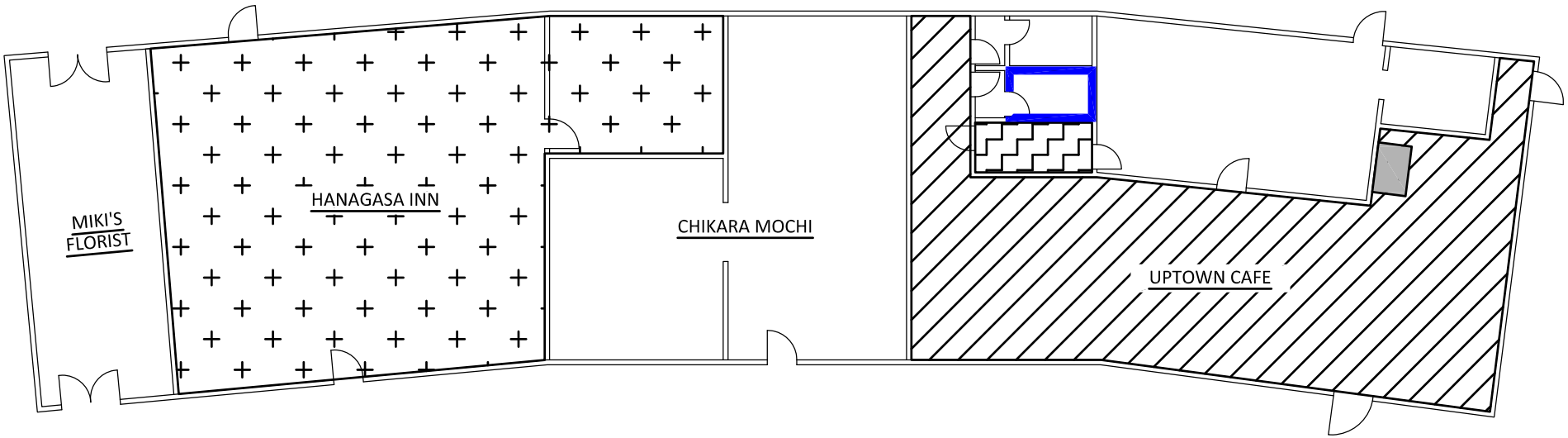
< = Below laboratory reporting limit (RL)
% by WT = Percent by weight

FIGURES



NOT TO SCALE

FORD & ASSOCIATES, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS		Site Map	Figure 1
Job Number: 19-1439	Created by: DG	Project: Halewaiolu Residence 1331-1347 River Street Honolulu, Oahu, Hawaii	
Date: 04/05/19	Reviewed By: TKS	Client: Halewaiolu Senior Development, LLC	



Legend:

- Approximately 250 square feet of 4- by 4-inch blue and white ceramic floor tile located throughout the men's restroom walls of Uptown Cafe
- Approximately 800 square feet of black mastic beneath 12- by 12-inch gray vinyl floor tile located throughout the dining room of Uptown Cafe
- Approximately 100 square feet of black mastic beneath 12- by 12-inch beige stripped vinyl floor tile located throughout the office of Uptown Cafe
- Approximately five square feet of unknown sink undercoating located throughout one sink located on the service station of Uptown Cafe
- Approximately 950 square feet of black mastic beneath 12- by 12-inch beige vinyl floor tile located throughout the dining room of Hanagasa Inn

NOT TO SCALE

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

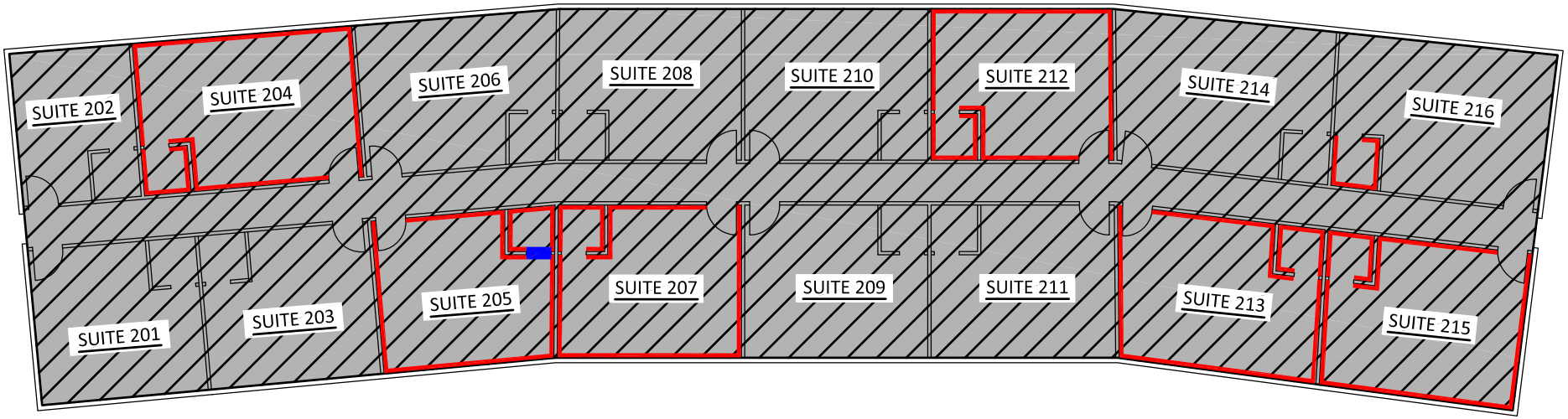
Job Number: 19-1439	Created by: DG
Date: 04/05/19	Reviewed By: TKS

Confirmed ACM - First Floor

Project: Halewaiolu Residence
1331-1347 River Street
Honolulu, Oahu, Hawaii

Client: Halewaiolu Senior Development, LLC

Figure 2



Legend:

Approximately 520 linear feet of 4-inch brown cove base located throughout Suites 204, 205, 207, 212, 213, 215 (restrooms included) and Suite 216 restroom only

Approximately five square feet of remnant black mirror mastic located throughout restroom door of Suite 205

Approximately 5,400 square feet of 9- by 9-inch brown vinyl floor tile located throughout Suites 201 through 216 and restrooms, and hallway

Approximately 12,200 square feet of painted interior wall plaster located throughout Suites 201 through 216 and hallway

NOT TO SCALE

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

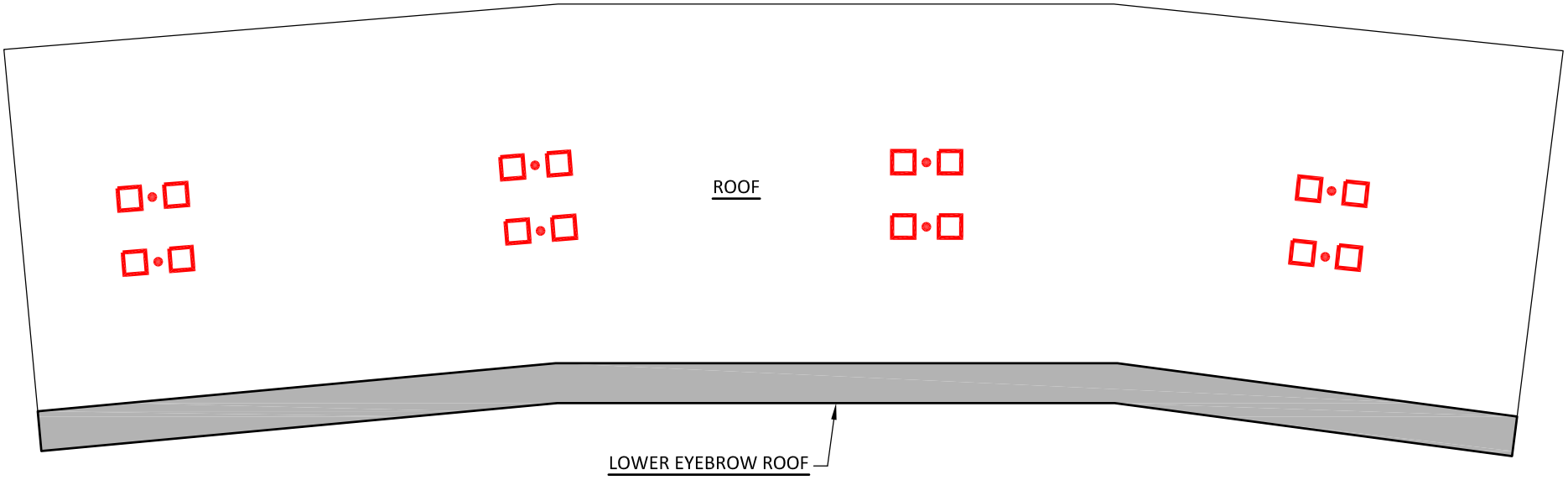
Job Number: 19-1439	Created by: DG
Date: 04/05/19	Reviewed By: TKS

Confirmed ACM - Second Floor

Project: Halewaiolu Residence
1331-1347 River Street
Honolulu, Oahu, Hawaii

Client: Halewaiolu Senior Development, LLC

Figure 3



Legend:

Approximately 30 square feet of black sealant located throughout roof penetrations and protrusions

Approximately 750 square feet of black coating beneath white roof coating located throughout lower west side eyebrow roof (awning)

NOT TO SCALE

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Job Number: 19-1439	Created by: DG	Project:	Confirmed ACM - Roof Halewaiolu Residence 1331-1347 River Street Honolulu, Oahu, Hawaii
Date: 04/05/19	Reviewed By: TKS	Client:	Halewaiolu Senior Development, LLC

Figure 4

PHOTOGRAPHS

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



Front street view of Halewaiolu Residences, located at 1331-1347 River Street in Honolulu, Hawaii	PHOTO **1**



View of rear side of the project building and portion of the parking lot, with exit driveway in the background	PHOTO **2**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of Hawaiian Electric-owned, “non-PCB-containing” pad-mounted transformer, located on the southwest corner of the project site, fronting the entry driveway

PHOTO **3**



View of smaller high intensity density (HID) light fixture, surface mounted on the rear exterior of the project building

PHOTO **4**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of larger HID light fixture, roof-mounted along the rear of the project building

PHOTO **5**



View of the first pad-mounted split-system air-conditioning (AC) unit, located at the rear of Uptown Café

PHOTO **6**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of the second pad-mounted split-system AC unit, located at the rear of Uptown Café

PHOTO **7**



View of window-mounted AC units, located on the 2nd floor front units

PHOTO **8**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of window-mounted AC units, located on the 2nd floor rear units	PHOTO **9**



View of “inaccessible” sink with presumed asbestos-containing undercoating	PHOTO **10**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of 12- by 12-inch gray VFT with confirmed asbestos-containing black mastic beneath, located throughout the first floor, Uptown Café, dining room	PHOTO **11**



View of 4- by 4-inch blue ceramic wall tile with confirmed asbestos-containing light brown mastic underneath, located on the first floor, Uptown Café, men's restroom	PHOTO **12**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018

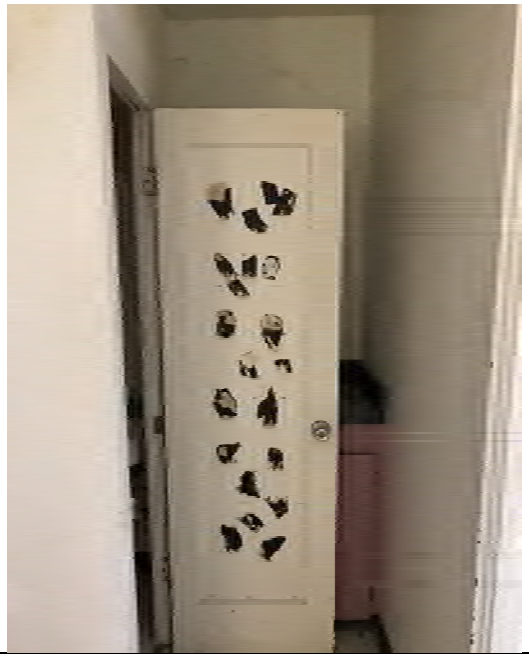


View of confirmed asbestos-containing 9-by 9-inch brown VFT, located throughout the entire second floor, suites, restrooms, and hallway	PHOTO **13**



View of confirmed asbestos-containing 4-inch brown vinyl cove base, located in second floor Suites 204, 205, 207, 212, 213, 215 (restrooms included), 216 restroom (only)	PHOTO **14**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of confirmed asbestos-containing remnant black mirror mastic, located on restroom door of suite 205	PHOTO **15**



View of confirmed asbestos-containing interior wall plaster, located throughout the second floor walls and partitions	PHOTO **16**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of confirmed asbestos-containing black asphalt sealant, located on the roof, associated with penetrations and protrusions

PHOTO **17**



View of confirmed asbestos-containing black coating beneath the white roof coating, located throughout the west side lower eye-brow roof (awning)

PHOTO **18**

Client:	Halewaiolu Senior Development, LLC	**Project No.:** 19-1439
Site Name:	Halewaiolu Residences 1331-1347 River Street, Honolulu, HI	**Date:** March 14, 2018



View of smoke detector, located in Uptown Café, dining room ceiling	PHOTO **19**



View of emergency exit light fixture, located in Uptown Café, above exit door.	PHOTO **20**

APPENDIX A

LABORATORY ANALYTICAL REPORTS FOR ASBESTOS SAMPLING

March 22, 2019

Don Gacusan
Ford & Associates, Inc.
928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 1905329.00

Client Project: 19-1439
Location: Halewaiolu Residences

Dear Mr. Gacusan,

Enclosed please find test results for the 30 sample(s) submitted to our laboratory for analysis on 3/19/2019.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with both **EPA 600/M4-82-020**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116** Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Matt Macfarlane, Asbestos Lab Supervisor

Lab Code: 102063-0

Enc.: Sample Results

Phone: 206 547.0100 | Fax: 206 634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103-6516

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Lab ID: 19027229 **Client Sample #: HR-01**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with granules and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Granules, Paint	Cellulose 2%	**None Detected ND**

Lab ID: 19027230 **Client Sample #: HR-02**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with granules and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Granules, Paint	Cellulose <1%	**None Detected ND**

Lab ID: 19027231 **Client Sample #: HR-03**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with granules and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Granules, Paint	Cellulose 1%	**None Detected ND**

Lab ID: 19027232 **Client Sample #: HR-04**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Beige compressed fibrous material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Organic debris, Glass debris, Perlite	Cellulose 58%	**None Detected ND**
Paint	Glass fibers 37%	

Lab ID: 19027233 **Client Sample #: HR-05**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 1 **Description:** Beige compressed fibrous material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Organic debris, Glass debris, Perlite	Cellulose 56%	**None Detected ND**
Paint	Glass fibers 39%	

Lab ID: 19027234 **Client Sample #: HR-06**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Beige compressed fibrous material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Organic debris, Glass debris, Perlite	Cellulose 57%	**None Detected ND**
Paint	Glass fibers 38%	

Lab ID: 19027235 **Client Sample #: HR-07**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with wood flakes and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Wood flakes, Paint	Wood fibers 23%	**None Detected ND**

Lab ID: 19027236 **Client Sample #: HR-08**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with wood flakes and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Wood flakes, Paint	Wood fibers 21%	**None Detected ND**

Lab ID: 19027237 **Client Sample #: HR-09**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

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Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 1 of 1	**Description:** White brittle material with wood flakes and paint			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Wood flakes, Paint	Wood fibers	14%	**None Detected ND**

Lab ID: 19027238 **Client Sample #: HR-10**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** White compacted powdery material with paint			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Calcareous binder, Fine particles, Paint	Cellulose	2%	**None Detected ND**
Layer 2 of 2	**Description:** White chalky material with paper			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Gypsum/Binder, Fine particles	Cellulose	21%	**None Detected ND**
		Glass fibers	12%	

Lab ID: 19027239 **Client Sample #: HR-11**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** White compacted powdery material with paint			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Calcareous binder, Fine particles, Paint	Cellulose	2%	**None Detected ND**
Layer 2 of 2	**Description:** White chalky material with paper			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Gypsum/Binder, Fine particles	Cellulose	21%	**None Detected ND**
		Glass fibers	12%	

Lab ID: 19027240 **Client Sample #: HR-12**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

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Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 2	**Description:** White compacted powdery material with paint		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Calcareous binder, Fine particles, Paint	Cellulose 1%	**None Detected ND**
Layer 2 of 2	**Description:** White chalky material with paper		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Gypsum/Binder, Fine particles	Cellulose 23%	**None Detected ND**
		Glass fibers 7%	

Lab ID: 19027241 **Client Sample #: HR-13**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Gray vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine particles	Cellulose 3%	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Fine particles	Cellulose <1%	**Chrysotile 7%**

Lab ID: 19027242 **Client Sample #: HR-14**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Gray vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine particles	Cellulose 1%	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Fine particles	Cellulose 1%	**Chrysotile 8%**

Lab ID: 19027243 **Client Sample #: HR-15**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

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Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 2	**Description:** Gray vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine particles	Cellulose 2%	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Fine particles	Cellulose 1%	**Chrysotile 6%**

Lab ID: 19027244 **Client Sample #: HR-16**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Black rubbery material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Rubber/Binder, Fine particles	Cellulose <1%	**None Detected ND**
Layer 2 of 2	**Description:** White soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	None Detected ND	**None Detected ND**

Lab ID: 19027245 **Client Sample #: HR-17**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Black rubbery material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Rubber/Binder, Fine particles	Cellulose 1%	**None Detected ND**
Layer 2 of 2	**Description:** White soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	None Detected ND	**None Detected ND**

Lab ID: 19027246 **Client Sample #: HR-18**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 2	**Description:** Black rubbery material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Rubber/Binder, Fine particles	Cellulose	1%	**None Detected ND**
Layer 2 of 2	**Description:** White soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Mastic/Binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027247 **Client Sample #: HR-19**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Brown rubbery material with trace paint			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Rubber/Binder, Fine particles, Paint	Cellulose	<1%	**None Detected ND**
Layer 2 of 3	**Description:** Brown soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Mastic/Binder, Fine particles	None Detected	ND	**None Detected ND**
Layer 3 of 3	**Description:** White compacted powdery material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Calcareous binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027248 **Client Sample #: HR-20**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Brown rubbery material with paint			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Rubber/Binder, Fine particles, Paint	Cellulose	2%	**None Detected ND**
Layer 2 of 3	**Description:** Brown soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Mastic/Binder, Fine particles	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 3 of 3	**Description:** White compacted powdery material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Calcareous binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027249 **Client Sample #: HR-21**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Brown rubbery material with paint			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Rubber/Binder, Fine particles, Paint	Cellulose	1%	**None Detected ND**
Layer 2 of 3	**Description:** Brown soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	None Detected	ND	**None Detected ND**
Layer 3 of 3	**Description:** White compacted powdery material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Calcareous binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027250 **Client Sample #: HR-22**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** White vinyl tile with laminate			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Laminate/binder, Fine particles	Cellulose	2%	**None Detected ND**
Layer 2 of 2	**Description:** Light brown soft adhesive			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Adhesive/Binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027251 **Client Sample #: HR-23**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 2	**Description:** White vinyl tile with laminate		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Laminate/binder, Fine particles	Cellulose <1%	**None Detected ND**
Layer 2 of 2	**Description:** Light brown soft adhesive		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Adhesive/Binder, Fine particles	None Detected ND	**None Detected ND**

Lab ID: 19027252 **Client Sample #: HR-24**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** White vinyl tile with laminate		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Laminate/binder, Fine particles	Cellulose <1%	**None Detected ND**
Layer 2 of 2	**Description:** Light brown soft adhesive		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Adhesive/Binder, Fine particles	None Detected ND	**None Detected ND**

Lab ID: 19027253 **Client Sample #: HR-25**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Black soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose 6%	**None Detected ND**
Layer 2 of 3	**Description:** White vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine particles	Cellulose <1%	**None Detected ND**
Layer 3 of 3	**Description:** Black brittle asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Fine particles	Cellulose 1%	**Chrysotile 6%**

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

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Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Lab ID: 19027254 **Client Sample #: HR-26**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Black soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose 8%	**None Detected ND**
Layer 2 of 3	**Description:** White vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine particles	Cellulose 2%	**None Detected ND**
Layer 3 of 3	**Description:** Black brittle asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Fine particles	Cellulose <1%	**Chrysotile 8%**

Lab ID: 19027256 **Client Sample #: HR-27**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Black soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose 7%	**None Detected ND**
Layer 2 of 3	**Description:** White vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine particles	Cellulose 1%	**None Detected ND**
Layer 3 of 3	**Description:** Black brittle asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Fine particles	Cellulose <1%	**Chrysotile 7%**

Lab ID: 19027257 **Client Sample #: HR-28**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905329.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 1 of 2	**Description:** Brown ceramic material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Mineral grains, Fine particles	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Dark gray brittle material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Mineral grains, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027258 **Client Sample #: HR-29**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Brown ceramic material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Mineral grains, Fine particles	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Dark gray brittle material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Mineral grains, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027259 **Client Sample #: HR-30**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Brown ceramic material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Mineral grains, Fine particles	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Dark gray brittle material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Mineral grains, Fine particles	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: Matthew McCallum **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905329.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019 **Time** 1:15 PM	
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	19027229	HR-01		A
2	19027230	HR-02		A
3	19027231	HR-03		A
4	19027232	HR-04		A
5	19027233	HR-05		A
6	19027234	HR-06		A
7	19027235	HR-07		A
8	19027236	HR-08		A
9	19027237	HR-09		A
10	19027238	HR-10		A
11	19027239	HR-11		A
12	19027240	HR-12		A
13	19027241	HR-13		A
14	19027242	HR-14		A
15	19027243	HR-15		A
16	19027244	HR-16		A
17	19027245	HR-17		A
18	19027246	HR-18		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	Matthew McCallum		NVL	3/20/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:46 PM
Entered By: Fatima Khan

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905329.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019	**Time** 1:15 PM
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
19	19027247	HR-19		A
20	19027248	HR-20		A
21	19027249	HR-21		A
22	19027250	HR-22		A
23	19027251	HR-23		A
24	19027252	HR-24		A
25	19027253	HR-25		A
26	19027254	HR-26		A
27	19027256	HR-27		A
28	19027257	HR-28		A
29	19027258	HR-29		A
30	19027259	HR-30		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	Matthew McCallum		NVL	3/20/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:46 PM
Entered By: Fatima Khan

1905329

NVL LABS
INDUSTRIAL HYGIENE SERVICES
Laboratory | Management | Training

ASBESTOS CHAIN OF CUSTODY

Turn Around Time
- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 2 Days
- ☐ 3 Days
- ☐ 4 Days
- ☑ 5 Days
- ☐ 10 Days

Please call for TAT less than 24 Hours

Company: Ford & Associates
Address: 928 Nuuanu Avenue, Suite 505
Honolulu, HI 96813
Phone: 808-426-6927

Project Manager: D. Gacusan
Cell: (808) 387 - 2722
Email: dgacusan@fordassoc.com
Fax: ( ) -

Project Name/Number: 19-1439
Project Location: Halewaiolu Residences

- ☐ PCM Air (NIOSH 7400)
- ☑ PLM (EPA 600/R-93-116)
- ☐ PLM Gravimetry (600/R-93-116)
- ☐ Asbestos Friable/Non-Friable (EPA 600/R-93/116)
- ☐ TEM (NIOSH 7402)
- ☐ EPA 400 Points (600/R-93-116)
- ☐ Asbestos in Vermiculite (EPA 600/R-04/004)
- ☐ TEM (AHERA)
- ☐ Other
- ☐ TEM (EPA Level II Modified)
- ☐ EPA 1000Points (600/R-93-116)
- ☐ Asbestos in Sediment (EPA 1900 Points)

Reporting Instructions: Please email results
☐ Call (808) 387 - 2722 ☐ Fax ( ) - ☑ Email dgacusan@fordassoc.com

Total Number of Samples 141

	Sample ID	Description	A/R
1	HR-01 thru HR-141	See attached data sheet.	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

	Print Name	Signature	Company	Date	Time
Sampled by	D. Gacusan		FAI	03/14/19	0830
Relinquish by	D. Gacusan		FAI	03/15/19	1500

Office Use Only

	Print Name	Signature	Company	Date	Time
Received by	[illegible]		NVL	3/19/19	1315 Fedex
Analyzed by					
Called by					
Faxed/Email by					

1905329

FAI – Asbestos Sampling Sheet

Project No. 19-1439 **Inspectors' Name:** TKS / DG **Page:** 1 of 5

Project Name: MDC **Bldg. Name / No.** Halewaiolu Residences **Date:** 3/14/19

Sample Number	Sample Location	Material Description	Quantity/Material Location	Category	Friability
HR-01	Mens rr, near sink	Wall plaster	Uptown café	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-02	Womens rr, rear wall, by toilet				
HR-03	South doorway				
HR-04	Dining room	2x4 fissured drop ceiling panel	Uptown café – Dining room	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-05	Dining room				
HR-06	Dining room				
HR-07	Bar area	2x2 drop ceiling panel	Uptown café – Bar	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-08	Bar area				
HR-09	Bar area				
HR-10	Mens rr, vestibule	Gypsum wallboard with joint compound and tape	Restrooms, office, kitchen walls/ceiling	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-11	Womens rr, vestibule				
HR-12	Office, front wall				
HR-13	Near right side exit door	12x12 gray VFT w/blk mastic	Dining room and ½ of office	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-14	Near front entry door				
HR-15	Receptionist podium				
HR-16	Front entryway, baseboard	4-inch black cove base w/wht mastic	Front entryway	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-17	Front entryway, baseboard				
HR-18	Front entryway, baseboard				
HR-19	Dining room, south wall	4-inch dark brown cove base w/brown mastic	Throughout other areas	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-20	Bar, rear wall				
HR-21	Near restroom entryway				
HR-22	Bar	12x12 tan peel-n-stick VFT	Bar	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-23	Bar				
HR-24	Bar				
HR-25	Office	12x12 beige stripped VFT w/blk mastic	Office	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-26	Office				
HR-27	Office				
HR-28	Mens restroom, doorway	1-inch brown ceramic floor tile w/blk grout	Mens rr	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-29	Mens restroom, doorway				
HR-30	Mens restroom, doorway				

Notes:

March 22, 2019

Don Gacusan
Ford & Associates, Inc.
928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 1905333.00

Client Project: 19-1439
Location: Halewaiolu Residences

Dear Mr. Gacusan,

Enclosed please find test results for the 30 sample(s) submitted to our laboratory for analysis on 3/19/2019.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with both **EPA 600/M4-82-020**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116** Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Matt Macfarlane, Asbestos Lab Supervisor

Lab Code: 102063-0

Enc.: Sample Results

Phone: 206 547.0100 | Fax: 206 634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103-6516

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Lab ID: 19027298 **Client Sample #: HR-31**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** White ceramic with blue glaze			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Fine particles	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Light brown brittle mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose	3%	**Chrysotile 3%**

Lab ID: 19027299 **Client Sample #: HR-32**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** White ceramic with blue glaze			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Fine particles	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Brown brittle adhesive			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Adhesive/Binder, Fine particles	Cellulose	8%	**None Detected ND**

Lab ID: 19027300 **Client Sample #: HR-33**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** White ceramic with blue glaze			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Fine particles	None Detected	ND	**None Detected ND**
Layer 2 of 3	**Description:** Light gray fibrous material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Fine particles	Cellulose	40%	**None Detected ND**
		Synthetic fibers	8%	

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

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Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 3 of 3	**Description:** Light gray ceramic with red glaze			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Ceramic/Binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027301 **Client Sample #: HR-34**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Red brick			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Brick, Debris	Cellulose	3%	**None Detected ND**
Layer 2 of 2	**Description:** Light brown crumbly material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine grains	None Detected	ND	**None Detected ND**

Lab ID: 19027302 **Client Sample #: HR-35**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Brown soft material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine particles	Cellulose	6%	**None Detected ND**
Layer 2 of 3	**Description:** Red brick			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Brick, Fine grains	None Detected	ND	**None Detected ND**
Layer 3 of 3	**Description:** Light brown crumbly material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine grains	None Detected	ND	**None Detected ND**

Lab ID: 19027303 **Client Sample #: HR-36**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 3	**Description:** Brown soft material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Fine particles	Cellulose	4%	**None Detected ND**
Layer 2 of 3	**Description:** Red brick			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Brick, Fine grains	None Detected	ND	**None Detected ND**
Layer 3 of 3	**Description:** Light brown crumbly material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Fine grains	None Detected	ND	**None Detected ND**

Lab ID: 19027304 **Client Sample #: HR-37**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Off-white ceramic with pink glaze			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Fine grains, Debris	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** White brittle material with debris			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Binder/Filler, Debris, Fine particles	Wollastonite	10%	**None Detected ND**
		Cellulose	3%	

Lab ID: 19027305 **Client Sample #: HR-38**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Off-white ceramic with pink glaze			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Fine grains, Debris	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 2 of 2 **Description:** White brittle material with debris

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Debris, Fine particles	Wollastonite	14%	**None Detected ND**
	Cellulose	3%	

Lab ID: 19027306 **Client Sample #: HR-39**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Off-white ceramic with pink glaze

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Ceramic/Binder, Fine grains, Debris	None Detected	ND	**None Detected ND**

Lab ID: 19027307 **Client Sample #: HR-40**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Asphalt/Binder, Fine particles	Cellulose	3%	**None Detected ND**

Lab ID: 19027308 **Client Sample #: HR-41**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Asphalt/Binder, Fine particles	Cellulose	3%	**None Detected ND**

Lab ID: 19027309 **Client Sample #: HR-42**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Asphalt/Binder, Fine particles	Cellulose	3%	**None Detected ND**

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

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Address: 928 Nuuanu Ave. Suite 505
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Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Lab ID: 19027310 **Client Sample #: HR-43**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint, Calcareous binder, Fine grains	Cellulose 4%	**None Detected ND**
Mica, Fine particles		

Lab ID: 19027311 **Client Sample #: HR-44**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Off-white brittle material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint, Calcareous binder, Fine grains	None Detected ND	**None Detected ND**
Fine particles, Debris		

Lab ID: 19027312 **Client Sample #: HR-45**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint, Calcareous binder, Fine grains	None Detected ND	**None Detected ND**
Fine particles, Debris, Mica		

Lab ID: 19027313 **Client Sample #: HR-46**
Location: Halewaiolu Residences

Layer 1 of 2 **Description:** White compacted powdery material with paint and paper

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint, Calcareous binder, Gypsum particles	Cellulose 22%	**None Detected ND**

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 2 of 2 **Description:** White chalky material with paper

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Gypsum/Binder, Fine particles	Cellulose 28%	**None Detected ND**

Lab ID: 19027314 **Client Sample #: HR-47**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** White compacted powdery material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint, Calcareous binder, Calcareous particles	Cellulose 6%	**None Detected ND**

Layer 2 of 2 **Description:** White chalky material with paper

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Gypsum/Binder, Fine particles	Cellulose 25%	**None Detected ND**
	Glass fibers 10%	

Lab ID: 19027315 **Client Sample #: HR-48**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White chalky material with paper and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint, Calcareous binder, Calcareous particles	Cellulose 28%	**None Detected ND**
	Glass fibers 6%	

Lab ID: 19027316 **Client Sample #: HR-49**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint, Binder/Filler, Fine grains	Cellulose 2%	**None Detected ND**
Fine particles, Mica		

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Lab ID: 19027317 **Client Sample #: HR-50**
Location: Halewaiolu Residences

Layer 1 of 1	**Description:** White brittle material with paint			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Paint, Binder/Filler, Fine grains	Cellulose	2%	**None Detected ND**
	Fine particles, Mica			

Lab ID: 19027318 **Client Sample #: HR-51**
Location: Halewaiolu Residences

Layer 1 of 1	**Description:** White brittle material with paint			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Paint, Binder/Filler, Fine grains	Cellulose	2%	**None Detected ND**
	Fine particles, Mica			

Lab ID: 19027319 **Client Sample #: HR-52**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Tan vinyl			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic mastic with debris			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Debris, Fine particles	Cellulose	3%	**Chrysotile 5%**

Lab ID: 19027320 **Client Sample #: HR-53**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 2	**Description:** Tan vinyl			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic mastic with debris			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Debris, Fine particles	Cellulose	2%	**Chrysotile 5%**

Lab ID: 19027321 **Client Sample #: HR-54**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Tan vinyl			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic mastic with debris			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Debris, Fine particles	Cellulose	2%	**Chrysotile 4%**

Lab ID: 19027322 **Client Sample #: HR-55**
Location: Halewaiolu Residences

Layer 1 of 4	**Description:** Beige ceramic material with white glaze and debris			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Ceramic/Binder, Debris	None Detected	ND	**None Detected ND**
Layer 2 of 4	**Description:** Gray cementitious material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Cement/Binder, Fine grains	Synthetic fibers	3%	**None Detected ND**
Layer 3 of 4	**Description:** Brown brittle mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 4 of 4	**Description:** Black asphaltic mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Asphalt/Binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027323 **Client Sample #: HR-56**

Location: Halewaiolu Residences

Layer 1 of 4	**Description:** Beige ceramic material with white glaze and debris			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Debris	None Detected	ND	**None Detected ND**
Layer 2 of 4	**Description:** Gray cementitious material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Cement/Binder, Fine grains	Synthetic fibers	3%	**None Detected ND**
Layer 3 of 4	**Description:** Brown brittle mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Mastic/Binder	None Detected	ND	**None Detected ND**
Layer 4 of 4	**Description:** Black asphaltic mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Asphalt/Binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027324 **Client Sample #: HR-57**

Location: Halewaiolu Residences

Layer 1 of 4	**Description:** Beige ceramic material with white glaze and debris			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Ceramic/Binder, Debris	None Detected	ND	**None Detected ND**
Layer 2 of 4	**Description:** Gray cementitious material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Cement/Binder, Fine grains	Synthetic fibers	3%	**None Detected ND**

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 3 of 4	**Description:** Brown brittle mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder	None Detected	ND	**None Detected ND**
Layer 4 of 4	**Description:** Black asphaltic mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Fine particles	None Detected	ND	**None Detected ND**

Lab ID: 19027325 **Client Sample #: HR-58**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Light gray brittle material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine grains, Fine particles	Cellulose	3%	**None Detected ND**
Layer 2 of 2	**Description:** Brown compressed fibrous material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine particles	Cellulose	92%	**None Detected ND**
		Wood fibers	6%	

Lab ID: 19027326 **Client Sample #: HR-59**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Light gray brittle material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine grains, Fine particles	Cellulose	4%	**None Detected ND**
Layer 2 of 2	**Description:** Brown compressed fibrous material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine particles	Cellulose	92%	**None Detected ND**
		Wood fibers	5%	

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905333.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Lab ID: 19027327 **Client Sample #: HR-60**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Brown compressed fibrous material with debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Debris, Fine particles	Cellulose 93%	**None Detected ND**
	Wood fibers 5%	

Sampled by: Client
Analyzed by: Michael Jenkins **Date:** 03/22/2019
Reviewed by: Matt Macfarlane **Date:** 03/22/2019

Matt Macfarlane, Asbestos Lab Supervisor

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ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905333.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019 **Time** 1:15 PM	
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	19027298	HR-31		A
2	19027299	HR-32		A
3	19027300	HR-33		A
4	19027301	HR-34		A
5	19027302	HR-35		A
6	19027303	HR-36		A
7	19027304	HR-37		A
8	19027305	HR-38		A
9	19027306	HR-39		A
10	19027307	HR-40		A
11	19027308	HR-41		A
12	19027309	HR-42		A
13	19027310	HR-43		A
14	19027311	HR-44		A
15	19027312	HR-45		A
16	19027313	HR-46		A
17	19027314	HR-47		A
18	19027315	HR-48		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	Michael Jenkins		NVL	3/22/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:48 PM
Entered By: Fatima Khan

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905333.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019	**Time** 1:15 PM
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
19	19027316	HR-49		A
20	19027317	HR-50		A
21	19027318	HR-51		A
22	19027319	HR-52		A
23	19027320	HR-53		A
24	19027321	HR-54		A
25	19027322	HR-55		A
26	19027323	HR-56		A
27	19027324	HR-57		A
28	19027325	HR-58		A
29	19027326	HR-59		A
30	19027327	HR-60		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	Michael Jenkins		NVL	3/22/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:48 PM
Entered By: Fatima Khan

1905333

FAI – Asbestos Sampling Sheet

Project No. 19-1439 **Inspectors' Name:** TKS / DG **Page:** 2 of 5

Project Name: MDC **Bldg. Name / No.** Halewaiolu Residences **Date:** 3/14/19

Sample Number	Sample Location	Material Description	Quantity/Material Location	Category	Friability
HR-31	Mens restroom, near doorway	4x4 blue ceramic wall tile w/wht grout	Mens rr	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-32	Mens restroom, near doorway				
HR-33	Mens restroom, near doorway				
HR-34	Kitchen, rear doorway	6x6 red ceramic floor tile w/blk grout	Kitchen and womens rr	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-35	Kitchen, rear doorway				
HR-36	Womens restroom, doorway				
HR-37	Womens restroom , doorway	4x4 pink ceramic wall tile w/wht grout	Womnes rr, wainscot	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-38	Womens restroom , doorway				
HR-39	Womens restroom , doorway				
HR-40	Beneath stainless-steel counter	Black undercoat	Uptown Café, Kitchen	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-41	Beneath stainless-steel counter				
HR-42	Beneath stainless-steel counter				
HR-43	North wall	Wall and ceiling plaster	Former "Mochi" factory	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-44	Middle ceiling				
HR-45	South wall				
HR-46	Near rear entryway	Gypsum wallboard with joint compound and tape	Hanagasa Inn	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-47	Rear of bar				
HR-48	South side wall				
HR-49	Bar	Plaster wall and ceiling	Hanagasa Inn	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-50	Storage room				
HR-51	Office				
HR-52	Dining room	12x12 beige VFT w/blk mastic	Hanagasa Inn	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-53	Dining room				
HR-54	Dining room				
HR-55	Mens rr, doorway	6x6 beige ceramic floor tile w/blk grout	Hanagasa Inn	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-56	Mens rr, doorway				
HR-57	Mens rr, doorway				
HR-58	Storage room, ceiling	Black water-proofing in ceiling	Hanagasa Inn	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-59	Storage room, ceiling				
HR-60	Storage room, ceiling				

Notes:

March 20, 2019

Don Gacusan
Ford & Associates, Inc.
928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 1905334.00

Client Project: 19-1439
Location: Halewaiolu Residences

Dear Mr. Gacusan,

Enclosed please find test results for the 30 sample(s) submitted to our laboratory for analysis on 3/19/2019.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with both **EPA 600/M4-82-020**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116** Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Matt Macfarlane, Asbestos Lab Supervisor

Lab Code: 102063-0

Enc.: Sample Results

Phone: 206 547.0100 | Fax: 206 634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103-6516

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905334.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Lab ID: 19027328 **Client Sample #: HR-61**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White rubbery material with paint and wood flakes

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Caulking compound, Wood flakes, Calcareous particles	Cellulose 7%	**None Detected ND**
Fine particles, Paint		

Lab ID: 19027329 **Client Sample #: HR-62**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White rubbery material with built up paint and woven fibers

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Caulking compound, Wood flakes, Calcareous particles	Cellulose 16%	**None Detected ND**
Fine particles, Paint	Synthetic fibers 2%	

Lab ID: 19027330 **Client Sample #: HR-63**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White rubbery material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Caulking compound, Paint, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027331 **Client Sample #: HR-64**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 3%	**Chrysotile 6%**

Lab ID: 19027332 **Client Sample #: HR-65**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905334.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**Chrysotile 8%**

Lab ID: 19027333 **Client Sample #: HR-66**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**Chrysotile 5%**
	Spider silk <1%	

Lab ID: 19027334 **Client Sample #: HR-67**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with mineral grains

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Mineral grains, Mica	Cellulose 3%	**None Detected ND**
Sea shell		

Lab ID: 19027335 **Client Sample #: HR-68**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White brittle material with mineral grains

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Mineral grains, Mica	Cellulose 2%	**None Detected ND**
Sea shell		

Lab ID: 19027336 **Client Sample #: HR-69**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

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Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 1 of 1 **Description:** White brittle material with mineral grains and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Mineral grains, Mica	Cellulose 2%	**None Detected ND**
Sea shell, Paint		

Lab ID: 19027337 **Client Sample #: HR-70**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Brown vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	Cellulose <1%	**Chrysotile 7%**

Layer 2 of 2 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Fine particles, Calcareous particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027338 **Client Sample #: HR-71**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Brown vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	None Detected ND	**Chrysotile 5%**

Layer 2 of 2 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Fine particles, Calcareous particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027339 **Client Sample #: HR-72**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Brown vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	Cellulose 2%	**Chrysotile 8%**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Layer 2 of 2 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Fine particles, Calcareous particles	Cellulose 3%	**None Detected ND**

Lab ID: 19027340 **Client Sample #: HR-73**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Black brittle material with brown surface

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Calcareous particles	Cellulose 2%	**Chrysotile 5%**

Layer 2 of 2 **Description:** Tan firm mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027341 **Client Sample #: HR-74**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Black brittle material with brown surface

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Calcareous particles	Cellulose 2%	**Chrysotile 5%**

Layer 2 of 2 **Description:** Tan firm mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	Cellulose 3%	**None Detected ND**

Lab ID: 19027342 **Client Sample #: HR-75**

Location: Halewaiolu Residences

Layer 1 of 3 **Description:** Black brittle material with brown surface

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Calcareous particles	Cellulose <1%	**Chrysotile 6%**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 2 of 3	**Description:** Tan firm mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Mastic/Binder, Calcareous particles	Cellulose	2%	**None Detected ND**
		Spider silk	<1%	
Layer 3 of 3	**Description:** White compacted powdery material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Calcareous binder, Calcareous particles, Fine grains	Cellulose	2%	**None Detected ND**

Lab ID: 19027343 **Client Sample #: HR-76**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Tan rubbery material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Vinyl/Binder	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Tan firm mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Mastic/Binder, Calcareous particles	Cellulose	3%	**None Detected ND**
		Spider silk	<1%	
		Synthetic fibers	<1%	

Lab ID: 19027344 **Client Sample #: HR-77**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Tan rubbery material			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Vinyl/Binder	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 2 of 2 **Description:** Tan firm mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles, Calcareous particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027345 **Client Sample #: HR-78**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Tan rubbery material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder	None Detected ND	**None Detected ND**

Layer 2 of 2 **Description:** Brown brittle mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles, Calcareous particles	Cellulose 3%	**None Detected ND**

Lab ID: 19027346 **Client Sample #: HR-79**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Yellow brittle mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	Cellulose 3%	**None Detected ND**

Lab ID: 19027347 **Client Sample #: HR-80**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Yellow brittle mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	Cellulose 2%	**None Detected ND**
	Synthetic fibers 2%	

Lab ID: 19027348 **Client Sample #: HR-81**

Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Layer 1 of 1 **Description:** Yellow brittle mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	Synthetic fibers 2%	**None Detected ND**
	Cellulose <1%	

Lab ID: 19027349 **Client Sample #: HR-82**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Beige vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**

Layer 2 of 2 **Description:** Black asphaltic mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Asphalt/Binder, Calcareous particles	Cellulose 4%	**None Detected ND**

Lab ID: 19027350 **Client Sample #: HR-83**

Location: Halewaiolu Residences

Layer 1 of 3 **Description:** Beige vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**

Layer 2 of 3 **Description:** Black asphaltic mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Asphalt/Binder, Calcareous particles	Cellulose 3%	**None Detected ND**

Layer 3 of 3 **Description:** Brown vinyl

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	Cellulose <1%	**Chrysotile 6%**

Lab ID: 19027351 **Client Sample #: HR-84**

Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Layer 1 of 3	**Description:** Beige vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**
Layer 2 of 3	**Description:** Black asphaltic mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Asphalt/Binder, Calcareous particles	Cellulose 4%	**None Detected ND**
		Synthetic fibers <1%	
Layer 3 of 3	**Description:** Brown vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	Cellulose <1%	**Chrysotile 7%**

Lab ID: 19027352 **Client Sample #: HR-85**

Location: Halewaiolu Residences

Layer 1 of 4	**Description:** Beige vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**
Layer 2 of 4	**Description:** Yellow soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Calcareous particles, Insect parts	Cellulose 5%	**None Detected ND**
		Synthetic fibers 2%	
Layer 3 of 4	**Description:** Brown vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected ND	**Chrysotile 5%**
Layer 4 of 4	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Lab ID: 19027353 **Client Sample #: HR-86**

Location: Halewaiolu Residences

Layer 1 of 4	**Description:** Beige vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**
Layer 2 of 4	**Description:** Yellow soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Calcareous particles	Cellulose 3%	**None Detected ND**
		Synthetic fibers <1%	
Layer 3 of 4	**Description:** Brown vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	Cellulose <1%	**Chrysotile 6%**
Layer 4 of 4	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027354 **Client Sample #: HR-87**

Location: Halewaiolu Residences

Layer 1 of 4	**Description:** Beige vinyl tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**
Layer 2 of 4	**Description:** Yellow soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Calcareous particles	Cellulose 2%	**None Detected ND**
		Synthetic fibers <1%	

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Layer 3 of 4	**Description:** Brown vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	Cellulose <1%	**Chrysotile 6%**
Layer 4 of 4	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027355 **Client Sample #: HR-88**

Location: Halewaiolu Residences

Layer 1 of 5	**Description:** Beige vinyl tile with brown surface		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**
Layer 2 of 5	**Description:** Yellow soft mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Calcareous particles	Cellulose 2%	**None Detected ND**
Layer 3 of 5	**Description:** Brown vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	Cellulose <1%	**Chrysotile 7%**
Layer 4 of 5	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**
Layer 5 of 5	**Description:** Off-white compacted powdery material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Calcareous binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027356 **Client Sample #: HR-89**

Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Layer 1 of 5	**Description:** Beige vinyl tile with brown surface			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 2 of 5	**Description:** Yellow soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Calcareous particles	Cellulose	3%	**None Detected ND**
Layer 3 of 5	**Description:** Brown vinyl			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**Chrysotile 5%**
Layer 4 of 5	**Description:** Black asphaltic material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose	3%	**None Detected ND**
Layer 5 of 5	**Description:** Off-white compacted powdery material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Calcareous binder, Calcareous particles, Fine particles	Cellulose	<1%	**None Detected ND**

Lab ID: 19027357 **Client Sample #: HR-90**

Location: Halewaiolu Residences

Layer 1 of 5	**Description:** Beige vinyl tile with brown surface			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 2 of 5	**Description:** Yellow soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Calcareous particles	Cellulose	2%	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905334.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 3 of 5	**Description:** Brown vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	Cellulose <1%	**Chrysotile 7%**
Layer 4 of 5	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**
Layer 5 of 5	**Description:** Off-white compacted powdery material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Calcareous binder, Calcareous particles, Fine particles	Cellulose 3%	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/20/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905334.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019 **Time** 1:15 PM	
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	19027328	HR-61		A
2	19027329	HR-62		A
3	19027330	HR-63		A
4	19027331	HR-64		A
5	19027332	HR-65		A
6	19027333	HR-66		A
7	19027334	HR-67		A
8	19027335	HR-68		A
9	19027336	HR-69		A
10	19027337	HR-70		A
11	19027338	HR-71		A
12	19027339	HR-72		A
13	19027340	HR-73		A
14	19027341	HR-74		A
15	19027342	HR-75		A
16	19027343	HR-76		A
17	19027344	HR-77		A
18	19027345	HR-78		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	William Minor		NVL	3/20/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:52 PM
Entered By: Fatima Khan

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905334.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019	**Time** 1:15 PM
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
19	19027346	HR-79		A
20	19027347	HR-80		A
21	19027348	HR-81		A
22	19027349	HR-82		A
23	19027350	HR-83		A
24	19027351	HR-84		A
25	19027352	HR-85		A
26	19027353	HR-86		A
27	19027354	HR-87		A
28	19027355	HR-88		A
29	19027356	HR-89		A
30	19027357	HR-90		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	William Minor		NVL	3/20/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:52 PM
Entered By: Fatima Khan

1905334

FAI – Asbestos Sampling Sheet

Project No. 19-1439 **Inspectors' Name:** TKS / DG **Page:** 3 of 5

Project Name: MDC **Bldg. Name / No.** Halewaiolu Residences **Date:** 3/14/19

Sample Number	Sample Location	Material Description	Quantity/Material Location	Category	Friability
HR-61	Front entryway	White door caulking	Hanagasa Inn	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-62	Front entryway				
HR-63	Rear entryway				
HR-64	Sink, left wall	Black sink undercoating	Miki's Florist	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-65	Sink, left wall				
HR-66	Sink, left wall				
HR-67	North wall	Plaster wall and ceiling	Miki's Florist	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-68	South wall				
HR-69	Middle, ceiling				
HR-70	Suite 213	9x9 brown VFT w/blk mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-71	Suite 215				
HR-72	Suite 216				
HR-73	Suite 213	4-inch brown cove base w/tan mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-74	Suite 213				
HR-75	Suite 215				
HR-76	Suite 212	4-inch tan cove base w/tan mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-77	Suite 212				
HR-78	Suite 216				
HR-79	Suite 212	Tan carpet mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-80	Suite 212				
HR-81	Suite 212				
HR-82	Suite 212, restroom	12x12 beige VFT w/blk mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-83	Suite 212, restroom				
HR-84	Suite 202				
HR-85	Suite 213 restroom	12x12 beige peel-n-stick VFT over 9x9 brown FT w/blk mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-86	Suite 213 restroom				
HR-87	Suite 213 restroom				
HR-88	Suite 207	12x12 tan peel-n-stick square design VFT over 9x9 brown VFT w/blk mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-89	Suite 207				
HR-90	Suite 207				

Notes:

March 21, 2019

Don Gacusan
Ford & Associates, Inc.
928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 1905337.00

Client Project: 19-1439
Location: Halewaiolu Residences

Dear Mr. Gacusan,

Enclosed please find test results for the 30 sample(s) submitted to our laboratory for analysis on 3/19/2019.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with both **EPA 600/M4-82-020**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116** Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Matt Macfarlane, Asbestos Lab Supervisor

Lab Code: 102063-0

Enc.: Sample Results

Phone: 206 547.0100 | Fax: 206 634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103-6516

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Lab ID: 19027364 **Client Sample #: HR-91**

Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Black vinyl tile with brown surface			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 2 of 3	**Description:** Colorless soft sticky mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine particles, Calcareous particles	Cellulose	3%	**None Detected ND**
	Mineral grains			
Layer 3 of 3	**Description:** Black asphaltic material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles	Cellulose	2%	**None Detected ND**

Lab ID: 19027365 **Client Sample #: HR-92**

Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Black vinyl tile with brown surface			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 2 of 3	**Description:** Colorless soft sticky mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine grains, Calcareous particles	Cellulose	4%	**None Detected ND**
	Fine particles	Synthetic fibers	<1%	
Layer 3 of 3	**Description:** Black asphaltic material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose	3%	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

		Synthetic fibers <1%	

Lab ID: 19027366 **Client Sample #: HR-93**

Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Black vinyl tile with brown surface		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	Cellulose <1%	**None Detected ND**
Layer 2 of 3	**Description:** Colorless soft sticky mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine grains, Calcareous particles	Cellulose 3%	**None Detected ND**
	Fine particles	Synthetic fibers 2%	
Layer 3 of 3	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027367 **Client Sample #: HR-94**

Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Beige rubbery material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder	None Detected ND	**None Detected ND**
Layer 2 of 2	**Description:** Tan very firm mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027368 **Client Sample #: HR-95**

Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 1 of 2	**Description:** Beige rubbery material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Tan very firm mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose	<1%	**None Detected ND**

Lab ID: 19027369 **Client Sample #: HR-96**

Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Beige rubbery material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Tan very firm mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine particles	Cellulose	2%	**None Detected ND**

Lab ID: 19027370 **Client Sample #: HR-97**

Location: Halewaiolu Residences

Comments: Unable to analyze mastic as a separate layer, in layer 1.

Layer 1 of 4	**Description:** White vinyl tile with tan surface and sticky mastic backing			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles, Mastic/Binder	Cellulose	2%	**None Detected ND**
Layer 2 of 4	**Description:** Off-white vinyl tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

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Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: **Mr. Don Gacusan**
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 3 of 4	**Description:** Tan soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine particles, Calcareous binder	Cellulose	4%	**None Detected ND**
Layer 4 of 4	**Description:** Black asphaltic material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Adhesive/Binder, Calcareous particles, Fine particles	Cellulose	2%	**None Detected ND**

Lab ID: 19027371 **Client Sample #: HR-98**

Location: Halewaiolu Residences

Layer 1 of 2	**Description:** White vinyl tile with tan surface and sticky mastic backing			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles, Mastic/Binder	Cellulose	2%	**None Detected ND**
Layer 2 of 2	**Description:** Off-white vinyl tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**

Lab ID: 19027372 **Client Sample #: HR-99**

Location: Halewaiolu Residences

Layer 1 of 3	**Description:** White vinyl tile with tan surface and sticky mastic backing			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles, Mastic/Binder	Cellulose	2%	**None Detected ND**
Layer 2 of 3	**Description:** Off-white vinyl tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 3 of 3	**Description:** Tan soft mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Calcareous particles, Fine particles	Cellulose	3%	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Lab ID: 19027373 **Client Sample #: HR-100**
Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Gray rubbery material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Vinyl/Binder	None Detected	ND	**None Detected ND**

Layer 2 of 2 **Description:** Yellow soft mastic

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Mastic/Binder, Calcareous particles, Fine particles	Cellulose	7%	**None Detected ND**
	Synthetic fibers	2%	
	Glass fibers	2%	

Lab ID: 19027374 **Client Sample #: HR-101**
Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Gray rubbery material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Vinyl/Binder	None Detected	ND	**None Detected ND**

Layer 2 of 2 **Description:** Yellow soft mastic

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Mastic/Binder, Calcareous particles, Fine particles	Cellulose	5%	**None Detected ND**
	Synthetic fibers	<1%	

Lab ID: 19027375 **Client Sample #: HR-102**
Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Gray rubbery material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Vinyl/Binder	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

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Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 2 of 2 **Description:** Yellow soft mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Calcareous particles, Fine particles	Cellulose 6%	**None Detected ND**
Insect parts		

Lab ID: 19027376 **Client Sample #: HR-103**

Location: Halewaiolu Residences

Comments: Unable to analyze mastic as a separate layer, in layer 3.

Layer 1 of 5 **Description:** Beige vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**

Layer 2 of 5 **Description:** Black asphaltic mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Mastic/Binder, Calcareous particles	Cellulose 2%	**None Detected ND**

Layer 3 of 5 **Description:** White vinyl tile with sticky mastic backing

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**

Layer 4 of 5 **Description:** Brown vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles, Fine particles	Cellulose 2%	**Chrysotile 5%**

Layer 5 of 5 **Description:** Black asphaltic mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Mastic/Binder, Calcareous particles	Cellulose 5%	**None Detected ND**

Lab ID: 19027377 **Client Sample #: HR-104**

Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 5	**Description:** Beige vinyl tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 2 of 5	**Description:** Black asphaltic mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Calcareous particles	Cellulose	3%	**None Detected ND**
Layer 3 of 5	**Description:** White vinyl tile with sticky mastic backing			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 4 of 5	**Description:** Brown vinyl tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles, Fine particles	Cellulose	2%	**Chrysotile 6%**
Layer 5 of 5	**Description:** Black asphaltic mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Calcareous particles	Cellulose	3%	**None Detected ND**

Lab ID: 19027378 **Client Sample #: HR-105**

Location: Halewaiolu Residences

Layer 1 of 5	**Description:** Beige vinyl tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 2 of 5	**Description:** Black asphaltic mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Mastic/Binder, Calcareous particles	Cellulose	2%	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 3 of 5 **Description:** White vinyl tile with sticky mastic backing

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	Cellulose 2%	**None Detected ND**

Layer 4 of 5 **Description:** Brown vinyl tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles, Fine particles	Cellulose <1%	**Chrysotile 7%**

Layer 5 of 5 **Description:** Black asphaltic mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Mastic/Binder, Calcareous particles	Cellulose 4%	**None Detected ND**
Fine particles	Synthetic fibers <1%	

Lab ID: 19027379 **Client Sample #: HR-106**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Beige vinyl floor tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	Cellulose <1%	**None Detected ND**

Layer 2 of 2 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**

Lab ID: 19027380 **Client Sample #: HR-107**

Location: Halewaiolu Residences

Layer 1 of 3 **Description:** Beige vinyl floor tile

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Calcareous particles	Cellulose <1%	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 2 of 3	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**
Layer 3 of 3	**Description:** Off-white brittle material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Binder/Filler, Mineral grains, Sea shell Calcareous particles	None Detected ND	**None Detected ND**

Lab ID: 19027381 **Client Sample #: HR-108**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Beige vinyl floor tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Calcareous particles	None Detected ND	**None Detected ND**
Layer 2 of 3	**Description:** Black asphaltic material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 2%	**None Detected ND**
Layer 3 of 3	**Description:** Off-white brittle material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Binder/Filler, Mineral grains, Sea shell Calcareous particles	None Detected ND	**None Detected ND**

Lab ID: 19027382 **Client Sample #: HR-109**
Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Beige ceramic tile		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Ceramic/Binder	None Detected ND	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 2 of 3	**Description:** Brown brittle material with quartz granules			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Quartz, Calcareous particles	None Detected	ND	**None Detected ND**
Layer 3 of 3	**Description:** White brittle material with mineral grains			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Mineral grains, Calcareous particles	None Detected	ND	**None Detected ND**
	Quartz, Fine grains			

Lab ID: 19027383 **Client Sample #: HR-110**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Beige ceramic tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Ceramic/Binder	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Brown brittle material with quartz granules and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Quartz, Calcareous particles	Synthetic fibers	2%	**None Detected ND**
	Metal foil	Cellulose	<1%	

Lab ID: 19027384 **Client Sample #: HR-111**
Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Beige ceramic tile			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Ceramic/Binder	None Detected	ND	**None Detected ND**
Layer 2 of 2	**Description:** Brown brittle material with quartz granules			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Quartz, Calcareous particles	None Detected	ND	**None Detected ND**

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

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Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Lab ID: 19027385 **Client Sample #: HR-112**
Location: Halewaiolu Residences
Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 3%	**Chrysotile 7%**

Lab ID: 19027386 **Client Sample #: HR-113**
Location: Halewaiolu Residences
Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 3%	**Chrysotile 6%**
Paint chips, Wood flakes	Synthetic fibers 2%	

Lab ID: 19027387 **Client Sample #: HR-114**
Location: Halewaiolu Residences
Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Calcareous particles, Fine particles	Cellulose 6%	**Chrysotile 6%**
Paint chips, Wood flakes	Synthetic fibers <1%	

Lab ID: 19027388 **Client Sample #: HR-115**
Location: Halewaiolu Residences
Layer 1 of 1 **Description:** Gray soft flaky material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles	Cellulose 16%	**None Detected ND**

Lab ID: 19027389 **Client Sample #: HR-116**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 1 of 1 **Description:** Gray soft flaky material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles	Cellulose 21%	**None Detected ND**

Lab ID: 19027390 **Client Sample #: HR-117**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Gray soft flaky material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles	Cellulose 18%	**None Detected ND**

Lab ID: 19027391 **Client Sample #: HR-118**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White rubbery material with paint and wood

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Caulking compound, Paint, Wood flakes	Cellulose 3%	**None Detected ND**
Calcareous binder, Mineral grains, Sea shell		

Lab ID: 19027392 **Client Sample #: HR-119**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** White rubbery material with paint and wood

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Caulking compound, Paint, Wood flakes	Cellulose 5%	**None Detected ND**
Calcareous binder, Mineral grains, Sea shell		

Lab ID: 19027393 **Client Sample #: HR-120**

Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: **Mr. Don Gacusan**
Project Location: Halewaiolu Residences

Batch #: 1905337.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 30
Samples Analyzed: 30
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 1 of 1 **Description:** White rubbery material with paint and wood

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Caulking compound, Paint, Wood flakes	Cellulose 3%	**None Detected ND**
Calcareous binder, Mineral grains, Sea shell		

Sampled by: Client
Analyzed by: William Minor **Date:** 03/21/2019
Reviewed by: Matt Macfarlane **Date:** 03/21/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905337.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019	**Time** 1:15 PM
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	19027364	HR-91		A
2	19027365	HR-92		A
3	19027366	HR-93		A
4	19027367	HR-94		A
5	19027368	HR-95		A
6	19027369	HR-96		A
7	19027370	HR-97		A
8	19027371	HR-98		A
9	19027372	HR-99		A
10	19027373	HR-100		A
11	19027374	HR-101		A
12	19027375	HR-102		A
13	19027376	HR-103		A
14	19027377	HR-104		A
15	19027378	HR-105		A
16	19027379	HR-106		A
17	19027380	HR-107		A
18	19027381	HR-108		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	William Minor		NVL	3/21/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:55 PM
Entered By: Fatima Khan

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905337.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019	**Time** 1:15 PM
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 30 Rush Samples

	Lab ID	Sample ID	Description	A/R
19	19027382	HR-109		A
20	19027383	HR-110		A
21	19027384	HR-111		A
22	19027385	HR-112		A
23	19027386	HR-113		A
24	19027387	HR-114		A
25	19027388	HR-115		A
26	19027389	HR-116		A
27	19027390	HR-117		A
28	19027391	HR-118		A
29	19027392	HR-119		A
30	19027393	HR-120		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	William Minor		NVL	3/21/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 2:55 PM
Entered By: Fatima Khan

1905337

FAI – Asbestos Sampling Sheet

Project No. 19-1439 **Inspectors' Name:** TKS / DG **Page:** 4 of 5

Project Name: MDC **Bldg. Name / No.** Halewaiolu Residences **Date:** 3/14/19

Sample Number	Sample Location	Material Description	Quantity/Material Location	Category	Friability
HR-91	Suite 206, restroom	12x12 brown peel-n-stick VFT	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-92	Suite 206, restroom				
HR-93	Suite 206, restroom				
HR-94	Suite 202	4-inch beige cove base w/tan mastic	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-95	Suite 202				
HR-96	Suite 202				
HR-97	Suite 204	12x12 tan peel-n-stick VFT	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-98	Suite 204				
HR-99	Suite 204				
HR-100	Suite 204, restroom	4-inch gray cove base w/clear adhesive	2nd floor	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-101	Suite 204, restroom				
HR-102	Suite 204, restroom				
HR-103	Suite 208	12x12 beige VFT w/blk mastic over white peel-n-stick VFT over 9x9 brown VFT w/blk mastic	2nd floor, 208, 210,	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-104	Suite 208				
HR-105	Suite 208				
HR-106	Suite 203	12x12 streaked VFT w/blk mastic		☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-107	Suite 203				
HR-108	Suite 203				
HR-109	Hallway, north doorway	6x6 beige ceramic floor tile w/brown grout	Throughout entire hallway	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-110	Hallway, north doorway				
HR-111	Hallway, north doorway				
HR-112	Suite 205, bathroom door	Remnant mirror mastic	2nd floor, 205	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-113	Suite 205, bathroom door				
HR-114	Suite 205, bathroom door				
HR-115	Suite 205	Gray sink undercoat	2nd floor, 205	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-116	Suite 205				
HR-117	Suite 205				
HR-118	Suite 213	White caulking	2nd floor, throughout doorways	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-119	Suite 212				
HR-120	Suite 215				

Notes:

March 25, 2019

Don Gacusan
Ford & Associates, Inc.
928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 1905344.00

Client Project: 19-1439
Location: Halewaiolu Residences

Dear Mr. Gacusan,

Enclosed please find test results for the 21 sample(s) submitted to our laboratory for analysis on 3/19/2019.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with both **EPA 600/M4-82-020**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116** Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Matt Macfarlane, Asbestos Lab Supervisor

Lab Code: 102063-0

Enc.: Sample Results

Phone: 206 547.0100 | Fax: 206 634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103-6516

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905344.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 21
Samples Analyzed: 21
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Lab ID: 19027408 **Client Sample #: HR-121**
Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Tan compacted powdery material with white paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Calcareous particles, Paint	Cellulose 5%	**Chrysotile 5%**
	Synthetic fibers <1%	

Layer 2 of 2 **Description:** Fine white brittle material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Binder/Filler, Calcareous particles	Cellulose 2%	**None Detected ND**
Mineral grains, Quartz		

Lab ID: 19027409 **Client Sample #: HR-122**
Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Tan compacted powdery material with white paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Calcareous particles, Paint	Cellulose 4%	**None Detected ND**
	Synthetic fibers <1%	

Layer 2 of 2 **Description:** Fine white brittle material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous particles, Fine particles, Binder/Filler	Cellulose	**None Detected ND**
Mineral grains, Quartz		

Lab ID: 19027410 **Client Sample #: HR-123**
Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Kenny Tran **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/25/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905344.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 21
Samples Analyzed: 21
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 1 of 1 **Description:** White sandy brittle material with white paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Fine particles, Sand, Paint/Binder	Cellulose	2%	**Chrysotile 2%**

Lab ID: 19027411 **Client Sample #: HR-124**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Gray sandy brittle material with white paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Calcareous particles, Fine grains, Paint	Cellulose	4%	**None Detected ND**
	Synthetic fibers	2%	

Lab ID: 19027412 **Client Sample #: HR-125**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Gray sandy brittle material with white paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Calcareous particles, Paint, Fine grains	Cellulose	3%	**None Detected ND**

Lab ID: 19027413 **Client Sample #: HR-126**
Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Gray sandy brittle material with white paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Calcareous particles, Fine particles, Paint	Cellulose	6%	**None Detected ND**

Lab ID: 19027414 **Client Sample #: HR-127**
Location: Halewaiolu Residences

Layer 1 of 2 **Description:** Gray fibrous material with white paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Paint	Synthetic fibers	90%	**None Detected ND**

Sampled by: Client
Analyzed by: Kenny Tran **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/25/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905344.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 21
Samples Analyzed: 21
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 2 of 2	**Description:** Black asphaltic material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder, Fine grains	Cellulose	8%	**None Detected ND**
		Glass fibers	3%	

Lab ID: 19027415 **Client Sample #: HR-128**

Location: Halewaiolu Residences

Layer 1 of 2	**Description:** Gray fibrous material with white paint			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Paint	Synthetic fibers	95%	**None Detected ND**
Layer 2 of 2	**Description:** Black asphaltic material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder	Cellulose	2%	**None Detected ND**
		Synthetic fibers	<1%	

Lab ID: 19027416 **Client Sample #: HR-129**

Location: Halewaiolu Residences

Layer 1 of 3	**Description:** Gray fibrous material with white paint			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Paint	Synthetic fibers	95%	**None Detected ND**
Layer 2 of 3	**Description:** Black asphaltic material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Asphalt/Binder	Cellulose	6%	**None Detected ND**
		Synthetic fibers	3%	

Sampled by: Client
Analyzed by: Kenny Tran **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/25/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905344.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 21
Samples Analyzed: 21
Method: EPA/600/R-93/116 & EPA/600/M4-82-020

Layer 3 of 3 **Description:** Tan compacted powdery material with mica

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Calcareous binder, Calcareous particles, Mica	Cellulose	7%	**None Detected ND**

Lab ID: 19027417 **Client Sample #: HR-130**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Asphalt/Binder	Cellulose	2%	**None Detected ND**
	Glass fibers	4%	

Lab ID: 19027418 **Client Sample #: HR-131**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Asphalt/Binder	Cellulose	3%	**None Detected ND**
	Glass fibers	4%	

Lab ID: 19027419 **Client Sample #: HR-132**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic material

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Asphalt/Binder	Cellulose	3%	**Chrysotile 4%**

Lab ID: 19027420 **Client Sample #: HR-133**

Location: Halewaiolu Residences

Sampled by: Client
Analyzed by: Kenny Tran **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/25/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905344.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 21
Samples Analyzed: 21
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Layer 1 of 1 **Description:** Gray rubbery material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Adhesive/Binder, Calcareous particles	Cellulose 3%	**None Detected ND**
	Synthetic fibers <1%	

Lab ID: 19027421 **Client Sample #: HR-134**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Gray rubbery material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Calcareous particles	Cellulose 5%	**None Detected ND**
	Synthetic fibers 2%	

Lab ID: 19027422 **Client Sample #: HR-135**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Gray rubbery material with metallic flakes

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Adhesive/Binder, Metallic flakes, Calcareous particles	Cellulose 2%	**None Detected ND**
	Synthetic fibers 2%	

Lab ID: 19027423 **Client Sample #: HR-136**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** White coating over tan coating

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint/Binder	Cellulose 4%	**None Detected ND**

Layer 2 of 2 **Description:** Black asphaltic coating

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Paint	Glass fibers <1%	**Chrysotile 2%**

Sampled by: Client
Analyzed by: Kenny Tran **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/25/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905344.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 21
Samples Analyzed: 21
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

Synthetic fibers <1%

Lab ID: 19027424 **Client Sample #: HR-137**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** White coating over tan coating

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint/Binder	Synthetic fibers <1%	**None Detected ND**

Layer 2 of 2 **Description:** Black asphaltic coating

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Paint	Cellulose 2%	**Chrysotile 2%**
	Synthetic fibers <1%	

Lab ID: 19027425 **Client Sample #: HR-138**

Location: Halewaiolu Residences

Layer 1 of 2 **Description:** White coating over tan coating

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Paint/Binder	Synthetic fibers 2%	**None Detected ND**

Layer 2 of 2 **Description:** Black asphaltic coating

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Asphalt/Binder, Paint	Cellulose 2%	**Chrysotile 3%**
	Synthetic fibers <1%	

Lab ID: 19027426 **Client Sample #: HR-139**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic cementitious material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Cement/Binder, Asphalt/Binder, Fine grains	Cellulose 5%	**None Detected ND**

Sampled by: Client
Analyzed by: Kenny Tran **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/25/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905344.00
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 21
Samples Analyzed: 21
Method: EPA/600/R-93/116
& EPA/600/M4-82-020

	Mineral grains	Synthetic fibers <1%	

Lab ID: 19027427 **Client Sample #: HR-140**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic cemetitious material

	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Cement/Binder, Fine grains	Cellulose 2%	**None Detected ND**
	Mineral grains	Synthetic fibers <1%	

Lab ID: 19027428 **Client Sample #: HR-141**

Location: Halewaiolu Residences

Layer 1 of 1 **Description:** Black asphaltic cementitious material

	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Asphalt/Binder, Cement/Binder, Fine grains	Cellulose 3%	**None Detected ND**
	Mineral grains	Synthetic fibers <1%	

Sampled by: Client
Analyzed by: Kenny Tran **Date:** 03/20/2019
Reviewed by: Matt Macfarlane **Date:** 03/25/2019

Matt Macfarlane, Asbestos Lab Supervisor

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and 600/M4-82-020 Methods with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905344.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019 **Time** 1:15 PM	
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 21 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	19027408	HR-121		A
2	19027409	HR-122		A
3	19027410	HR-123		A
4	19027411	HR-124		A
5	19027412	HR-125		A
6	19027413	HR-126		A
7	19027414	HR-127		A
8	19027415	HR-128		A
9	19027416	HR-129		A
10	19027417	HR-130		A
11	19027418	HR-131		A
12	19027419	HR-132		A
13	19027420	HR-133		A
14	19027421	HR-134		A
15	19027422	HR-135		A
16	19027423	HR-136		A
17	19027424	HR-137		A
18	19027425	HR-138		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	Kenny Tran		NVL	3/20/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 3:08 PM
Entered By: Fatima Khan

ASBESTOS LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905344.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019	**Time** 1:15 PM
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 21 Rush Samples

	Lab ID	Sample ID	Description	A/R
19	19027426	HR-139		A
20	19027427	HR-140		A
21	19027428	HR-141		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	Kenny Tran		NVL	3/20/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 3:08 PM
Entered By: Fatima Khan

1905344

FAI – Asbestos Sampling Sheet

Project No. 19-1439 **Inspectors' Name:** TKS / DG **Page** 5 **of** 5

Project Name: MDC **Bldg. Name / No.** Halewaiolu Residences **Date:** 3/14/19

Sample Number	Sample Location	Material Description	Quantity/Material Location	Category	Friability
HR-121	Suite 203	Wall plaster	2nd floor, throughout	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-122	Suite 212				
HR-123	Suite 215				
HR-124	Suite 204	Ceiling plaster	2nd floor, throughout	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-125	Suite 211				
HR-126	Suite 216				
HR-127	South side	White TPO roofing	Roof	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-128	Middle				
HR-129	North side				
HR-130	South side	Black sealant	Roof, penetration	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-131	Middle				
HR-132	North side				
HR-133	North east side	Gray sealant	Roof, on metal ducts	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-134	North east side				
HR-135	North east side				
HR-136	North corner	White roof coating over black coating	Roof, west side eyebrow roof	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-137	North corner				
HR-138	North corner				
HR-139	South driveway	Asphalt concrete (AC) pavement	Exterior, parking lot and driveways	☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
HR-140	Middle parking lot				
HR-141	North parking lot				
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable
				☐ Surfacing ☐ TSI ☐ Misc.	☐ Friable ☐ Non-Friable

Notes:

APPENDIX B

LABORATORY ANALYTICAL REPORTS FOR LEAD PAINT SAMPLING

March 20, 2019

Don Gacusan
Ford & Associates, Inc.
928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

RE: Metals Analysis; NVL Batch # 1905348.00

Dear Mr. Gacusan,

Enclosed please find the test results for samples submitted to our laboratory for analysis. Preparation of these samples was conducted following protocol outlined in EPA Method SW 846 -3051 unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with U.S. EPA, NIOSH, OSHA and other ASTM methods.

For matrix materials submitted as paint, dust wipe, soil or TCLP samples, analysis for the presence of total metals is conducted using published U.S. EPA Methods. Paint and soil results are usually expressed in mg/Kg which is equivalent to parts per million (ppm). Lead (Pb) in paint is usually expressed in mg/Kg (ppm) , Percent (%) or mg/cm^2 by area. Dust wipe sample results are usually expressed in ug/wipe and ug/ft^2. TCLP samples are reported in mg/L (ppm). For air filter samples, analyses are conducted using NIOSH and OSHA Methods. Results are expressed in ug/filter and ug/m^3. Other matrix materials are analyzed accordingly using published methods or specified by client. The reported test results pertain only to items tested and are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more details.

This report is considered highly confidential and will not be released without your approval. Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. if you need further assistance please feel free to call us at 206-547-0100 or 1-888-NVLLABS.

Sincerely,

Shalini Patel, Lab Supervisor

Enc.: Sample results

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
WWW.AIHAACCREDITEDLABS.ORG
LAB # 101861

Analysis Report

Total Lead (Pb)

Client: Ford & Associates, Inc.
Address: 928 Nuuanu Ave. Suite 505
Honolulu, HI 96813

Attention: Mr. Don Gacusan
Project Location: Halewaiolu Residences

Batch #: 1905348.00
Matrix: Paint
Method: EPA 3051/7000B
Client Project #: 19-1439
Date Received: 3/19/2019
Samples Received: 14
Samples Analyzed: 14

Lab ID	Client Sample #	Sample Weight (g)	RL in mg/Kg	Results in mg/Kg	Results in percent
19027453	HR-P01	0.1567	64	< 64	<0.0064
19027454	HR-P02	0.0797	130	3000	0.30
19027455	HR-P03	0.2222	45	52	0.0052
19027456	HR-P04	0.2018	50	< 50	<0.0050
19027457	HR-P05	0.1986	50	250	0.025
19027458	HR-P06	0.1936	52	< 52	<0.0052
19027459	HR-P07	0.1203	83	1400	0.14
19027460	HR-P08	0.1284	78	< 78	<0.0078
19027461	HR-P09	0.2260	44	2500	0.25
19027462	HR-P10	0.1419	70	1200	0.12
19027463	HR-P11	0.1953	51	560	0.056
19027464	HR-P12	0.1854	54	< 54	<0.0054
19027465	HR-P13	0.0687	150	< 150	<0.015
19027466	HR-P14	0.2334	43	< 43	<0.0043

Sampled by: Client
Analyzed by: Yasuyuki Hida
Reviewed by: Shalini Patel

Date Analyzed: 03/20/2019
Date Issued: 03/20/2019

Shalini Patel, Lab Supervisor

mg/ Kg =Milligrams per kilogram
Percent = Milligrams per kilogram / 10000
Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

RL = Reporting Limit
'<' = Below the reporting Limit

Bench Run No: 2019-0320-9
FAA-02

LEAD LABORATORY SERVICES

Company	Ford & Associates, Inc.	**NVL Batch Number**	**1905348.00**
Address	928 Nuuanu Ave. Suite 505 Honolulu, HI 96813	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Don Gacusan	**Due Date** 3/26/2019 **Time** 1:15 PM	
Phone	(808) 426-6927	**Email**	dgacusan@fordcanty.com
Cell	(808) 387-2722	**Fax**	

Project Name/Number: 19-1439 **Project Location:** Halewaiolu Residences

Subcategory Flame AA (FAA)

Item Code FAA-02 EPA 7000B Lead by FAA <paint>

Total Number of Samples 14 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	19027453	HR-P01		A
2	19027454	HR-P02		A
3	19027455	HR-P03		A
4	19027456	HR-P04		A
5	19027457	HR-P05		A
6	19027458	HR-P06		A
7	19027459	HR-P07		A
8	19027460	HR-P08		A
9	19027461	HR-P09		A
10	19027462	HR-P10		A
11	19027463	HR-P11		A
12	19027464	HR-P12		A
13	19027465	HR-P13		A
14	19027466	HR-P14		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Emily Schubert		NVL	3/19/19	1315
Analyzed by	Yasuyuki Hida		NVL	3/20/19	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 3/19/2019
Time: 3:21 PM
Entered By: Emily Schubert

1905348

INVL LABS
INDUSTRIAL HYGIENE SERVICES
Laboratory | Management | Training

METALS CHAIN OF CUSTODY

Turn Around Time
- ❑ 2 Hour ❑ 4 Hours ❑ 24 Hours
- ❑ 2 Days ❑ 3 Days ❑ 4 Days
- ❑ 5 Days ☑ 6-10 Days
- Please call for TAT less than 24 Hours

Company: Ford & Associates
Address: 928 Nuuanu Avenue, Suite 505
Honolulu HI 96813
Phone: 808-426-6927

Project Manager: D. Gacusan
Cell: (808) 387 - 2722
Email: dgacusan@fordcanty.com
Fax: ( ) -

Project Name/Number: 19-1439
Project Location: Halewaiolu Residences

☑ Total Metals ❑ TCLP
☑ FAA (ppm ❑ ICP (PPM ❑ GFAA (ppb) ❑ CVAA (ppb)
❑ Air Filter ☑ Paint Chips (%) ❑ Soil ❑ Paint Chips (cm) ❑ Dust Wipes ❑ Drinking Water ❑ Waste Water ❑ Other
RCRA 8: ❑ Barium ❑ Chromium ❑ Silver ❑ Arsenic ❑ Mercury ☑ Lead ❑ Selenium ❑ Cadmium
RCRA 11: ❑ Copper ❑ Zinc ❑ Other

Reporting Instructions: email results
❑ Call (808) 387 - 2722 ❑ Fax ( ) - ☑ Email dgacusan@fordassoc.com

Total Number of Samples 14

	Sample ID	Description	A/R
1	HR-P01 thru HR-P14	* See the attached sampling data sheets	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

	Print Name	Signature	Company	Date	Time
Sampled by	D. Gacusan		FAI	03/14/19	0830
Relinquish by	D. Gacusan		FAI	03/15/19	1500

Office Use Only

	Print Name	Signature	Company	Date	Time
Received by	[illegible]		NVL	3/19/19	1315 Redef
Analyzed by					
Called by					
Faxed/Email by					

1905348

FAI – Paint Sampling Sheet

Project No. 19-1439 **Inspectors' Name:** TKS / DG **Page:** 1 of 2

Project Name: MDC **Bldg. Name / No.** Halewaiolu Residences **Date:** 3/14/19

Sample Number	Sample Location	Paint Description	Substrate	Notes/Paint Location	Condition
HR-P01	Mochi, interior, north wall	White paint	Gyp	Former Mochi factory	☐ Good ☐ Damaged % ☐ Sig. Dam. % _
HR-P02	Mochi, interior, front door	Blue paint	Wood	Former Mochi factory	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P03	Miki's, interior, north wall	Beige paint	Plaster	Miki's florist	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P04	Hanagasa, interior, column, west side wall	White paint	Concrete	Hanagasa	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P05	Hanagasa, interior, trim, rear doorway	Black paint (over white paint)	Wood	Hanagasa	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P06	Suite 213, interior, north wall	White paint	Plaster	2nd floor, throughout	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P07	Suite 212, interior, doorframe	White paint	Wood	2nd floor, throughout	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P08	Rear of Uptown Café, bollards	Yellow paint	Metal	Exterior parking lot	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P09	Miki's, rear doorway, trim	Blue paint	Wood	Exterior, trim	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P10	Exterior, south stairway, handrail	Black paint (over gray paint)	Metal	Exterior, stairway handrail	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _

Notes:

1905348

FAI – Paint Sampling Sheet

Project No. 19-1439 **Inspectors' Name:** TKS / DG **Page:** 2 **of** 2

Project Name: MDC **Bldg. Name / No.** Halewaiolu Residences **Date:** 3/14/19

Sample Number	Sample Location	Paint Description	Substrate	Notes/Paint Location	Condition
HR-P11	Exterior, south stairway, threads	Blue paint	Concrete	Exterior, stairways, threads	☐ Good ☐ Damaged % ☐ Sig. Dam. % _
HR-P12	Exterior, parking lot, stops	Yellow paint	Concrete	Exterior, parking lot	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P13	Exterior, parking lot, stops	Handicap blue paint	Concrete	Exterior, parking lot	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
HR-P14	Exterior, parking lot, stalls	White striping paint	AC	Exterior, parking lot	☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
					☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
					☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
					☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
					☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
					☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _
					☐ Good ☐ Damaged % _ ☐ Sig. Dam. % _

Notes:

APPENDIX C

HAWAIIAN ELECTRIC LETTER

TSC 2.5.1
Due Diligence Inquiries

June 26, 2015

Ms. Nicole Okino
Bureau Veritas North America, Inc.
841 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Transmitted via email: nicole.okino@us.bureauveritas.com

Dear Ms. Okino:

Subject: **Transformer Information**
1331 to 1347 River Street
Honolulu, Oahu, Hawaii

In response to your request for information regarding Hawaiian Electric transformers at the above referenced location, we are providing the following information below:

Pole / Vault Number	Transformer Number	Address	Date Purchased	PCB Status
V1109	82836	1333 River Street	06/16/10	Non-PCB

If you have any other questions, please contact me at 808.543.4523.

Sincerely,

Wray Kakugawa
Senior Environmental Scientist

Appendix M

Economic and Fiscal Impact Assessment

PBR Hawai‘i and Associates

October 2019

Halewai‘olu Senior Residences

ECONOMIC AND FISCAL IMPACT ASSESSMENT

Final Report

Prepared by:

PBR HAWAII
& ASSOCIATES, INC.
1001 Bishop Street, Suite 650
Honolulu, HI 96813

October 2019

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List of Acronyms -

AGI	adjusted gross income
EA	environmental assessment
CPI-U	Consumer Price Index – Urban Consumers
DBEDT	State of Hawai'i, Department of Business, Economic Development and Tourism
FTE	full-time equivalent
FY 2018	fiscal year ending June 30, 2018
GET	general excise tax
HRS	Hawai'i Revised Statutes
n/a	not applicable
ROH	Revised Ordinances of Honolulu
TAT	transient accommodations tax
TOD	Transit Oriented Development

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REPORT TEXT

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EXECUTIVE SUMMARY

Halewai'olu Senior Development, LLC (HSD) proposes to develop the Halewai'olu Senior Residences at 1331-1347 River Street in downtown Chinatown in Honolulu, island of O'ahu (Project). This executive summary describes the economic and fiscal impacts of the Project within the City and County of Honolulu (County) and the State of Hawai'i (State).

The following chapters provide more information on the study background, project parameters, and analyses.

STUDY BACKGROUND

On May 17, 2016, HSD entered into a Development Agreement with the County regarding certain development rights and an intended lease related to a 26,925 square foot parcel of land owned by the County. The property is located at 1331-1347 River Street and identified as TMK (1) 1-7-006: 012 (the Property). The Property is within the City's Downtown Neighborhood Transit Oriented Development (TOD) plan area, due to its location within a ½-mile radius of the City's planned Chinatown and Iwilei rail stations. The Property is not within the City's Chinatown Special District, but to the extent practicable, design is expected to align with the intent of that designation, as set forth in the County's Land Use Ordinance.

R.M. Towill Corporation (Towill) is assisting HSD in preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) and other necessary environmental documentation. Towill is also processing a "201H" application for zoning and other exemptions pursuant to Chapter 201H, Hawai'i Revised Statutes (HRS). This statute allows eligible 201H projects to seek exemptions from certain fees, statutes, ordinances and rules of any governmental agency relating to planning, zoning and construction standards in exchange for providing affordable housing, so long as the project does not negatively affect the health and safety of the general public and does not contravene standards, rates and fees approved by the public utilities commission.

HSD and Towill sought this economic and fiscal impact assessment to support the EA and 201H entitlement documents. A NEPA EA seeks to address a project's "cumulative impact", which is defined by the Council on Environmental Quality as:

> *"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions*" (40 CFR § 1508.7)[1].

The Project is one of several residential developments anticipated within the downtown and Chinatown areas, in relationship to the initiation of rail service and other projects anticipated in the area. As reflected in a July 2019 study on market demand and capacity in transit oriented areas prepared for the City and County of Honolulu, the Chinatown and downtown areas of the "Downtown Neighborhood," as defined therein, has capacity for 1,470 and 1,680 more residential units, respectively, including this Project (Strategic Economics, 2019).[2] Thus, the impacts of the Halewai'olu Senior Residences have been

[1] 40 CFR § 1508.7

[2] Strategic Economics, "Honolulu TOD Demand Analysis and Market Projections", July 2, 2019.

accounted for within the context of other residential and public infrastructure investments in the area.

THE PROJECT

The Halewai'olu Senior Residences entails demolition of an existing two-story commercial building on-site and construction of a 17-story senior housing project with 155 affordable rental units, plus one unit for resident manager. The Project is also expected to include a multipurpose room, a recreation deck and garden area, approximately 500 square feet of retail/commercial area, and a two-story parking structure. All tenants shall have incomes at or below 80% of the area median income (AMI) for the County, as adjusted for family size. After development, HSD or its related entity will manage and operate the Project for a maximum term of 75 years, pursuant to the ground lease terms.

Development of the Halewai'olu Senior Residences is already underway, with design, financing and permitting. These planning efforts are projected to conclude by September 2020, with construction commencing immediately thereafter and extending to approximately April 2020. Leasing could be completed by July 2022, with all operations stabilized within a year thereafter.

In order to approximate the above schedule, this economic and fiscal assessment is presented in periods that correspond to the County and State's fiscal years, with the development period represented as FY2020 to FY2022 (July 2019 to June 2022), and the first year of full operations represented as FY2023 (July 2022 to June 2023). Operations are assumed to be stabilized by FY2024 (July 2023 to June 2024).

In operational terms, the key Project elements evaluated in this economic and fiscal impact assessment are as follows.

Table 1: Project Elements Evaluated

	FY2019-FY2022 (Development)	FY2023 (Full operations)	Total/Stabilized Operations
Apartments:		**156 apartments**	**156 apartments**
30% AMI	-	8	8
60% AMI	-	131	131
80% AMI	-	16	16
Manager's unit	-	1	1
Commercial space (sq. ft.)	-	500	**500 square feet**

Source: The Michaels Development Company, 2019. See also Exhibit 2-1.

DEVELOPMENT COST AND SUMMARY IMPACTS

This study uses results of the State's Input-Output model (DBEDT 2016)[3] and other factors to estimate various economic and fiscal impacts of the Halewai'olu Senior Residences. The total (including direct, indirect and induced)[4] statewide impacts of the Project are summarized below. HSD estimates overall development costs of $85.6 million, of which $78.6 million is estimated to support direct benefits for Hawai'i. This excludes certain non-

[3] State of Hawai'i, Department of Business, Economic Development and Tourism, "The Hawaii State Input-Output Study: 2012 Benchmark Report", March 2016. See Chapter 4 for discussion of terminology.

[4] State of Hawai'i, Department of Business, Economic Development and Tourism, "The Hawaii State Input-Output Study: 2012 Benchmark Report", March 2016. See Chapter 4 for definition of this terminology.

construction related costs in the development budget such as operating and lease-up reserves, developer fees, and entitlement expenses. As of October 2019, before obtainment of final entitlements, HSD had already expended some $2.9 million of these funds, demonstrating the company's commitment to the Project and to providing affordable housing and social services in the County.

The existing two-story building on the Property is no longer occupied and no longer generates employment, real property taxes or other revenues for the County or State. Therefore, all economic and fiscal impacts estimated herein for the Halewai'olu Senior Residences are considered to be net new.

The table following provides a summary of the anticipated economic and fiscal impacts to be generated by these investments.

Table 2: Summary of Economic and Fiscal Impacts (2019 dollars)

	2020-2022 (Development period)	2023 (Operations)	Total/Stabilized Operations
Hawai'i development costs	$78.6 million	$0	**$78.6 million**
	-		
FTE Employment (av. annual)[5]			
Development-related	260	0	**0**
Operations-related			
On-site[6]	0	5	**5**
Net new jobs on Island	1	12	**12**
Total personal earnings per year (av. annual)[7]			
Development-related	$17.9	$0.0	**$0.0**
Operations-related	$0.1	$0.9	**$0.9**
Average earnings per FTE job[5]			
Development-related	$69,000	n/a	**n/a**
Operations-related	$68,000	$74,000	**$75,000**
In-migrant resident population			
To the County	5	10	**10**
To the State	5	6	**6**
Net additional government revenues (annual)			
For the County	$0.00	$0.01	**$0.01**
For the State	$0.86	$0.02	**$0.02**
Revenue/expenditure ratio			
For the County	0.4	0.3	**0.4**
For the State	27.8	1.4	**1.5**

Source: PBR HAWAII, 2019. See also Exhibit 1-1.

[5] Average annual direct, indirect and induces impacts; FTE = Full-time equivalent, defined as 40 hours per week or 2,080 hours per year.

[6] On-site estimates reflect direct employment only; other categories reflect total (direct, indirect and induced) impacts on a statewide basis.

[7] Earnings are defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance, and reflect total (direct, indirect and induced) impacts on a statewide basis.

The goal of this Project is to increase and enhance the supply of affordable rental housing for seniors on an unutilized County property that is located in an established urban area already served by utilities, services and numerous commercial and other enterprises. Social services to be provided at the Project are also intended to enhance the lives of its residents and the surrounding community.

While employment is not a driving motivation of the Halewai'olu Senior Residences, the Project is expected to generate substantial employment during its development, with some 260 FTE positions supported per year over about three years. Operational employment impacts are likely to be modest, with about 5 FTE positions created on-site, or perhaps 12 island-wide, when the impacts of off-site spending are accounted for. The latter could include jobs that are directly created by Halewai'olu Senior Residences off-site, such as for elevator maintenance, utility services, and the like, as well as those supported through indirect and induced effects.

As a 100% affordable housing development, the Project is not conceived as a means of generating income for County or State governments. In fact, through the 201H process, and the County and State's various incentives for affordable housing, the Project is expected to seek common tax and other exemptions considered key to the feasibility of such affordable housing developments. Consistent with this, the assessment shows net additional tax revenues of around $900,000 per year for the State during its development (largely income tax revenues on development employment earnings), but essentially zero net additional government revenues for the State during operations, and none for the County throughout the analysis period.

Accordingly, the ratio of net additional government revenues to expenditures is high for the State during the Project's development, at 27.8, but the ratios ranges from about 1.4 to 1.5 during operations. For the County, the Project could generate slightly less revenue than the costs of providing government services to its potential new residents. The analysis points to a County revenue to expenditure ratio of about 0.3 to 0.4, owing largely to its expected exemption from real property taxes.

These conclusions are discussed further in Chapter 2.

1 – INTRODUCTION

REPORT ORGANIZATION

The remainder of this report is organized as follows:

The report text is presented in three chapters:

1. Introduction - Study objectives and key parameters of the analysis.
2. Projected Impacts – Detailed study findings relating to the economic, population and fiscal impacts of the Halewai'olu Senior Residences.
3. Study Conditions and Terminology – Definitions and other important factors underlying the study.

Exhibits and Appendices follow the text and offer more detailed analyses and findings.

STUDY OBJECTIVE

The objective of this study is to estimate the economic and fiscal impacts of the Halewai'olu Senior Residences (Project) within the City and County of Honolulu (County) and the State of Hawai'i (State), to inform community members, public agencies and other interested parties, and to accompany the requests for discretionary approvals and entitlements as described in the Executive Summary. Factors evaluated include:

- **Economic impacts**:
  - Development-related employment
  - Operations-related employment
  - Personal earnings deriving from development and operations
- **Population impacts:**
  - Persons who may move between islands or from outside of the State because of residential opportunities generated by the Project
  - Employees who relocate to the County or State because of a work opportunity generated by the Project
- **Fiscal impacts:**
  - Real property tax and other County government revenues
  - General excise tax, income tax, and other State government revenues
  - County and State government operating expenditures
  - County and State net fiscal impacts and revenue/expenditure ratios

DOLLAR DENOMINATION

Unless otherwise stated, all dollar amounts referenced are stated in 2019 dollars.

REPORTING PERIODS

This analysis begins in FY2020 (July 2019 to June 2020), after major discretionary approvals were presumed to have been obtained. The conclusions are presented with respect to three time periods:

- **Development activities: planning and design (FY2020 to FY2022)** – While various planning and design efforts are already underway, the analysis begins in July 2019 so as to exclude the majority of the entitlement period. This first three-year period encompasses final Project planning, design, engineering and permitting. This stage is expected to conclude by September 2020. Thereafter, demolition of the existing building, site preparation, and new construction are targeted to begin, with commercial and residential leasing initiated soon thereafter. The Project's certificate of occupancy is targeted for April 2022.
- **Full operations: (FY2023)** – The Project is expected to be fully leased by July 2022, thus FY2023 (July 2022 to June 2023) is treated as its first year of full operations for purposes of this model.
- **Stabilization (FY2024 on)** – The final "period" considered depicts the long-term impacts of the Halewai'olu Senior Residences, after the organizational impacts of initial leasing have subsided and all operations are stabilized.

Note that the first period encompasses three years, while others are evaluated in terms of single years. Thus, care should be taken when comparing totals for each period.

2 – PROJECTED IMPACTS

The Halewai'olu Senior Residences will generate employment, earnings and fiscal benefits during its development and operations. For details of impacts by development element, the reader is referred to the exhibits noted below each table. More information on the current study methodology and definition of key terms such as "direct", "indirect" and "induced" impacts, are provided in Chapter 3.

The analyses undertaken herein reflect economic multipliers and coefficients derived from the State of Hawai'i, Department of Business, Economic Development and Tourism (DBEDT), "The Hawai'i State Input-Output Study: 2012 Benchmark Report," March 2016 (DBEDT 2016).

DEVELOPMENT COSTS

The Halewai'olu Senior Residences is expected to represent an investment of over $85 million, of which some $78.6 million is anticipated to be infused into the Hawai'i economy, and is therefore the focus of this analysis. The differential is due to exclusion of certain non-construction related costs in the development budget, such as operating and lease-up reserves, developer fees, and entitlement expenses. This adjustment is made to best align the analyses with assumptions used in DBEDT 2016.

Most development expenditures are for demolition and construction, representing "hard costs" such as for labor and materials. However, development budgets also cover design, engineering, legal and other professional services, as well as permitting, insurance, administrative and office costs, etc. Substantial shares of these professional services and "other" budgets would be incurred during the planning period prior to groundbreaking.

The table below presents estimated Hawai'i-based costs in total, as well as the average annual estimates projected during the development planning and construction periods.

Table 3: Order of Magnitude Development Costs (2019 dollars, in millions)

	Total	**Average annual** (FY2020-FY2022)
Professional services	$3.3	$1.1
Construction	$64.7	$21.6
Other	$10.6	$3.5
Total	**$78.6**	**$26.2**

Source: The Michaels Development Company, 2019. See Exhibits 3-1 and 3-2 for further detail.

All development expenditures are assumed for projection purposes to occur within the County.

EMPLOYMENT

The Halewai'olu Senior Residences will generate new employment through direct, indirect and induced economic impacts. Employment opportunities are segregated into those temporary effects that would originate from the Project's development, and those permanent effects that would be supported by its operations.

Development-Related

The Halewai'olu Senior Residences is estimated to generate up to 370 full-time equivalent (FTE) jobs per year as a direct effect, and up to 780 annually when considering positions supported directly and indirectly by development expenditures. While some development activities are already underway, the greatest impacts would be felt during the construction period, between FY2020 and FY2022, as represented.

In any given year, this jobs generation could represent some 122 FTE jobs of direct employment, or 260 in total.

Table 4: FTE Development Employment

	Total person-years	Average annual (2020-2022)
Direct	370	122
Indirect and induced	410	137
Total	**780**	**260**

Source: PBR HAWAII, 2019. See also Exhibit 3-3.

Operations-Related

The employment impacts of a real estate development are often thought of as those that occur on-site or at its new facilities. While this is important, and many on-site jobs represent new employment opportunities, others may be jobs that would have existed elsewhere in the County and/or State whether or not the development occurred, and the development may also create employment opportunities off-site. Therefore, assessment of the Project's operations-related employment impacts is presented two ways: (1) in terms of on-site employment and (2) in terms of additional employment statewide. Since this Project entails no discontinuation of existing operations, the new employment it generates is considered "net new".

By definition, on-site operating employment will be located in Honolulu, and all such jobs are considered direct impacts. On the other hand, the Project's statewide impact is considered in terms of employment supported by direct purchases from vendors or other impacts of additional spending the Halewai'olu Senior Residences generates. Such jobs could be located anywhere in the state, although it is assumed that the majority will be on-island. Additionally, this net new employment will have multiplier effects and can therefore be considered in terms of direct, indirect and induced employment.

- **On-site** (direct impacts only) - When the Project is fully operational and leased in 2023, the Project is expected to support some 5 FTE direct jobs on-site.
- **Statewide** – The Halewai'olu Senior Residences is expected to support about 12 ongoing FTE jobs statewide, once the new facilities are stabilized, including its direct, indirect and induced impacts.

Operating employment impacts would include technical and staff positions at the new residential and commercial facilities themselves, as well as other positions in that can be expected to be generated throughout the State's economy via indirect and induced economic factors. Most such positions can be expected to be realized by persons who are already residents of the State.

Table 5: Average Annual FTE Operational Employment			
	FY2020 to FY2022	**FY2023 (full operations)**	**FY2024+ (stabilized)**
ON-SITE			
Direct impacts	0	5	5
STATEWIDE			
Direct	0.4	7	7
Indirect and induced	0.4	5	5
Total (rounded)	1	12	12

Source: PBR HAWAII, 2019. See also Exhibits 3-6 and 3-7.

EARNINGS

Evaluation of personal earnings is based on the statewide impacts shown above. This study defines earnings in alignment with the framework of the DBEDT 2016 models, where earnings include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance. Earnings exclude gratuities and bonuses that may also apply to certain types of work.

Development-Related

Development-related positions attributable to the Project are expected to support total earnings of some $53.6 million over the three-year period evaluated, representing an average of about $17.9 million per year. These earnings are estimated to average $81,000 per direct FTE job, and $58,000 per indirect and induced job, for an overall average of $69,000.

Table 6: Personal Earnings Attributable to Development Employment (2019 dollars)		
	Total	**Average annual (FY2020-FY2022)**
Direct	$29.9 million	$10.0 million
Total (direct, indirect & induced)	$53.6 million	$17.9 million
Average per FTE job (Total)		*$69,000*

Source: PBR HAWAII, 2019. See also Exhibits 3-4 and 3-5.

Operations-Related

During the development period, initial leasing activity could generate a small amount of personal earnings, budgeted at $77,500 in total or some $0.03 million per year. Once operations are stabilized and initial leasing is concluded, average annual ongoing earnings are anticipated to represent some $0.9 million per year, including direct, indirect and induced effects.

On average, these net new FTE positions, including direct, indirect and induced impacts, are expected to earn about $75,000 per FTE job at stabilization.

Table 7: Personal Earnings Attributable to Statewide Operational Employment (2019 dollars)			
	FY2020 to FY2022 (initial leasing)	**FY2023 (full operations)**	**FY2024+ (stabilized)**
Direct	$0.03 million	$0.4 million	$0.4 million
Total (direct, indirect & induced, rounded)	$0.1 million	$0.9 million	$0.9 million
Average per FTE job (Total)	*$68,000*	*$74,000*	*$75,000*

Source: PBR HAWAII, 2019. See also Exhibits 3-7 and 3-8.

POPULATION

Resident population movements could be driven by the Project's residential or employment opportunities, as well as its ongoing operations. Population impacts are of interest in themselves and are also evaluated because more population tends to require additional State and County resources and services, as addressed in the fiscal impacts section of this report.

Project Tenants Moving From Off-Island

The vast majority of Halewai'olu Senior Residences tenants are expected to be existing residents of O'ahu. However, for modelling purposes, a very small number, about 5% or some 6 to 10 persons, are projected to move from a neighbor island or from out-of-State because of the new residential opportunities at the Project.

Resident Population Change Due to Employment

In-migrant employee impacts are assessed for the Project's direct employment impacts only.

In theory, employment opportunities created by Halewai'olu Senior Residences could encourage some out-of-state residents, including former Hawai'i residents, to move to O'ahu. Others may commute to O'ahu from another island on a daily or longer basis. Based on recent construction and development management experiences, 96% of the development labor force is expected to be filled by persons who are already established residents of O'ahu. Conversely, 4% could commute from, or move from outside of the County to take a temporary development-related position created by the Halewai'olu Senior Residences. Because of the size and diversity of O'ahu's construction labor force, these movers are generally anticipated to be from out-of- state rather than from other islands.

With respect to operational positions, due to the well-developed and experienced labor force resident in Hawai'i, the majority of operations-related positions are expected to be filled by persons who are already established residents of O'ahu and/or the State. Given the small size of the Project labor force, it is assumed for projection purposes that no population impacts are generated by this means.

De Facto Population Change Due to Visitation

Because the Halewai'olu Senior Residences does not have facilities catering to off-island visitors or tourists, it is not expected to have any additional de facto population impact.

Summary Population Impacts

Combining the potential movements of population due to the Project's residential and employment opportunities, its average daily impact on State and County population levels are nominal but are considered because they could generate carrying costs for government entities, as explained in the section below.

Table 8: Average Daily Population Impact

	FY2020 to FY2022 (development)	FY2023 (full operations)	FY2024+ (stabilized)
To the County	5	10	10
To the State	5	6	6

Source: PBR HAWAII, 2019. See also Exhibit 4-1.

FISCAL IMPACTS

This section presents the fiscal impacts of the Project, in terms of new revenues and expenses for the County and State governments.

County

The County's main source of revenue is real property taxes. However, based on its status as an affordable housing development, the Halewai'olu Senior Residences would be eligible for exemption from real property taxes throughout the regulated affordability period agreed to with the County.[8] For modelling purposes, it is assumed that the Project will continue to be exempt from real property taxes thereafter as well.

An additional source of revenue for the County is a 0.5% surcharge Honolulu is allowed on qualifying State Gross Excise Tax (GET) collections. However, the Project's status as affordable housing is also expected to make its development expenditures exempt from GET, this potential source is also expected to yield little if any County tax revenues.

- **Net additional revenues** – Net additional revenues for the County are nominal. However, the Property is not known to be generating any real property taxes or other County revenues at this time, so the various exemptions would not represent a loss of revenues for the County.
- **Revenue to expenditure ratio** – After considering the government carrying costs of the Project's slight population impacts to the County, the revenue to expenditure ratio attributable to development of the Project is estimated to range from about 0.3 to 0.4.

State

With the State government's more diverse and far-reaching taxing powers, the Halewai'olu Senior Residences' fiscal impacts are expected to be more substantial than the County's.

- **Net additional revenues** – While construction of the Halewai'olu Senior Residences is expected to be exempt from GET, other sources of State taxes would include GET

[8] The real property exemption is among the affordable housing incentives established by the Revised Ordinances of Honolulu (ROH), Ordinance 18-1, for projects with an affordable housing agreement with the Department of Planning and Permitting, as set forth in ROH Ordinance 18-10.

on spending by new residents of the State, and income taxes on the development and operational earnings that the Project supports. Altogether, these sources are expected to generate some $0.9 million per year in net additional State taxes, after considering the carrying costs of new residents during development, but only nominal changes thereafter.

- **Revenue to expenditure ratio** - Considering the ratio of additional State operating revenues to expenditures, development of the Halewai'olu Senior Residences could generate some 27.8 times more revenues that expenses for the State. Owing to its much smaller employment impact during operations as compared to development, however, the ratio could fall to about 1.4 to 1.5 once construction is complete. The total (including direct, indirect and induced) fiscal impacts of the Halewai'olu Senior Residences redevelopment are summarized as follows:

Table 9: Estimated Net Total Fiscal Impacts (2019 dollars)

	FY2020 to FY2022 (development)	FY2023 (full operations)	FY2024+ (stabilized)
Net additional revenues (average annual)			
To the County	$0.0 million	$0.0 million	$0.0 million
To the State	$0.9 million	$0.0 million	$0.0 million
Net revenue/expenditure ratio			
For the County	0.4	0.3	0.4
For the State	27.8	1.4	0.5

Source: PBR HAWAII, 2019. See also Exhibit 5-7.

3 – STUDY CONDITIONS AND TERMINOLOGY

Special considerations and terminology for the analyses on which the preceding results rely are presented in this chapter. For a more complete understanding of the study analyses, the reader may refer to the exhibits in the next section of this report, and the notes that accompany each exhibit.

ANALYTICAL CONSIDERATIONS

Commercial Impacts

The Project's commercial facilities are expected to attract spending, but it is likely that Honolulu residents and visitors would have spent an equivalent amount on dining out and/or personal services whether or not the Project's commercial facilities were developed. Given a competitive market, the planned facilities could lead to a geographic reallocation of some spending among areas. Therefore, new spending attributable to the Halewai'olu Senior Residences redevelopment is seen as a function of those new residents that the Project is assumed to attract to the County and/or State, and not to its commercial facilities per se.

In other words, on-site facilities will employ workers, pay taxes and generate other economic and fiscal benefits. These are valid impacts and most associated employment would be located on-site. However, the net benefits of the Halewai'olu Senior Residences redevelopment are best measured in terms of the spending by new residents and visitors that the Halewai'olu Senior Residences attracts to the island, and the taxes and other benefits these persons will generate throughout the County and State. Many of these spending impacts are likely to be felt off-site, likely benefitting enterprises and establishments elsewhere in the County and State.

Government Expenditures

County and State expenditures as estimated herein are based on the structure of tax collections and services for the fiscal year ending June 30, 2018. Cost information is obtained from the Comprehensive Annual Financial Reports of the respective jurisdictions. The impacts estimated herein would differ if County and/or State governmental taxing and spending policies were to be materially altered.

Government Revenues

Government revenues are largely derived from the same sources noted for expenditures. However, County real property tax revenues are based on rates that were in effect during the fiscal year ending June 30, 2018. State income tax revenues are based on 2018 rates[9], as applicable to married taxpayers filing jointly, in income brackets relevant to the employment opportunities created.

Tax structures related to the State's transient accommodations tax (TAT) and GET that were altered by the summer 2017 State Legislature's Special Session have been incorporated into the analyses.

[9] The State's 2019 tax tables were not available as of time of drafting this report, therefore 2018 rates were used as a provisional estimate.

DEFINITION OF KEY TERMINOLOGY

Consistent with established input-output economic theory, the following definitions apply to types of impacts:

- **Direct impacts** – Direct impacts are those economic, population or other impacts attributable to persons or activities that are a direct result of the proposed activity or investment. For instance, direct employment impacts are expected to include those involved in building the proposed facilities, such as construction workers, and those who would later work at them in their operations.

  Many, but not all direct impacts can be expected to occur on-site. For instance, a portion of the construction budget is for architects and engineers. While such persons' employment might be temporarily dependent on contracts related to the Halewai'olu Senior Residences, most such professionals would be expected to work from offices located off-site, elsewhere in Honolulu. Likewise, administrative and managerial staff located off-site would support construction professionals working on-site.

- **Indirect impacts** - Indirect impacts occur when the businesses or persons who are directly affected make expenditures for additional supplies or services. For instance, some of the additional retail spending by visitors or residents attracted to the County or State by the Halewai'olu Senior Residences could be spent on eating out. These elevated dining expenditures could indirectly increase demand for produce, seafood and meats from Hawai'i farms, fishermen and/or ranching enterprises. The Halewai'olu Senior Residences would have thus indirectly supported new business opportunities for area providers of such goods and services.

- **Induced impacts** - Induced impacts occur throughout the community when those persons or companies that have benefited from the direct or indirect impacts of the Halewai'olu Senior Residences spend their associated earnings on consumer goods and services. For instance, a construction worker may spend some of her earned wages to buy a new pair of shoes, or to pay for her child's day care. The farmer who sells produce to a food service facility at the Project may use some of his profit to take his family out to the movies. The businesses and individuals impacted by such re-spending are said to enjoy induced economic impacts from the Halewai'olu Senior Residences redevelopment.

- **Total impacts** - Total impacts are defined as the sum of direct, indirect and induced impacts for any given variable.

- **Resident population -** Resident population refers to all those persons who habitually reside in a given area, whether or not they are temporarily away.

- **De facto population –** De facto population includes all those present in the County or State on any given day. It differs from resident population by excluding those residents who are temporarily away while adding those visitors who are temporarily present.

- **Full-time equivalent** - This study measures employment opportunities in full- time equivalent (FTE) units. One full-time equivalent position is defined herein as 2,080

hours of employment per year, including paid vacation and sick leave. This is equivalent to 40 hours per week and may also be referred to as a "person-year" of employment. Two half-time jobs are considered to together represent one FTE job.

- **Earnings –** This study employs the definition of earnings that corresponds to the DBEDT 2016 models, which includes wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance. Earnings as so defined exclude gratuities and bonuses that may also apply to certain types of work.

REPORT CONDITIONS

Assumptions regarding the scale, nature and timing of the Halewai'olu Senior Residences are made to assess its economic and fiscal impacts. This study relies on physical parameters, layouts, timelines, budgets, development and operating plans and other inputs provided by HSD and other sources as noted.

This assessment also incorporates information provided by government agencies, developers, brokers, landowners, and other sources as cited in the exhibits. While attempts have been made to verify such information via multiple sources, it is not always possible to do so. PBR HAWAII cannot guarantee the accuracy of all information upon which its assessments may be based.

This report has been prepared for the planning purposes of HSD and its consultant teams, as well as for public disclosure of the nature of the Halewai'olu Senior Residences. It is not intended to be used for any solicitation of investment.

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EXHIBITS

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Exhibit 1-1
Summary of Economic and Fiscal Impacts
2019 dollars

	Comment	FY2022	FY2023	FY2024+ [1]
FTE employment:[2]	***Direct, indirect and induced (except on-site)***			
Development-related		260	0	0
Operations-related				
On-site	*Generated at Project facilities (direct impacts only)*	0	5	5
Net new jobs on Island	*New to County*	1	12	12
Total personal earnings per year:[3]	***Direct, indirect and induced, in millions***			
Development-related	*Average annual*	$17.9	$0.0	$0.0
Operations-related	*For net new jobs only*	$0.1	$0.9	$0.9
Average earnings per FTE job:	***Direct, indirect and induced, not in millions***			
Development-related	*Average annual*	$69,000	n/a	n/a
Operations-related	*For net new jobs only*	$68,000	$74,000	$75,000
In-migrant resident population:	***Average daily employees, dependents, and new island residents***			
To the County		5	10	10
To the State		5	6	6
Fiscal impacts:				
Net additional taxes:	*Net tax revenues less expenditures*			
For the County		($0.0)	($0.0)	($0.0)
For the State		$0.9	$0.0	$0.0
Revenue/expenditure ratio:				
For the County		0.4	0.3	0.4
For the State		27.8	1.4	1.5

1 Real property tax payments could be higher after 2036, should the County affordable housing exemption expire thereafter. Additionally, the currently authorized County surcharge on the State GET, a nominal additional source of County revenue, could expire in 2031 and beyond.

2 FTE = Full-time equivalent, defined as 40 hours per week or 2,080 hours per year.

3 Earnings defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance.

Exhibit 2-1
Project Concept and Potential Development Timing
2019 dollars

	Unit	Notes & assumptions	FY2020-FY2022 (Development)	FY2023 (Full Operations)	Total/ FY2024+ stabilized
Highlights of period:			■ *Design, financing, permitting: to Aug 2020* ■ *Construc-tion Oct 2020 to Apr 2020* ■ *Certificate of occupancy: Apr 2022*	■ *Fully leased: Jul 2022*	■ *Stabilized operations: Jul 2023*
Development:					
Residential	*Apartments*	*Gross monthly rent per unit*			
30% AMI		*$588 all 1-BR units*		8	8
60% AMI		*$1,206 1- and 2-BR units*		131	131
80% AMI		*$1,746 1- and 2-BR units*		16	16
Non-revenue		*$0 2-BR unit*		1	1
Total apartments		*$1,222 average rent*	0	156	156
Commercial retail	*GLA sq. ft.*				
New facilities in tower		*Ancillary to residential*	0	500	500
Ongoing operations		*None*	0	0	0
Demolitions/closures:					
Commercial retail	GLA sq. ft.	*2-story, retail/office*	(10,256)	(10,256)	(10,256)
Net additional development in place by end of period:					
Residential apartments					
Affordable units			0	156	8
Market units			0	0	0
			0	156	8
Commercial GLA			(10,256)	(9,756)	(9,756)

Source: Michaels Development Company, 2019.

Exhibit 2-2
Projected Tenant Utilization Patterns

	Basis/reference			FY2022	FY2023	Total/ FY2024+ stabilized
Use of residence:	*Primary home*	*Part-time users*	*Total*			
Affordable rentals	*100%*	*0%*	*100%*			
Assumed prior residence						
Oahu	*95%*	*n/a*	*95%*			
Neighbor Island	*2%*	*n/a*	*2%*			
Out-of-State	*3%*	*n/a*	*3%*			
Total	*100%*	*n/a*	*100% out-of-state*			
Resident utilization pattern:						
Average daily occupied units -				0%	90%	95%
Affordable units				0	140	148
Average daily persons (tenants) in residence -						
Total tenants	*1.4*	*persons per occupied unit*		0	198	209
- Number from out-of-State				*0*	*6*	*6*
- Number from off-Island				*0*	*10*	*10*

Source: Michaels Development Company, 2019.

Exhibit 2-3

Average Annual New Resident Expenditures in Hawai'i

2019 dollars, in millions, except as noted

	Basis/reference (not in millions)		FY2022	FY2023	Total/ FY2024+ stabilized
Residents new to State:	*Tenants moving from out of State*				
Bases for projection:					
Average total consumption per person	*$34,500*	*Includes entitlement spending (SNAP, food stamps, etc.)*			
Percent consumed on-Island[2]	*70%*	*DBEDT 2018 Data Book, Table 13.29 worksheet notes*			
Average daily persons (FTE)	*Exhibit 2-2*		0	6	6
Projections:					
Direct on-Island consumption per year	*Per FTE person: $24,200*		$0.00	$0.14	$0.15
Indirect & induced[1]	*0.87*	*multiplier*	$0.00	$0.13	$0.13
Total			**$0.00**	**$0.27**	**$0.28**

1 Based on State weighted average of Type II final demand multipliers for output among 20 condensed industry groups (less 1.0) as shown in State of Hawaii, Department of Business, Economic Development and Tourism, "The Hawaii State Input-Output Study: 2012 Benchmark Report," March 2016, Table 2.4.

Exhibit 3-1
Estimated Development Costs: Total for Each Period
2019 dollars, in millions unless stated

	Basis/reference (not in millions)	**FY2020-FY2022**	**FY2023**	**Total**
In 2019 dollars:[1]				
Professional services[2]	*Hawaii-based architectural, engineering, planning, construction management, consultants*	$3.3	$0.0	$3.3
Construction (hard) - On-site	*Demolition, infrastructure, building construction, tenant improvements & contingencies*	$64.7	$0.0	$64.7
Other	*Indirect/soft costs including fees and permits; Hawaii office operations and management; accounting/legal; marketing; financing; etc.*	$10.6	$0.0	$10.6
Total, rounded		**$78.6**	**$0.0**	**$78.6**

1 Based on budgets provided by Michaels Development Company, 2019. Covers demolition, grading and other preparation of development pad with utility installation; high rise building development. Excludes due diligence and entitlement expenses; operating reserves; permanent loan interest and fees.

2 Architectural and engineering design, and construction management.

Exhibit 3-2
Estimated Development Costs: Average Annual in Period
2019 dollars, in millions

	Basis/reference	FY2020-FY2022	FY2023
Costs by type:	*Exhibit 3-1*		
Professional services		$1.1	$0.0
Construction -			
On-site		$21.6	$0.0
Other		$3.5	$0.0
Total, rounded		**$26.2**	**$0.0**

Exhibit 3-3
Development Employment: FTE Jobs

	Basis/reference	FY2020-FY2022	FY2023
Total in period:			
Direct jobs -	*Appendix 1 and Exhibit 3-2*		
Professional services		12	0
Construction		227	0
Other		126	0
Subtotal direct jobs (rounded)		370	0
Indirect and induced jobs1	*Appendix 1*	410	0
Total jobs in period (rounded)		**780**	**0**
Average annual:			
Direct jobs -			
Professional services		4	0
Construction		76	0
Other		42	0
Subtotal direct jobs		**122**	**0**
Indirect and induced jobs1		137	0
Total jobs per year (rounded)		**260**	**0**

Note: FTE = Full time equivalent, defined as 40 hours per week or 2,080 hours per year.

1 Based on weighted average of Direct-Effect jobs multipliers for each job category, as shown in Appendix 1.

Exhibit 3-4
Personal Earnings from Development: Total in Period
2019 dollars, in millions

	Basis/reference	FY2020-FY2022	FY2023
Direct earnings[1]:			
Professional services		$1.7	$0.0
Construction -			
On-site		$23.3	$0.0
Off-site		$0.0	$0.0
Other		$4.9	$0.0
Subtotal, direct		**$29.9**	**$0.0**
Indirect and induced earnings[2]		$23.7	$0.0
Total earnings		**$53.6**	**$0.0**

Note: Earnings defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance.

1 Based on industry coefficients as shown in Exhibit 3-2 and estimated construction cost.

2 Weighted average of estimated direct earnings by industry as shown above, and direct effect industry multipliers.

Exhibit 3-5
Personal Earnings from Development: Average Annual
2019 dollars, in millions except average earnings

	Basis/reference		FY2020-FY2022	FY2023
Average annual in period:	*Exhibit 3-4*			
Direct earnings	*Incl. professional services, construction and other*		$10.0	$0.0
Indirect & induced earnings			$7.9	$0.0
Total earnings			**$17.9**	**$0.0**
Average per new FTE job:	*Exhibits 3-3 and 3-4, rounded*			
Direct jobs	*Incl. professional services, construction and other*		$81,000	n/a
Indirect and induced jobs			$58,000	n/a
Average per job			**$69,000**	n/a
Estimated average family income:	$44,000	Additional family income[1]		
For direct job-holders			$125,000	n/a
For indirect and induced job-holders			$102,000	n/a
All Project-related job-holders			**$113,000**	n/a
Percent of median family income:	*$99,000*	*median family income, 2019, Honolulu County*[2]		
For direct job-holders			126%	n/a
For indirect and induced job-holders			103%	n/a
All Project-related job-holders			**114%**	n/a

Note: Earnings defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance.

1 Additional family income based on average 1.8 FTE jobs per family with the additional 0.8 FTE income based on 2018 average earnings in Honolulu MSA, all occupations, as provided by State of Hawaii, Department of Labor & Industrial Relations. Reflects multiple job-holders within each family as well as multiple job-holding by individuals.

2 U.S. Department of Housing & Urban Development, as presented by Hawaii Housing Finance and Development Corporation , "Honolulu County Income Schedule by Family Size: 2019."

Exhibit 3-6
On-Site Operational Employment: Direct FTE Jobs

	Basis/reference	FY2022	FY2023	Total/ FY2024+ stabilized
Source of employment -				
Rental housing[1]	*4 FTE persons (Michaels Organization)*	0	4	4
Commercial retail:				
New development - other	*460 Square feet GLA per FTE*	0	1	1
Total on-site jobs		**0**	**5**	**5**
Existing job(s) expected to be displaced	*No existing operations on-site*	0	0	0.0
Net new jobs on-site		**0**	**5**	**5**

Note: FTE = Full time equivalent, defined as 40 hours per week or 2,080 hours per year. Excludes leasing agents marketing personnel that may locate on-site, as well as private household maintenance and related services.

1 Includes anticipated salaried positions as well as contracted employment.

Exhibit 3-7
Net Additional Operational Employment: Annual FTE Jobs
2019 dollars, in millions, except as noted

	Basis/reference	FY2020-FY2022	FY2023	Total/ FY2024+ stabilized
Bases for projection:				
Av. annual spending by residents new to State	*Direct, indirect & induced (new to Island): Exhibit 3-1*	*$0.00*	*$0.27*	*$0.28*
Av. annual commercial & residential leasing fees -				
Initial lease-up (2022)	*$77,500 total budget; shown as average annual in each period*	*$0.03*	*$0.00*	*$0.00*
Releasing in 2023+	*5.0% Turnover per year*	*$0.00*	*$0.00*	*$0.00*
Projected net additional jobs:				
Direct -				
Attributable to new State residents[1]	*7.9 /$mil output, selected industries*	-	2	2
Real estate leasing & rentals	*Michaels Development Company*	0.4	-	-
Rental housing	*Exhibit 3-6*	-	4	4
Commercial retail	*Exhibit 3-6*	-	1	1
Displaced jobs	*Exhibit 3-6*	-	-	-
Subtotal, direct jobs		**0.4**	**7**	**7**
Indirect and induced -	*Multiplier and industry category applied[2]:*			
Attributable to new State residents	*0.88 Selected industries*	-	2	2
Real estate leasing & sales	*1.06 Real estate & rentals industries*	0.4	-	-
Rental housing	*0.64 Other services industry*	-	3	3
Commercial retail	*0.47 Retail industry*	-	1	1
Subtotal, indirect & induced jobs		**0.4**	**5**	**5**
Total net additional jobs, rounded		**1**	**12**	**12**

Note: FTE = Full time equivalent, defined as 40 hours per week or 2,080 hours per year.

1 Coefficient calculated based on total (wage, salary and proprietors') jobs per million output in representative industries as shown in DBEDT 2012 detailed industry input-output transactions table, adjusted to reflect estimate of future inflation and productivity. See DBEDT, ibid.

2 For indirect and induced impacts of respective direct impacts. Multipliers derived from Type II direct effect total job/total job multipliers as shown in DBEDT, ibid; published multipliers reduced by 1.0 to eliminate direct jobs previously calculated.

Exhibit 3-8
Personal Earnings from Net New Operational Activity: Average Annual
2019 dollars, in millions, except as noted

	Basis/reference (not in millions)		FY2020-FY2022	FY2023	Total/ FY2024+ stabilized
Direct earnings -	*Estimated average FTE salary or other basis:*				
Attributable to new Hawaii residents	*$32,300*	*Estimated average salary per person for income-restricted tenants*	$0.00	$0.07	$0.07
Marketing/leasing -	*Residential & commercial properties, Ex. 3-7*				
Initial lease-up	*Actual impact will concentrate in 2021-2022*		$0.03	$0.00	$0.00
Releasing after 2024			$0.00	$0.00	$0.00
Rental housing	*$78,200*	*Michaels Development Company, 2019*	$0.00	$0.31	$0.31
Commercial retail	*$39,700*	*Average sales related occupations* [1]	$0.00	$0.04	$0.04
Subtotal, direct earnings			**$0.03**	**$0.43**	**$0.4**
Indirect and induced earnings -	*Multiplier and industry category* [2] *:*				
Attributable to new Hawaii residents	*0.94*	*Weighted average, selected industries*	$0.00	$0.06	$0.07
Marketing/leasing -	*1.17*	*Real estate & rentals industries*	$0.03	$0.00	$0.00
Rental housing	*1.17*	*Real estate & rentals industries*	$0.00	$0.37	$0.37
Commercial retail	*0.69*	*Retail trade*	$0.00	$0.03	$0.03
Subtotal, indirect & induced			$0.03	$0.46	$0.5
Total earnings, rounded			**$0.1**	**$0.9**	**$0.9**

Note: Earnings defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance. They exclude tips.

1 Annual wage estimate based on average 2018 average wage for the Honolulu MSA all occupations, adjusted to 2019 dollars. Data provided by State of Hawaii, Hawaii Workforce Infonet, "Occupational Employment & Wages, State, MSA, County, 2018." (Latest survey data available as of August 1, 2019.)

2 For indirect and induced impacts of respective direct impacts. Multipliers derived from Type II direct effect total job/total job multipliers from DBEDT, ibid; published multipliers reduced by 1.0 to eliminate direct jobs previously calculated.

Exhibit 3-9
Personal Earnings from Net New Operational Activity: Average Per Job and Family
2019 dollars, in millions, except as noted

		Basis/reference	FY2020-FY2022	FY2023	Total/ FY2024+ stabilized
Average earnings per new FTE job:		*Not in millions*			
Direct jobs			$65,000	$59,000	$59,000
Indirect and induced jobs			$71,000	$94,000	$92,000
Weighted average per job			**$68,000**	**$74,000**	**$75,000**
Estimated average family income[1]:	$44,000	Estimated additional family income			
For direct job-holders			$109,000	$103,000	$103,000
For indirect and induced job-holders			$115,000	$138,000	$136,000
All Project-related job-holders			**$112,000**	**$118,000**	**$119,000**
Percent of median income[2]:	*$99,000*	*median family income, 2019, Honolulu County[2]*			
For direct job-holders			110%	104%	104%
For indirect and induced job-holders			116%	139%	137%
All Project-related job-holders			**113%**	**119%**	**120%**

Note: Earnings defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance. They exclude tips.

1 Additional family income based on average 1.8 FTE jobs per family with the additional 0.8 FTE income based on 2018 average earnings in Honolulu MSA, all occupations, as provided by State of Hawaii, Department of Labor & Industrial Relations. Reflects multiple job-holders within each family as well as multiple job-holding by individuals.

2 U.S. Department of Housing & Urban Development, as presented by Hawaii Housing Finance and Development Corporation, "Honolulu County Income Schedule by Family Size: 2019."

Exhibit 4-1
Average Daily In-Migrant Population

	Basis/reference	FY2020-FY2022	FY2023	Total/ FY2024+ stabilized
Residents of Project:				
Average FTE persons in residence	*Exhibit 2-2, all occupants*	0	198	209
In-migrants to State (rounded)	*Exhibit 2-2, those new to State*	0	6	6
In-migrants to County (rounded)[1]		0	10	10
Employees:				
In-migrants to the State[1] -	*Subset of in-migrants to County*			
Development employees	*4% of direct average annual jobs, Exhibit 3-3*	5	0	0
Operational employees	*2% of net additional annual jobs, Exhibit 3-7*	0	0	0
Dependents[2]	*Ratio of in-migrant employees*	0	0	0
In-migrants to State[3]		5	0	0
In-migrants to County[3] -	*Includes in-migrants to State*			
Development employees	*4% of direct average annual jobs, Exhibit 3-3*	5	0	0
Operational employees	*3% of net additional annual jobs, Exhibit 3-7*	0	0	0
Dependents[2]	*Ratio of in-migrant employees*	0	0	0
In-migrants to County[3]		5	0	0
Total in-migrants:	*Total of those attracted by new residences and by net new employment (rounded)*			
To State		**5**	**6**	**6**
To County		**5**	**10**	**10**

1 Subset of County in-migrants. See footnote 3, below. Share of employees moving from out-of-State because of job opportunity will vary depending on specific Honolulu and other U.S. labor market conditions at the time. Figures applied reflect long-term observations of Hawaii labor market experience.

2 In-migrant dependents estimated to average 0.1 per in-migrant development employee, and 1.0 per in-migrant operational employee.

3 In-migrants to the County include all those moving to the State plus any that may move between islands due to job opportunities at the Project.

Exhibit 5-1
Real Property Taxes Carried by Project
2019 dollars, in millions, except as noted

	Basis/reference (not in millions)	FY2022	FY2023	2024+
Estimated taxable assessed values:	*Estimated unit values, incorporating land and amenities, but net of furnishings*			
Residential apartments:[1]				
Affordable rentals	*$300 per year minimum rate*	n/a	n/a	n/a[1]
New commercial in tower	*Michaels Development Company, 2019*	n/a	n/a	n/a[1]
Total		**$0.0**	**$0.0**	**$0.0**
Real property tax revenues:				
Ongoing and new revenues -	*FYE 2018 rates per $1,000 net taxable value*[2]			
Rental housing	*$0.00 Per ROH 8-10.20 and 8-10.21*	$0.0	$0.0	$0.0
New commercial in tower	*$12.40 Commercial*	$0.0	$0.0	$0.0
Subtotal, potential tax revenues		$0.0	$0.0	$0.0
Discontinued payments due to demolitions and exemption -				
Current payments[3]	*$0 No current RPT collections*	$0.0	$0.0	$0.0
Estimated RPT		**$0.0**	**$0.0**	**$0.0**

Notes: FYE - fiscal year ending.

1 Tax assessed values for Project not estimated because they are assumed to be exempt. Real property tax payments could be higher after 2036, should County exemption expire thereafter.

2 For fiscal year ending June 30, 2020.

3 Existing tax payments on properties expected to be superseded by new tax payments as shown.

Exhibit 5-2
Annual County Government Revenues
2019 dollars, in millions, except as noted

	Basis/reference (not in millions)		FY2022	FY2023	2024+[1]
Bases for projection:					
FTE in-migrants to County -	*Exhibit 4-1*				
Project non-primary residents			*0*	*10*	*10*
Employees and their dependents			*5*	*0*	*0*
Estimated tax and other revenues:					
Net new property tax revenues	*Exhibit 5-1*		$0.0	$0.0	$0.0
Miscellaneous taxes from in-migrant residents[1]	*Other than real property taxes* *$366 per person (residents + employees)*		$0.0	$0.0	$0.0
General excise taxes, on -	*Honolulu County GET surcharges only*[2]				
Development	*0.0%*	*assumed exempt*	$0.0	$0.0	$0.0
Real estate rentals & marketing	*0.5%*	*of commissions*	$0.0	$0.0	$0.0
Operating revenues	*0.5%*	*of residential & commercial space rents, ground lease & related income (Ex. 5-3)*	$0.0	$0.0	$0.0
Spending by Project's new Hawaii residents	*0.5%*	*of spending*	$0.0	$0.0	$0.0
Spending by employee in-migrants to State	*0.5%*	*of employee & dependent spending*	$0.0	$0.0	$0.0
Less State administrative charge	*1.0%*	*of above GET surcharges (as of 1/1/2018)*	($0.0)	($0.0)	($0.0)
Additional County revenues (rounded)			**$0.0**	**$0.0**	**$0.0**

Note: Excludes GET on affordable housing rentals and commercial leasing; also excludes revenues from fuel taxes, licenses and permits and charges for

1 Includes licences and permits, charges for services, fines and forfeits and other miscellaneous taxes and revenues collected by the County.

2 The counties are authorized to levy a surcharge on the State's GET and use taxes per Chapter 46, HRS, until December 31, 2030, given extension granted in the 2017 Special Legislative Session. Honolulu County's 0.5% surcharge must be used for operating and capital costs related to mass transit. From this amount, the State deducts a 1% handling charge beginning on January 1, 2018 (the 2017 Special Legislative Session reduced this administrative charge from 10%), which amounts become a general fund realization for the State. This nominal additional source of County revenue could be eliminated in 2031 and beyond.
However, the project's development costs are assumed to be exempt from GET.

Exhibit 5-3
Bases for Projecting Annual State Government Revenues
2019 dollars, in millions, except as noted

	Basis/reference	FY2022	FY2023	Total/ FY2024+ stabilized
For GET calculations:				
Project development costs -	*Exhibit 3-2*			
Professional services		$1.1	$0.0	$0.0
Construction and other		$25.1	$0.0	$0.0
Taxable expenditures	*Development costs assumed GET-exempt*	$0.0	$0.0	$0.0
Real estate leasing & marketing -	*Initial and ongoing fees: Exhibit 3-7*			
Commercial and residential	*Leasing expenditures*	$0.03	$0.00	$0.0
Spending by Project's new Hawaii residents	*In-State spending: Exhibit 3-7*	$0.0	$0.3	$0.3
Spending by in-migrant employees to the State -				
In-migrant employees	*Exhibit 4-1, net of dependents*	5	0	0
In-State spending	*70% of average earnings per FTE job*	$0.2	$0.0	$0.0
Handling fee on County GET surcharge[2] -	*1% fee*	$0.0	$0.0	$0.0
For individual income taxes:	*Total of direct, indirect and induced*			
Net new personal income earned -	*Average annual in preceding period*			
Development	*Exhibit 3-5*	$17.9	$0.0	$0.0
Operational	*Exhibit 3-8*	$0.1	$0.9	$0.9
Average personal earnings/FTE job -				
Development	*Exhibit 3-5 , not in millions >>*	$69,000	$0	$0
Operational	*Exhibit 3-8 , not in millions >>*	$68,000	$74,000	$75,000
For other State taxes:				
FTE in-migrants to State	*Residents, employees and dependents who are new to State*	5	6	6

1 The counties are authorized to levy a surcharge on the State's GET and use taxes per Chapter 46, HRS. See note at Exhibit 5-2.

Exhibit 5-4
Annual State Government Revenues
2019 dollars, in millions, except as noted

	Basis/reference (not in millions)	FY2022	FY2023	Total/ FY2024+ stabilized
General excise taxes, on:				
Development[1]	*0.0% Development assumed exempt*	$0.00	$0.00	$0.00
Operating revenues and expenses	*4.0% of residential and commercial space rents, related income, and net ground lease payments*	$0.00	$0.00	$0.00
Spending by Project's new Hawaii residents	*4.0% of spending*	$0.00	$0.01	$0.01
Spending by in-migrant employees	*4.0% of share of employee earnings*	$0.01	$0.00	$0.00
Handling fee on County GET surcharge -	*1% fee*	$0.00	$0.00	$0.00
Less: lost taxable income	*4.0% of taxable income to be lost*	$0.00	$0.00	$0.00
Individual income taxes[2]:				
Development employees	*6.5% effective tax rate on av. family AGI estimated at $85,000 Exhibit 3-5*	$0.88	$0.00	$0.00
Operational employees	*6.6% effective tax rate on av. family AGI estimated at $89,000 Exhibit 3-9*	$0.00	$0.04	$0.04
Additional State revenues (rounded)		**$0.9**	**$0.1**	**$0.1**

Note: Projections exclude corporate income tax, GET on commercial spending, and miscellaneous State tax revenues including tobacco and liquor taxes, liquid fuel tax, motor vehicle weight & registration tax, fines & forfeitures, licenses, franchise tax, rental motor vehicle surcharge tax, public service companies tax, tax on premiums of insurance companies and other fees and taxes.

1 As applicable, based on 4% on 100% of professional services and 60% of construction costs, plus a wholesale construction materials tax of 0.5% against 40% of construction costs.

2 Based on average or long-term family incomes for all Project-related job holders as shown in referenced exhibits, and on 2018 Tax Tables and Tax Rate Schedule II, for married taxpayers filing joint returns. Adjusted Gross Incomes (AGI) assumed to be 25% less than total average family earnings, considering potential deductions. Projections will differ should tax policies and rates change, and depending on individual family circumstances.

Exhibit 5-5
County Government Expenditures
Attributable to In-migration
2019 dollars, in millions, except as noted

	Basis/reference (not in millions)	FY2022	FY2023	Total/ FY2024+ stabilized
Bases for County projection -				
FTE in-migrants to County	*New Project residents, employees and dependents, Exhibit 4-1*	*5*	*10*	*10*
Annual expenditures -				
FTE in-migrants to County	*$1,490 per person, ref: Appendix 2*	$0.01	$0.01	$0.01
Visitors from off-Island	*$1,460 per person, ref: Appendix 2*	$0.00	$0.00	$0.00
Additional County expenditures		**$0.01**	**$0.01**	**$0.01**

Exhibit 5-6
Annual State Government Expenditures Attributable to In-migration
2019 dollars, in millions, except as noted

	Basis/reference (not in millions)	FY2022	FY2023	Total/ FY2024+ stabilized
Bases for State projection -				
FTE in-migrants to State	*New Project residents, employees and dependents, Exhibit 4-1*	*5*	*6*	*6*
Visitors from out-of-State	*No visitor impact anticipated*	*-*	*-*	*-*
Annual expenditures -				
FTE in-migrants to State	*$6,390 per FTE person, ref: Appendix 3*	$0.03	$0.04	$0.04
Visitors from out-of-State	*$1,650 per FTE person, ref: Appendix 3*	$0.00	$0.00	$0.00
Additional State expenditures		**$0.03**	**$0.04**	**$0.04**

Exhibit 5-7
County & State Government Cost and Benefit Assessments
2019 dollars, in millions, except as noted

	Basis/reference	FY2022	FY2023	2024+[1]
City and County of Honolulu:	*Tax and other fiscal impacts*			
Additional revenues	*Exhibit 5-2*	$0.00	$0.01	$0.01
Additional expenditures	*Exhibit 5-5*	$0.01	$0.01	$0.01
Net additional revenues		**($0.00)**	**($0.01)**	**($0.01)**
Revenue to expenditure ratio[2]		**0.4**	**0.3**	**0.4**
State of Hawaii:	*Tax and other fiscal impacts*			
Additional revenues[3]	*Exhibit 5-4*	$0.89	$0.06	$0.06
Additional expenditures	*Exhibit 5-6*	$0.03	$0.04	$0.04
Net additional revenues		**$0.86**	**$0.02**	**$0.02**
Revenue to expenditure ratio[2]		**27.8**	**1.4**	**1.5**

1 Real property tax payments could be higher after 2036, should the County exemption expire thereafter. Additionally, the currently authorized County surcharge on the State GET, a nominal additional source of County revenue, could expire in 2031 and beyond.

2 Net revenues divided by net expenditures.

3 Excludes potential income taxes from any operating entities.

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APPENDICES

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Appendix 1
Input-Output Multipliers Applied to Development Activities

DIRECT REQUIREMENT COEFFICIENTS

	DBEDT industrial categories applied	Direct requirement coefficients per $1 million (2012$) project cost			
		Jobs[1]	FTE factor[2]	Productivity factor[3]	$ Earnings[4]
Professional services	*#46-Architectural and engineering services*	6.04	0.84	0.73	0.50
Construction:					
On-site	*#14-Construction of other buildings*	5.33	0.90	0.73	0.36
Off-site (community benefits)	*#15-Heavy & civil engineering*	5.33	0.90	0.73	0.36
Other costs	*#41-Other finance & insurance, #43-Real estate, #45-Legal services, #49-Other professional services, #52-Administrative & support services*	17.85	0.89	0.75	0.47

DIRECT EFFECT INDUSTRY MULTIPLIERS[5]

	DBEDT industrial categories applied	Indirect & induced multiplier per direct:	
		FTE job	$ Earnings
Professional services	*Same as above*	1.41	0.68
Construction:			
On-site	*Same as above*	1.41	0.84
Off-site (community benefits)	*Same as above*	1.41	0.84
Other	*Same as above*	0.60	0.61

1 Coefficients calculated from total (wage, salaried and proprietary) jobs per $1 million total output, as shown in Hawai'i State Department of Business, Economic Development and Tourism (DBEDT), "The Hawaii State Input-Output Study: 2012 Benchmark Report," March 2016. Figures derived from 68-industry detailed tables.

2 Adjustment factor applied to the jobs coefficients to estimate full-time equivalent jobs at 40 hours per week, since DBEDT input data reflects all jobs, including full- and part-time. Factor derived from Honolulu MSA data for January 2015 to April 2016 on average weekly hours reported worked in all private sector, mining and construction and financial sectors, as reported by State of Hawai'i, Hawai'i Workforce Infonet

3 Adjustment factor applied to the jobs coefficients to reflect inflation and anticipated gains in labor productivity. Factors derived from 2012 vs. projected 2021 Type I final demand multipliers for total jobs by detailed industry, DBEDT, ibid.

4 Earnings defined to include wage, salary and proprietary incomes, plus directors' fees and employer contributions to health insurance, less employee contributions to social insurance. Calculated from total earnings reported per $1 million total output, DBEDT, ibid.

5 For indirect and induced impacts of respective direct impacts. Multipliers derived from Type II direct effect total job/total job and earnings/earnings multipliers as shown in DBEDT, ibid; published multipliers reduced by 1.0 to eliminate direct jobs previously calculated.

Appendix 2
Government Expenditures - City and County of Honolulu
Per Capita in Fiscal Year July 1, 2017 to June 30, 2018

	Net expense[1] ($thousands)	Service population[2]	Net expenditures (not in thousands) per: Resident	Visitor
Primary government				
Governmental activities:				
General Government	$543,228	1,049,300	$518	$518
Public Safety	$435,543	1,049,300	$415	$415
Highways and Streets	$76,613	1,049,300	$73	$73
Sanitation	$254	1,049,300	$0	$0
Human services	$28,379	987,100	$29	$0
Culture and recreation	$94,514	1,049,300	$90	$90
Utilities or other enterprises	$0	1,049,300	$0	$0
Interest	$86,956	1,049,300	$83	$83
Subtotal	$1,265,487		$1,208	$1,179
Business-type activities:[3]				
Housing	$836	987,100	$1	$0
Sewer	$0	1,049,300	$0	$0
Solid Waste	$74,127	1,049,300	$71	$71
Public Transportation	$191,049	1,049,300	$182	$182
Subtotal	$266,012		$253	$253
Total, primary government	*$1,531,499*		*$1,460*	*$1,432*
Component units, net expense:[3,4]	$0	1,049,300	$0	$0
Total, in FY2017 dollars	**$1,531,499**		**$1,460**	**$1,432**
Estimated in 2019 dollars, based on	1.7%		**$1,490**	**$1,460**

1 Expenses less operating and capital grants and contributions, which are primarily intergovernmental transfers and other grants to the County government, most from State and Federal governments. Business-type activities and component unit net expenses also exclude charges for services, since such programs are intended to recover all or a significant portion of their costs through fees or charges. Set to zero where charges and contributions exceed expenses. Source: Department of Budget & Fiscal Services, City and County of Honolulu, "Comprehensive Annual Financial Report: Fiscal Year Ended June 30, 201," Statement of Activities, pp. 36-37.

2 Resident population and de facto population estimates based on U.S. Census estimates through July 1, 2017 and information provided by State of Hawai'i, Department of Business, Economic Development & Tourism (DBEDT).

3 Net expense shows only those activities requiring government or other subsidy after service charges, grants and contributions but before debt service where applicable, line entry is set to "0" where the unit or activity showed net positive revenues for the year.

4 Semi-autonomous entities including the Board of Water Supply, the Honolulu Authority for Rapid Transportation and Oahu Transit Services, Inc.

5 Based on State of Hawai'i, DBEDT forecast of 2019 vs. 2018 change in Honolulu Consumer Price Index - Urban (CPI-U). Figures from U.S. Department of Labor, Bureau of Labor Statistics not available as of August 2, 2019.

Appendix 3
Government Expenditures - State of Hawai'i
Per Capita in Fiscal Year July 1, 2017 to June 30, 2018

	Net expense[1] ($thousands)	Service population[2]	Net expenditures (not in thousands) per: Resident	Visitor
Primary government:				
Governmental activities:				
General government	$569,220	1,596,400	$357	$357
Public safety	$510,970	1,596,400	$320	$320
Highways	$423,411	1,596,400	$265	$265
Conservation of natural resources	($8,017)	1,596,400	($5)	($5)
Health	$616,966	1,596,400	$386	$386
Welfare	$1,041,241	1,427,000	$730	$0
Lower education	$3,086,271	1,427,000	$2,163	$0
Higher education	$950,843	1,427,000	$666	$0
Other education	$23,827	1,427,000	$17	$0
Culture and recreation	$71,335	1,596,400	$45	$45
Urban redevelopment and housing	$280,613	1,427,000	$197	$0
Economic development and assistance	$97,576	1,427,000	$68	$0
Interest expense	$311,340	1,596,400	$195	$195
Subtotal	$7,975,596		$5,404	$1,563
Business-type activities:[3]				
Airports	$0	1,596,400	$0	$0
Harbors	$0	1,596,400	$0	$0
Unemployment compensation	$0	1,427,000	$0	$0
Nonmajor proprietary fund	$0	1,596,400	$0	$0
Subtotal	$0		$0	$0
Total, primary government	*$7,975,596*		*$5,404*	*$1,563*
Component units, net expense:[3,4]	$1,272,005	(see note)	$879	$60
University of Hawaii	$951,014	1,426,154	$667	$0
Hawaii Housing Finance and Development	$0	1,426,154	$0	$0
Hawaii Public Housing Authority	$24,199	1,426,154	$17	$0
Hawaii Health Systems Corporation	$187,546	1,426,154	$132	$0
Hawaii Tourism Authority	$95,905	1,596,400	$60	$60
Hawaii Community Development Authority	$4,537	1,426,154	$3	$0
Hawaii Hurricane Relief Fund	$5	1,426,154	$0	$0
Subtotal	$1,263,206		$879	$60
Total, in FY2017 dollars	**$9,247,601**		**$6,282**	**$1,623**
Estimated in 2019 dollars, based on	1.7%		**$6,390**	**$1,650**

1 Expenses less operating and capital grants and contributions, which are primarily intergovernmental transfers and other grants to the State government, most from the Federal government. Business-type activities and component unit net expenses also exclude charges for services, since such programs are intended to recover all or a significant portion of their costs through fees or charges. Source: State of Hawai'i, Department of Accounting and General Services, "State of Hawai'i: Comprehensive Annual Financial Report For the Fiscal Year Ended June 30, 2018," Statement of Activities, pg. 30.

2 Resident population and de facto population estimates based on U.S. Census estimates through July 1, 2017 and information provided by State of Hawai'i, Department of Business, Economic Development & Tourism (DBEDT).

3 Net expense shows only those activities requiring government or other subsidy after service charges, grants and contributions but before debt service where applicable, line entry is set to "0" where the unit or activity showed net positive revenues for the year.

4 Semi-autonomous entities including the University of Hawai'i, the Hawai'i Housing Finance and Development Corporation, the Hawai'i Public Housing Authority, the Hawai'i Health Systems Corporation, the Hawai'i Tourism Authority, the Hawai'i Community Development Authority, and the Hawai'i Hurricane Relief Fund. All but HHFDC showed net expense for the year. All but HTA allocated to primary residents only.

5 Based on State of Hawai'i, DBEDT forecast of 2019 vs. 2018 change in Honolulu Consumer Price Index - Urban (CPI-U). Figures from U.S. Department of Labor, Bureau of Labor Statistics not available as of August 2, 2019.

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Appendix N

Archaeological Inventory Study
Cultural Surveys Hawai‘i, Inc.
December 2019

Draft

Archaeological Inventory Survey Report for the Halewai‘olu Senior Residences Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 1-7-006:012

Prepared for
Halewai‘olu Senior Development, LLC

Prepared by
Gina M. Farley, M.A.,
Ena Sroat, B.A.,
and
Matt McDermott, M.A.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: HONOLULU 87)

December 2019

O‘ahu Island	Maui Island	Hawai‘i Island	Kaua‘i Island
P.O. Box 1114	1860 Main Street	399 Hualani St.	2970 Kele St.
Kailua, HI 96734	Wailuku, HI 96793	Suite 124	Suite 114
Ph: (808) 262-9972	Ph: (808) 242-9882	Hilo, HI 96720	Līhu‘e, HI 96766
Fax: (808) 262-4950	Fax: (808) 244-1994	Ph. (866) 956-6478	Ph. (808) 245-9374

Management Summary

Reference	Archaeological Inventory Survey Report for the Halewai‘olu Senior Residences Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 1-7-006:012 (Farley et al. 2019)
Date	December 2019
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: HONOLULU 87
Investigation Permit Number	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological fieldwork permit number 19-07, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	SHPD; Federal Housing and Urban Development (HUD); City and County of Honolulu Office of Strategic Development, Department of Land Management (DLM), and Department of Planning and Permitting (DPP)
Land Jurisdiction	City and County of Honolulu
Project Proponent	City and County of Honolulu Office of Strategic Development
Project Funding	Federal; HUD Community Development Block Grants (CDBG)
Project Location	The Halewai‘olu Senior Residences project is at 1331–1347 River Street, between Vineyard Boulevard and North Kukui Street. The AIS study area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Project Description	The John R. Gilliland Sr. Building and its surrounding parking lot are planned for demolition, to be replaced by proposed affordable senior housing. The proposed project will redevelop land acquired by the City and County of Honolulu in 1992 with funds received from HUD-CDBG. The 17-story housing facility will consist of 155 units (plus one resident manager unit), a community room with warming kitchen, restrooms and storage, a computer room, social services activity rooms, a social services office, property management offices, mail and package boxes, and an elevator lobby on the ground level. A courtyard, retail space and parking access, trash compactor room, and loading area will also be on the ground level. Ground disturbance associated with project construction will include demolition and removal of the existing building, borings related to foundation pile installation, and excavations for structural footings, utility installation, roadway and parking area installation, and landscaping.
Project Area, Area of Potential Effect (APE), and AIS Study Area	The area of potential effect (APE) is bounded by Beretania Street on the southwest, ‘A‘ala Street on the northwest, the H-1 freeway on the northeast, and portions of Maunakea Street and Nu‘uanu Avenue on the southeast side (forming an “L” shape). The project area is identical to

	the APE, in accordance with HAR §13-275-2. The AIS study area within the APE/project area is restricted to the proposed project's footprint at 1331–1347 River Street.
Project Acreage	The APE/project area is approximately 45 acres (18.2 hectares). The AIS study area is approximately 0.6 acre (0.24 hectare).
Historic Preservation Regulatory Context	As a City and County of Honolulu project on City and County lands, the project is subject to historic preservation review under Hawai‘i Revised Statutes (HRS) §6E-8 and HAR §13-275. Additionally, the proposed project is a federal undertaking as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), due to the use of HUD-CDBG funding for acquisition and/or improvement of the project. Project construction is to be funded with federal equity through the Low Income Housing Tax Credit program and Hawai‘i State funds. With the use of federal funding for initial land purchase, the project is subject to HUD's environmental/historic preservation review regulations (24 CFR [Code of Federal Regulations] Part 58), which includes compliance with the National Environmental Policy Act (NEPA) and Section 106 of the NHPA. Following 24 CFR Part 58, the City is the responsible entity to carry out this federal environmental and historic preservation review in compliance with HUD. The City and County of Honolulu DLM initiated project-related HRS §6E-8 consultation with the SHPD at a meeting with the Architecture and Archaeology branches on 12 April 2017. The City DLM subsequently initiated project-related Section 106 consultation with the SHPD in a letter dated 10 June 2019, which was received by the SHPD on 14 June 2019 (Log No.: 2019.01347). Fung Associates, Inc., completed a *Reconnaissance Level Architectural Inventory Survey Form for the John R. Gilliland Sr. Building* (Hibbard and Chiu 2016; see Appendix A), which assessed the building as eligible for listing on the National Register of Historic Places (National Register) under Criterion C. The SHPD concurred with this assessment in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04). Because the project includes demolition of this determined National Register-eligible historic property, a project effect determination of "adverse effect" is likely, leading to a Memorandum of Agreement (MOA) under Section 106. The purpose of the MOA is to codify the mitigation measures for National Register-eligible historic properties that will be adversely affected by the project. CSH prepared a cultural impact assessment (CIA) (Spencer and Hammatt 2019) to support the project's NEPA environmental assessment. This AIS investigation was designed to fulfill both federal and Hawai‘i State historic preservation review requirements for the identification of

	archaeological historic properties. In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and evaluate archaeological historic properties' eligibility for listing on the National Register and to assess archaeological historic property significance under Hawai‘i State significance criteria pursuant to HAR §13-275-6. Archaeological historic property eligibility for listing on the Hawai‘i Register of Historic Places (Hawai‘i Register) was evaluated following the criteria outlined in HAR §13-198-8. This report is intended to support any project-related historic preservation consultation with consulting parties such as State and County agencies, interested Native Hawaiian Organizations (NHOs), and community groups. The identification and treatment of human skeletal remains discovered during this AIS investigation complied with Hawai‘i State burial law (HRS §6E-43 and HAR §13-300).
Architectural Historic Properties	In 2016, Fung Associates, Inc., prepared a reconnaissance level survey (RLS) of architectural historic properties within the project area (Hibbard and Chiu 2016; see Appendix A). The survey assessed the age, integrity, and significance of the AIS study area's only building, the John R. Gilliland Sr. Building. It also identified potential adverse effects and mitigation alternatives relating to the building's demolition. Staff who conducted the survey meet the Secretary of the Interior's Professional Qualifications Standards as architectural historians, per 36 CFR Part 61. The RLS was accepted by the SHPD Architecture Branch in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04). The RLS includes a brief historical context pertaining to the John R. Gilliland Sr. Building. The building was constructed in 1958 and was designed by architect Kenneth Sato. It retains much of its historic character in terms of design, materials, workmanship, and construction methods. The RLS assessed the John R. Gilliland Sr. Building as eligible for listing on the State and National Registers under Criterion C as a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s. Additionally, Fung Associates, Inc., completed a pedestrian survey in 2019 of all architectural properties within the APE built prior to 1972, in accordance with HAR §13-275 and 36 CFR Part 800.4. This study meets both state and federal requirements for the identification of historic properties. Twenty potentially historic resources comprising buildings, sculptures, or objects were identified and evaluated for eligibility based on the project's anticipated completion date of 2022. On behalf of the project proponents, Fung and Associates has submitted these results to

	the SHPD/State Historic Preservation Officer (SHPO) in support of the project’s historic preservation review compliance.
Consultation	Consultation regarding the Halewai‘olu Senior Residences Project has been ongoing since the project’s inception. Consultation efforts among the project proponents, the SHPD, consulting parties, and the River Street community are summarized below. On 12 April 2017, Liz Char of Halewai‘olu Senior Development, LLC, Alison Chiu and Tonia Moy of Fung Associates, Inc., and Matt McDermott of CSH met with Dr. Susan Lebo (archaeology branch chief), Kimi Matsushima and Stephanie Hacker (O‘ahu archaeologists), and Tanya Gumpac-Maguire (architectural historian) of the SHPD. This meeting initiated HRS §6E-8 consultation with the SHPD. Ms. Char introduced the project and provided a background of the property ownership, agency of record, proposed development, and known consulting parties. Because the demolition of the John R. Gilliland Sr. Building would likely result in an adverse effect, the SHPD staff recommended drafting an MOA in parallel with the project consultation and development and suggested additional parties for consultation. Mr. McDermott noted there was no data about subsurface archaeology in the project area, but that archaeological testing would likely yield findings. The SHPD staff recommended consultation with the O‘ahu Island Burial Council (OIBC) and proposed to meet at a later date to discuss a testing strategy for an AIS. On 8 May 2019, Matt McDermott of CSH gave a presentation at the OIBC monthly meeting to introduce the project, the AIS, and the consultation process. Mr. McDermott discussed the need for federal historic preservation review of the project triggered by federal funding and discussed previous land use within the archaeological study area as indicated by background research. Finally, he presented the proposed subsurface testing strategy for the AIS and explained that as a part of the consultation process, letters would be sent to the OIBC, Chinatown community groups, Nu‘uanu Stream groups, architecture groups, and NHOs. On 10 June 2019, invitations to the 25 June public meeting (see below) were sent via email or U.S. mail to the SHPD and consulting parties; this letter formally initiated NHPA Section 106 consultation with the SHPD. On 25 June 2019, a public informational meeting was held at the Blaisdell Center. Sandra Pfund (City and County DLM [Department of Land Management]) introduced the project and described the purpose of the meeting. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Alison Chiu and Bethany Zedalis (Fung Associates) provided an architectural background. On 9 July 2019, a Section 106 consultation meeting was attended by Alison Chiu and Bethany Zedalis of Fung Associates; Tanya Gumpac-

	Maguire of the SHPD Architecture Branch; Sharon Har and Questor Lau of Halewai‘olu Senior Development, LLC; Keith Kurahashi of R.M. Towill; Sandra Pfund from the City and County of Honolulu DLM; and Matt McDermott of CSH. Sharon Har provided an overview of the project and comments from consulting parties. Mr. McDermott provided an update of the ongoing AIS, including the burial find of 8 July 2019 (State Inventory of Historic Places [SIHP] # 50-80-14-8840 Component 2, Feature 6). Ms. Chiu and Ms. Zedalis proposed the APE for the project to consist of an archaeological APE and an additional architectural APE. Ms. Gumpac-Maguire concurred with the two APEs. On 22 July 2019, Ena Sroat and Matt McDermott of CSH met with Susan Lebo of the SHPD (Archaeology Branch) to discuss the results of the AIS testing up to that point and additional testing based on the identification of an in situ burial (SIHP # -8840 Component 2, Feature 6) in Test Excavation 2 (T-2). Based on this discussion, it was agreed that the AIS testing strategy would be increased by three test excavations—two in the vicinity of T-2 and one in the vicinity of Test Excavation 9 (T-9), where a potential agricultural berm had been identified. On 14 August 2019, Matt McDermott of CSH presented the results of the AIS investigation at the OIBC meeting. Mr. McDermott discussed the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6), and how excavation of two additional trenches—one on either side of the initial trench—failed to identify any additional human remains. He explained that the forthcoming burial treatment plan (BTP) will be part of the MOA and that the Native American Grave Protection and Repatriation Act (NAGPRA) does not apply, as the project does not involve tribal or federal land. He stated that Board Member Mana Caceres had been involved in the early stages of consultation regarding the burial find, and that Mr. Caceres would be applying as a cultural descendant for the remains. On 19 September 2019, a second public informational meeting was held at the Blaisdell Center. Sandra Pfund of the City and County of Honolulu DLM explained that the purpose of the meeting was to update the community regarding the AIS and CIA studies and how they relate to the project’s historic preservation review process. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Bethany Zedalis (Fung Associates) provided an architectural background. Matt McDermott of CSH presented the preliminary results of the project’s AIS and proposed mitigation commitments, including burial treatment for the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6). There were no questions from the audience members.

	On 6, 8, and 9 October 2019, a notice regarding the identification of human remains on 8 July 2019 (SIHP # -8840 Component 2, Feature 6) was published in the *Honolulu Star-Advertiser*. At the 9 October 2019 OIBC meeting, Brandy Caceres and ‘Ohana (family) were recognized as cultural descendants of the *‘iwi kupuna* (ancestral human remains) identified on 8 July 2019 (SIHP # -8840 Component 2, Feature 6). On 19 November 2019, a Section 106 Consultation meeting regarding the project’s MOA was attended by Susan Lebo (archaeology branch) and Tanya Gumpac-McGuire (architecture branch [via phone]) of the SHPD; Randy Chiu of the City and County DLM; Howard and Kehaulani Lum of Lum Sai Ho Ton; Liana Benn of the Chinatown Community Center Association; cultural descendants Mana and Kalehua Caceres; Daron Makaiwi of the Marin ‘Ohana; Sharon Har, Questor Lau, and Benjamin Edger of Halewai‘olu Senior Development, LLC; Matt McDermott of CSH; Tonia Moy and Alison Chiu of Fung Associates; Jay Morford of Hawaiian Memorial Life Plan; Mel Kalahiki of Borthwick Mortuary; Kiersten Faulkner of the Historic Hawai‘i Foundation; and Sylvia Young of HawaiiUSA Federal Credit Union. Ms. Har explained that the purpose of the meeting was to discuss mitigation. Mr. McDermott explained the MOA is being developed to alleviate the adverse effect of the project’s construction on the John R. Gilliland Sr. Building and the archaeological historic property identified during the AIS. SHPD staff proposed that mitigation should focus on things to benefit the community. Ms. Faulkner suggested this could be achieved through a display, a video, an oral history, a traveling exhibit, or by putting funds into an adjacent building. She further emphasized that the MOA needs to be enforceable, with a timeline and specific stipulations as to who does what and to what standard. Discussion also included the proposed activity center within the senior residence, and that it will not just be for residents but also for the community at large. On 21 November 2019, Matt McDermott and Ena Sroat of CSH met with Susan Lebo, Samantha Cragen, and Andrew McCallister of the SHPD Archaeology Branch. Discussion topics included the outstanding SIHP number for the historic property identified during the AIS and possible mitigation measures.
Fieldwork Effort	The AIS fieldwork was conducted between 1 and 30 July 2019, under the general supervision of Matt McDermott, M.A. (Principal Investigator), and Ena Sroat, B.A. (Project Director). CSH archaeologists included Sara Blahut, M.A. (osteologist), Alison Welser, M.A. (osteologist), Gina Farley, M.A., Lisa Manirath, M.A., Brittany Enanoria, B.A., Jessica Burden, B.A., Tanyja Roberson, B.A., Jonathan Alperstein, B.A., Ryan Harismendy, B.A., and Phoenix Pu‘u, B.A. This work required approximately 38 person-days to complete.

	Fieldwork consisted of a pedestrian inspection and the excavation and documentation of 15 test excavations.
Archaeological Historic Properties Identified and Historic Property Significance	One archaeological historic property was newly identified during the Halewai‘olu Senior Residences AIS: SIHP # 50-80-14-8840, subsurface cultural deposits. SIHP # -8840 comprises three components, designated as Components 1–3. SIHP # -8840 Component 1 consists of multiple, buried agricultural deposits associated with use of the Nu‘uanu Stream floodplain. SIHP # -8840 Component 2 consists of possibly pre- to post-Contact habitation layers, including associated pit features and a human burial site, which developed within the uppermost natural alluvium deposits alongside Nu‘uanu Stream. SIHP # -8840 Component 3 consists of historical infrastructure remnants associated with the residential and commercial development of Honolulu. SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to HAR §13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. This historic property has provided and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town from the nineteenth through mid-twentieth centuries; and on late pre- to post-Contact burial practices.
Project Effect	Based on the AIS investigation, the project effect determination per HAR §13-275-7 is “effect, with proposed mitigation commitments.” In addition, under Section 106 of the NHPA, the proposed project will have an “adverse effect” on the identified archaeological historic property.
Mitigation Commitments	Based on the AIS results, the agreed upon mitigation commitments consist of a BTP addressing the previously identified burial site (SIHP # -8840 Component 2, Feature 6) and data recovery in the form of archaeological monitoring for SIHP # -8840 Components 1–3. Mitigation measures will be detailed in the MOA that is currently being prepared pursuant to 36 CFR Part 800.6.

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Section 1 Introduction

1.1 Project Background

At the request of Halewai‘olu Senior Development, LLC, Cultural Surveys Hawai‘i, Inc. (CSH), has prepared this archaeological inventory survey (AIS) report for the Halewai‘olu Senior Residences Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 1-7-006:012. The Halewai‘olu Senior Residences project is at 1331–1347 River Street, between Vineyard Boulevard and North Kukui Street. The area of potential effect (APE) is bounded by Beretania Street on the southwest, ‘A‘ala Street on the northwest, the H-1 freeway on the northeast, and portions of Maunakea Street and Nu‘uanu Avenue on the southeast (forming an “L” shape). In accordance with Hawai‘i Administrative Rules (HAR) §13-13-275-2, the project area is identical to the APE, which comprises approximately 45 acres (18.2 hectares). The AIS study area within the APE/project area is restricted to the proposed project’s footprint at 1331–1347 River Street and comprises approximately 0.6 acre (0.24 hectare). The APE/project area is depicted on a 2013 aerial photograph (Figure 1). The AIS study area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2), a tax map plat (Figure 3), and a 2013 aerial photograph (Figure 4).

The John R. Gilliland Sr. Building (the only building within the AIS study area) and its surrounding parking lot (see Figure 4) are planned for demolition, to be replaced by proposed affordable senior housing. The proposed project will redevelop land acquired by the City and County of Honolulu in 1992 with funds received from Federal Housing and Urban Development (HUD) Community Development Block Grants (CDBG). The 17-story housing facility will consist of 155 units (plus one resident manager unit), a community room with warming kitchen, restrooms and storage, a computer room, social services activity rooms, a social services office, property management offices, mail and package boxes, and an elevator lobby on the ground level. A courtyard, retail space and parking access, trash compactor room, and loading area will also be on the ground level. Ground disturbance associated with project construction will include demolition and removal of the existing building, borings related to foundation pile installation, and excavations for structural footings, utility installation, roadway and parking area installation, and landscaping.

1.2 Historic Preservation Regulatory Context and Document Purpose

As a City and County of Honolulu project on City and County lands, the project is subject to historic preservation review under Hawai‘i Revised Statutes (HRS) §6E-8 and HAR §13-275. Additionally, the proposed project is a federal undertaking as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), due to the use of HUD-CDBG funding for acquisition and/or improvement of the project. Project construction is to be funded with federal equity through the Low Income Housing Tax Credit program and Hawai‘i State funds. With the use of federal funding for initial land purchase, the project is subject to HUD’s environmental/historic preservation review regulations (24 CFR [Code of Federal Regulations] Part 58), which includes compliance with the National Environmental Policy Act (NEPA) and Section 106 of the NHPA. Following 24 CFR Part 58, the City is the responsible



Figure 1. Aerial photograph showing the AIS study area within the APE (note APE is identical to the project area) (Google Earth 2013)

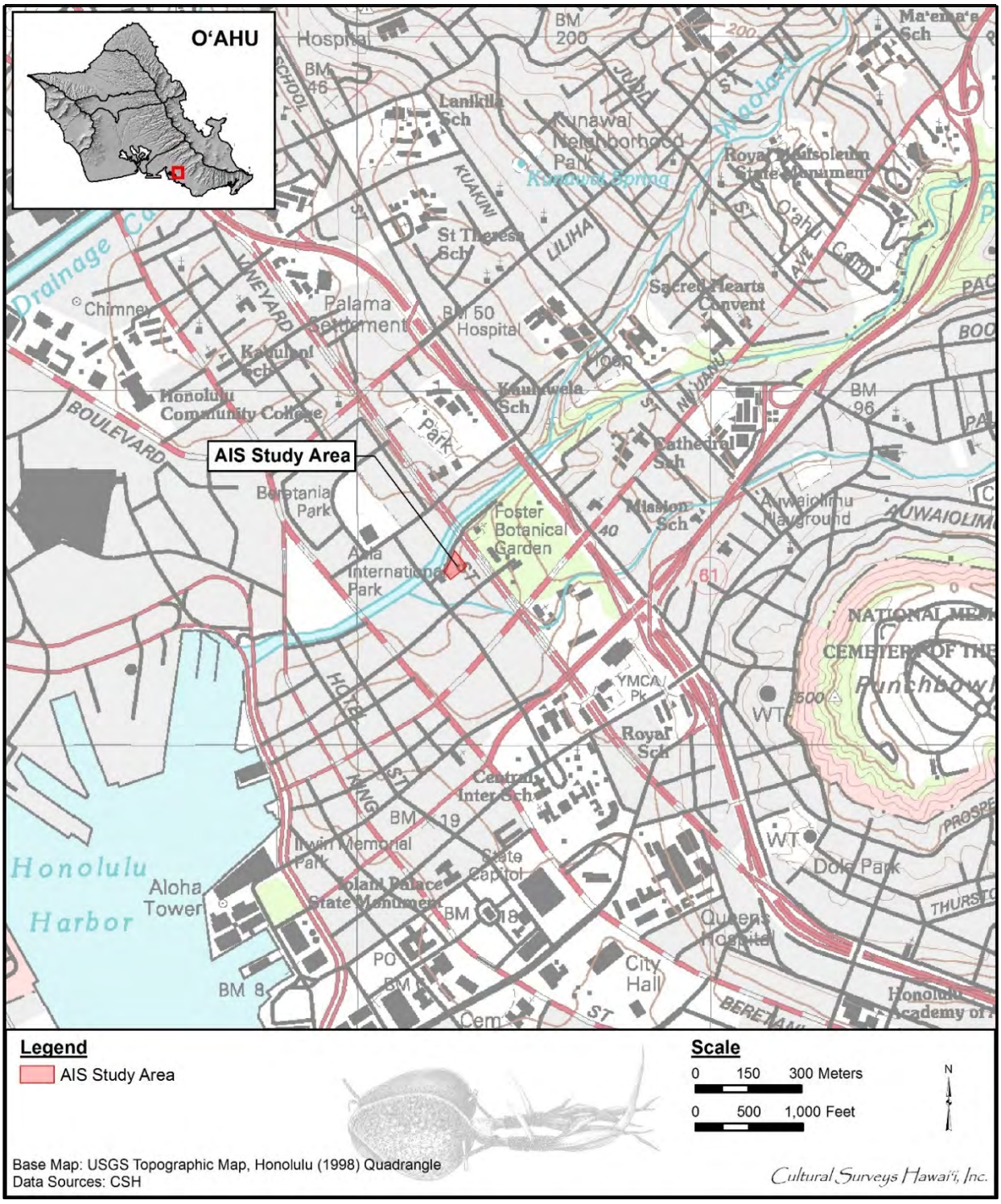

Figure 2. Portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle, showing the AIS study area

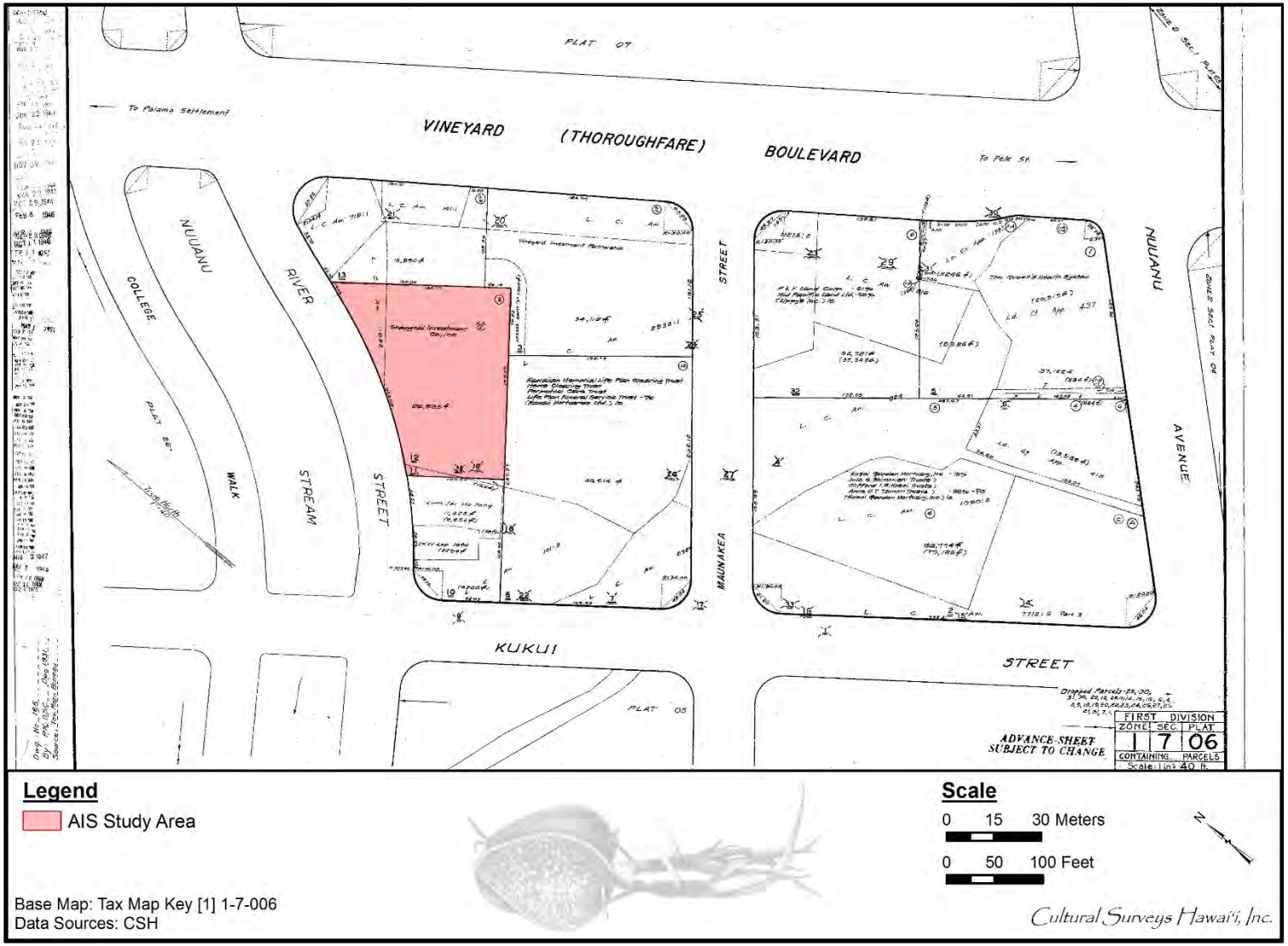

Figure 3. Tax Map Key (TMK) [1] 1-7-006, showing the AIS study area (Hawai‘i TMK Service 2014)



Figure 4. Aerial photograph of the AIS study area (Google Earth 2013)

entity to carry out this federal environmental and historic preservation review in compliance with HUD.

The City and County of Honolulu Department of Land Management (DLM) initiated project-related HRS §6E-8 consultation with the Hawai‘i State Historic Preservation Division (SHPD) at a meeting with the Architecture and Archaeology branches on 12 April 2017. The City DLM subsequently initiated project-related Section 106 consultation with the SHPD in a letter dated 10 June 2019, which was received by the SHPD on 14 June 2019 (Log No.: 2019.01347).

Fung Associates, Inc., completed a *Reconnaissance Level Architectural Inventory Survey Form for the John R. Gilliland Sr. Building* (Hibbard and Chiu 2016; see Appendix A), which assessed the building as eligible for listing on the National Register of Historic Places (National Register) under Criterion C (embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction). The SHPD concurred with this assessment in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04). As a result, a Memorandum of Agreement (MOA) is required for the project under Section 106. The purpose of the MOA is to codify the mitigation measures for National Register-eligible historic properties that will be adversely affected by the project.

CSH prepared a cultural impact assessment (CIA) (Spencer and Hammatt 2019) to support the project's NEPA environmental assessment.

This AIS investigation was designed to fulfill both federal and Hawai‘i State historic preservation review requirements for the identification of archaeological historic properties. In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and evaluate archaeological historic properties' eligibility for listing on the National Register and to assess archaeological historic property significance under Hawai‘i State significance criteria pursuant to HAR §13-275-6. Archaeological historic property eligibility for listing on the Hawai‘i Register of Historic Places (Hawai‘i Register) was evaluated following the criteria outlined in HAR §13-198-8. This report is intended to support any project-related historic preservation consultation with consulting parties, such as State and County agencies, interested Native Hawaiian Organizations (NHOs), and community groups.

The identification and treatment of human skeletal remains discovered during this AIS investigation complied with Hawai‘i State burial law (HRS §6E-43 and HAR §13-300).

1.3 Architectural Historic Properties

In 2016, Fung Associates, Inc., prepared a reconnaissance level survey (RLS) of architectural historic properties within the project area (Hibbard and Chiu 2016; see Appendix A). The survey assessed the age, integrity, and significance of the AIS study area's only building, the John R. Gilliland Sr. Building. It also identified potential adverse effects and mitigation alternatives related to the building's demolition. Staff who conducted the survey meet the Secretary of the Interior's Professional Qualifications Standards as architectural historians, per 36 CFR Part 61. The RLS was accepted by the SHPD Architecture Branch in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04).

The RLS included a brief historical context pertaining to the John R. Gilliland Sr. Building. The building was constructed in 1958 and was designed by architect Kenneth Sato. It retains much of its historic character in terms of design, materials, workmanship, and construction methods. The RLS assessed the John R. Gilliland Sr. Building as eligible for listing on the State and National Registers under Criterion C as a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s.

Additionally, Fung Associates, Inc., completed a pedestrian survey in 2019 of all architectural properties within the APE built prior to 1972, in accordance with HAR §13-275 and 36 CFR Part 800.4. This study meets both state and federal requirements for the identification of historic properties. Twenty potentially historic resources comprising buildings, sculptures, or objects were identified and evaluated for eligibility based on the project's anticipated completion date of 2022. On behalf of the project proponents, Fung and Associates has submitted these results to the SHPD/State Historic Preservation Officer (SHPO) in support of the project's historic preservation review compliance.

1.4 Environmental Setting

1.4.1 Natural Environment

The Halewai‘olu Senior Residences project is on the southern leeward coastal plain of Honolulu, approximately 0.7 km (0.4 mile) inland from Honolulu Harbor. It is relatively flat and is 2.7 m (8.9 ft) above sea level. Rainfall in the AIS study area averages 833.5 mm (32.8 inches) annually (Giambelluca et al. 2013), and the average temperature is 23.7° C (74.6° F) (Giambelluca et al. 2014). There is no vegetation within the AIS study area, which is paved with asphalt and concrete.

The AIS study area is on the margins of Nu‘uanu Stream, within the stream's floodplain as it enters Honolulu Harbor. According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist of Ewa silty clay loam, moderately shallow, 0 to 2% slopes (EmA) (Figure 5). The Ewa Series is described as follows:

> This series consists of well-drained soils in basins and on alluvial fans on the islands of Maui and Oahu. These soils developed in alluvium derived from basic igneous rock. […]
>
> These soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of fingergrass, kiawe, koa haole, klu, and uhaloa. [Foote et al. 1972:29]

1.4.2 Built Environment

The Halewai‘olu Senior Residences project is within central Honolulu, surrounded by modern urban development including commercial buildings, paved streets, sidewalks, utility infrastructure, and landscaped margins. The AIS study area consists of a two-story commercial building, the John R. Gilliland Sr. Building, and surrounding asphalt-paved parking lot (see Figure 4). The channelized Nu‘uanu Stream is northwest of the project area, across River Street.

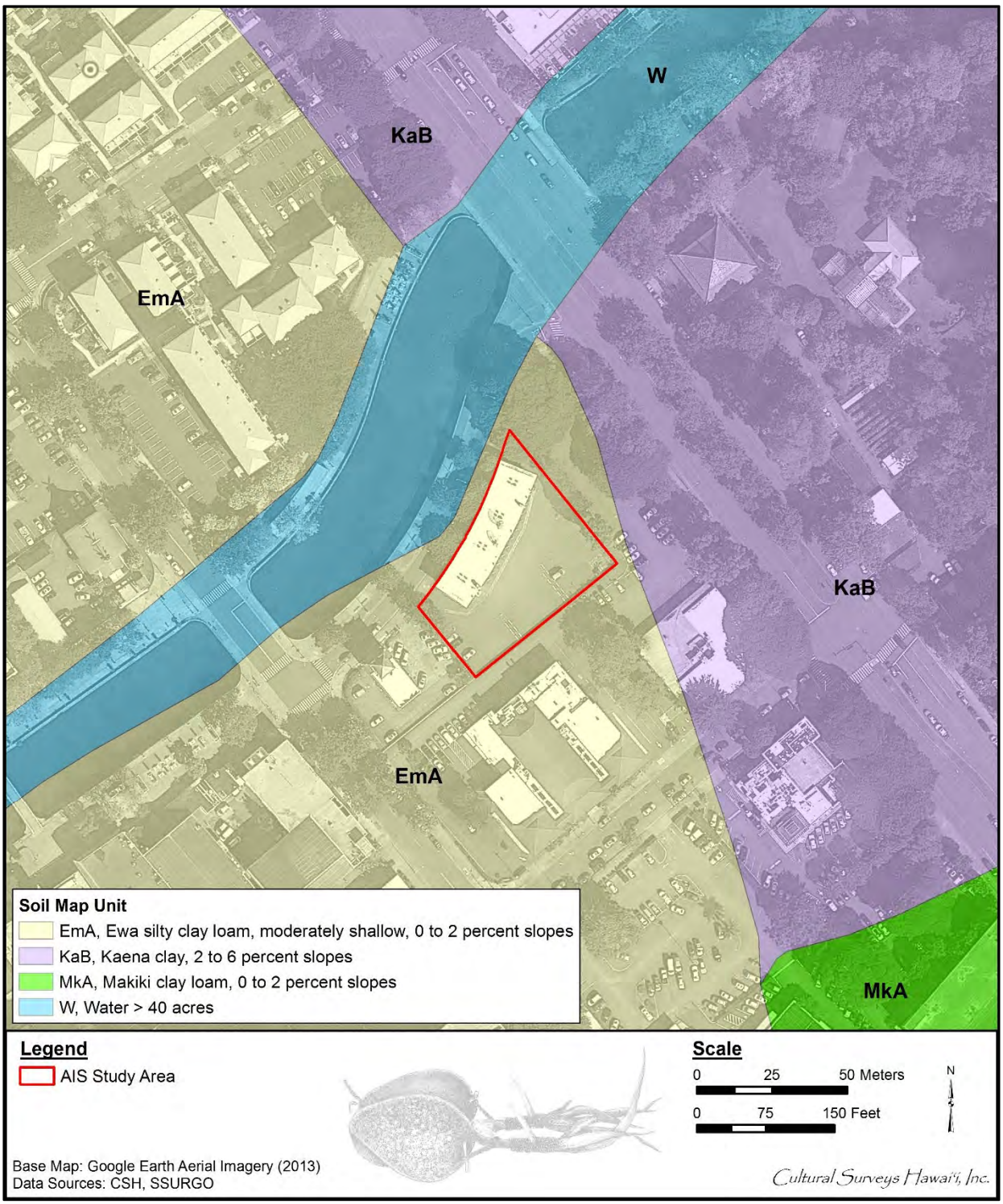

Figure 5. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the AIS study area (USDA SSURGO 2001)

Section 2 AIS Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological fieldwork permit number 19-07, issued by the SHPD pursuant to HAR §13-282. Fieldwork was conducted between 1 and 30 July 2019 under the general supervision of Matt McDermott, M.A. (Principal Investigator), and Ena Sroat, B.A. (Project Director). CSH archaeologists included Sara Blahut, M.A. (osteologist), Alison Welser, M.A. (osteologist), Gina Farley, M.A., Lisa Manirath, M.A., Brittany Enanoria, B.A., Jessica Burden, B.A., Tanyja Roberson, B.A., Jonathan Alperstein, B.A., Ryan Harismendy, B.A., and Phoenix Pu‘u, B.A. This work required approximately 38 person-days to complete.

As the Halewai‘olu Senior Residences AIS study area consists of a two-story commercial building (the John R. Gilliland Sr. Building) and associated asphalt parking lot, no surface archaeological historic properties were anticipated. Although fieldwork included a 100% pedestrian survey of the AIS study area, investigations focused on a program of test excavations to identify subsurface archaeological historic properties.

2.1.1 Subsurface Testing

The proposed subsurface testing strategy consisted of 12 test excavations (T-1 through T-12) distributed throughout the AIS study area, each measuring 0.6 by 6.1 m (2 by 20 feet [ft]) (Figure 6). The distribution was based on general coverage of the AIS study area; the planned locations of deep project-related ground disturbance such as elevator shafts (Figure 7); the accessibility of interior building space; and a review of cultural and historical background research, including historical maps and aerial photographs (see Section 3: Background Research). Based on the results of utility toning, several of the exterior test excavations were adjusted slightly (Figure 8). Based on spatial limitations and the results of utility toning, the dimensions of the two planned interior test excavations were adjusted to 0.9 by 3 m (3 by 10 ft) (T-10) and 0.6 by 3 m (2 by 10 ft) (T-11).

Following completion of AIS test excavations T-1 through T-12, CSH consulted with the SHPD regarding the testing results and the sufficiency of the testing strategy. Based on the documentation of a human burial site (State Inventory of Historic Places [SIHP] # 50-80-14-8840 Component 2, Feature 6) within T-2, CSH proposed two additional test excavations (T-2B and T-2C) on either side of T-2 to investigate the presence of a potential burial cluster and to delineate the burial site boundaries. The SHPD agreed with this strategy and additionally requested a third test excavation in the vicinity of T-9 in order to investigate further a potential agricultural berm feature (T-9B) (see Figure 8).

Initial excavation methods consisted of saw-cutting the asphalt parking lot surface (exterior excavations) or concrete building foundation (interior excavations). Excavation then proceeded via backhoe scrapes to approximately 1.5 m (5 ft) below surface (i.e., the maximum depth to safely enter the excavation without a shoring device). The excavation sidewalls were then cleaned, inspected, and documented, and soil samples were collected if appropriate. Excavation then continued to just below the water table and/or a culturally sterile, buried streambed (Stratum III). In general, this final excavation to the water table and/or streambed proceeded in two phases. The

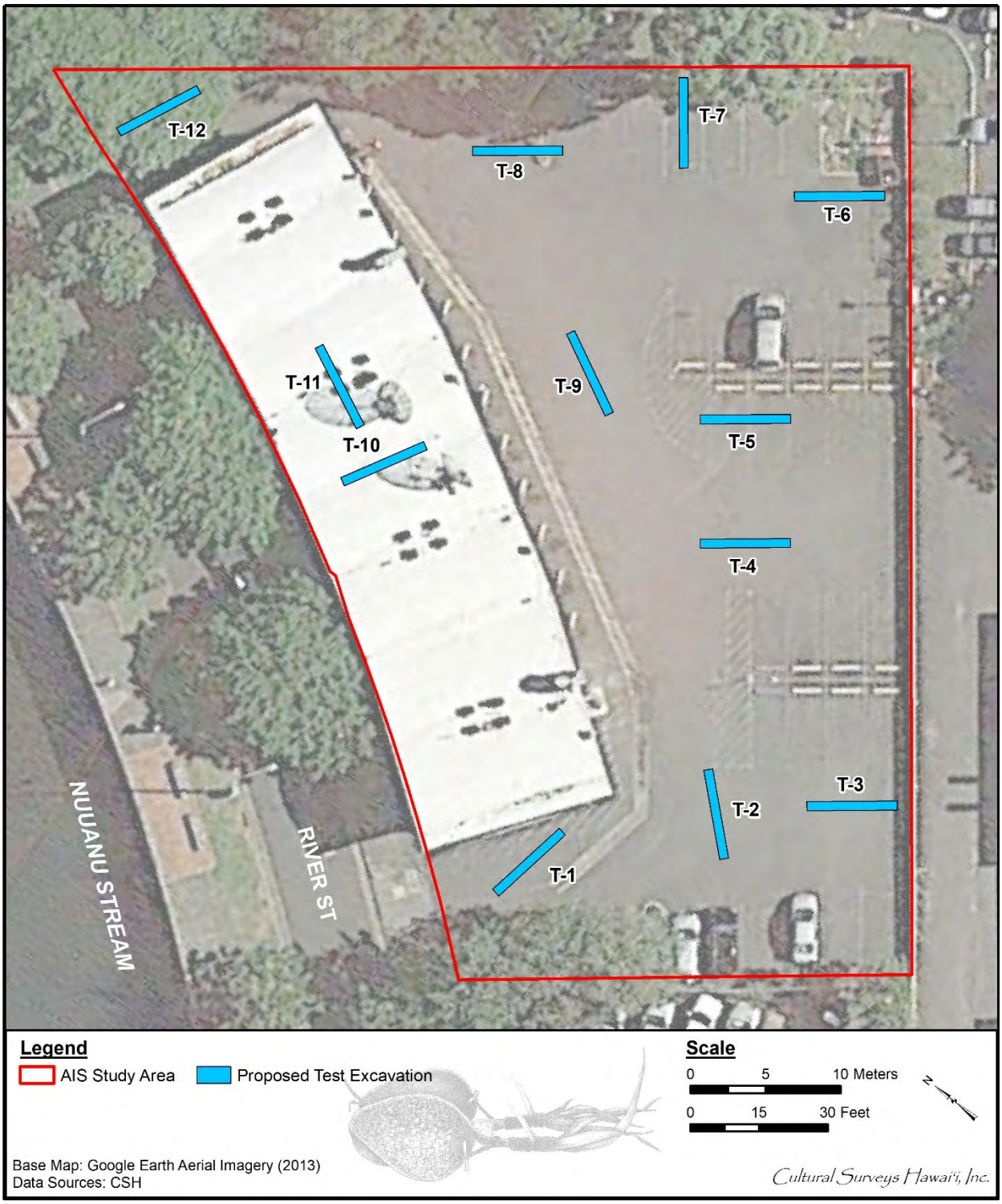

Figure 6. Aerial photograph showing 12 proposed AIS test excavations within the AIS study area (Google Earth 2013)

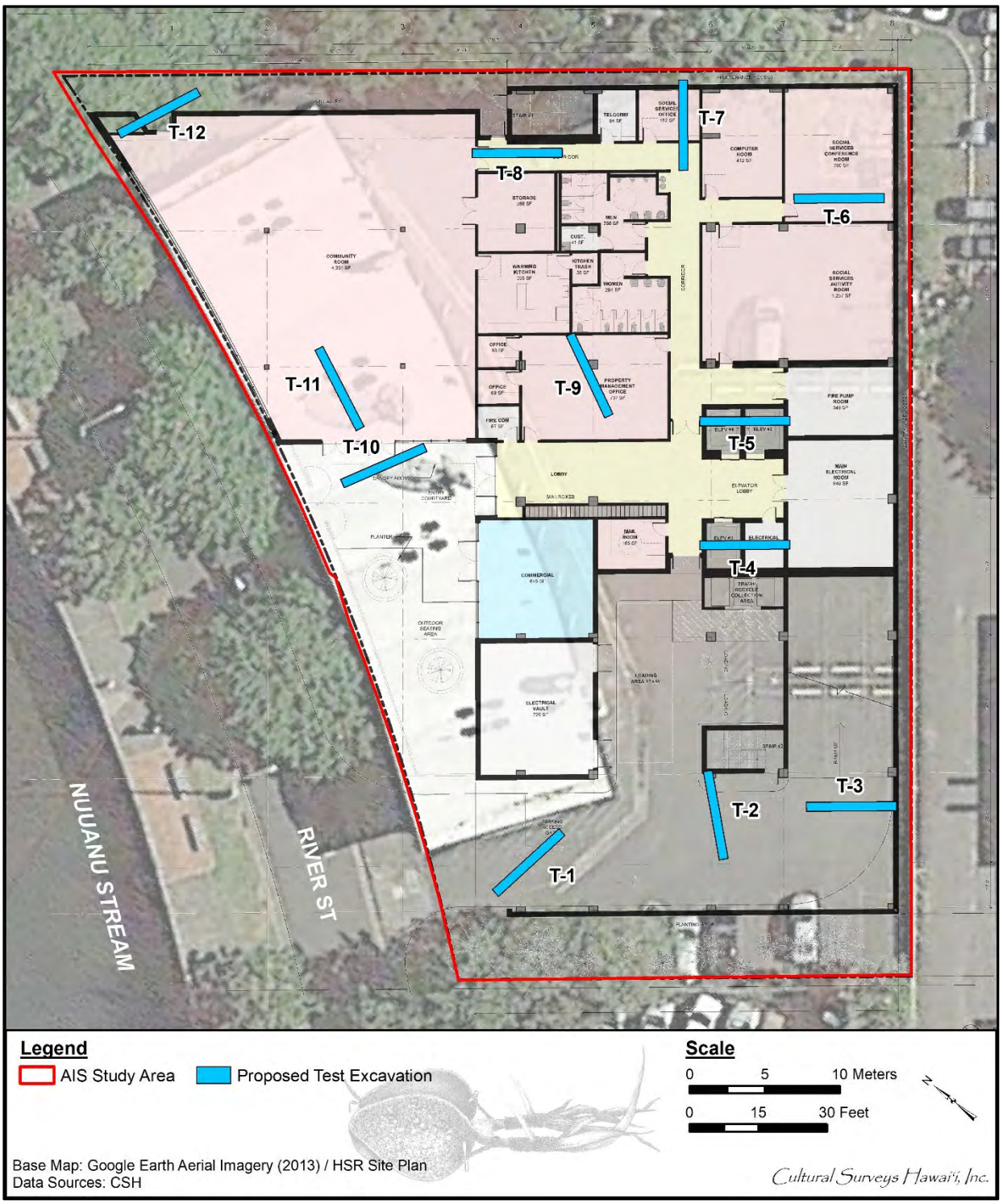

Figure 7. Aerial photograph of the AIS study area, with overlay of the project design; note T-4 and T-5 target planned deep elevator pit ground disturbance (Google Earth 2013)

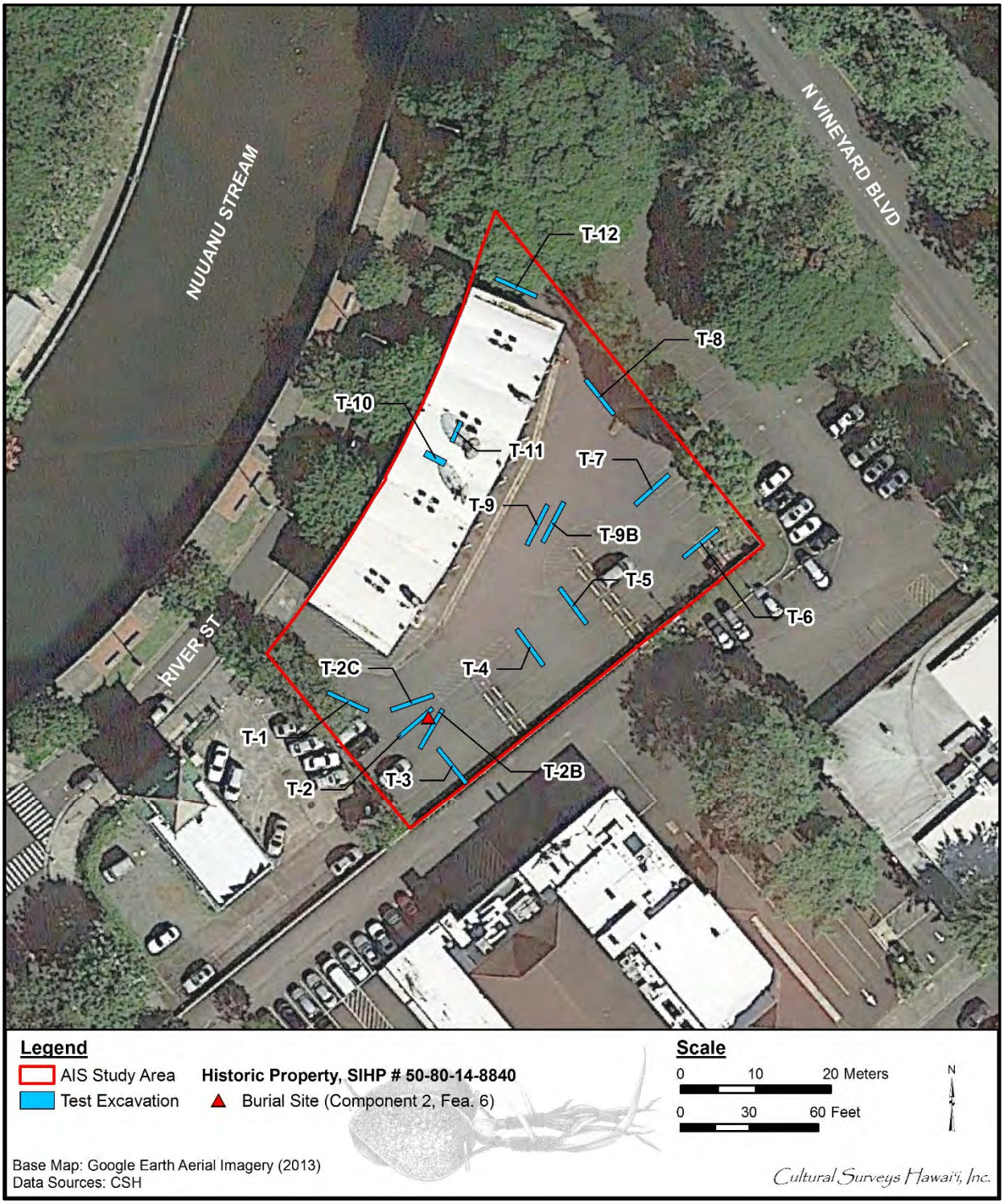

Figure 8. Aerial photograph of the AIS study area, showing the 15 completed AIS test excavations and the SIHP # -8840 Component 2, Feature 6, human burial (Google Earth 2013)

first phase consisted of completion of one half of the trench (e.g., the *makai* half), with the uncompleted portion (e.g., the *mauka* half) serving as a pedestal from which to safely inspect, document, and sample the deepest stratigraphy. The second phase consisted of excavation of the remaining portion of the trench, with close inspection of the extracted sediments to correlate with the previously collected data. Exceptions to this methodology included T-8, which was excavated to the water table in one phase, with shoring installed prior to inspection of the deepest stratigraphy; this was done to compare the efficacy of different methodologies. In a few instances, a portion of the test excavation could not be excavated to the water table and/or streambed due to safety concerns or subsurface obstacles. Safety issues included petroleum contamination within shallow fill deposits (T-4 and T-5) and unstable sidewalls due to demolition rubble (T-3). Subsurface obstacles included a large boulder within T-6 and a utility pipe within T-10. In addition, the immediate area of the human burial site identified within T-2 was not excavated in order to ensure the integrity and safety of the burial.

A stratigraphic profile of each test excavation was drawn and photographed. The observed soils/sediments were described using standard USDA soil description observations/terminology. Descriptions included Munsell color, texture, consistence, structure, plasticity, cementation, origin, descriptions of any inclusions, such as cultural material and/or roots, lower boundary distinctiveness and topography, and other general observations. Where stratigraphic anomalies or potential cultural deposits were exposed, these were carefully represented on test excavation profile maps. Photographs were also taken of the general AIS study area and in-progress work, recording on-the-job procedures, personnel, work conditions, and the area’s natural and built environment. A photographic scale and north arrow were included in each photograph.

Cultural material observed within modern and historical fill deposits such a demolition layers was generally recorded (e.g., photographed, described) but not collected. Cultural material associated with potential historic properties such as historical trash pits was photographed and grab samples were collected, with care given to including representative artifact types as well as those with the most diagnostic characteristics.

Representative soil/sediment samples were collected from the natural strata underlying modern and historical fill deposits, including potential cultural deposits (i.e., habitation layers, agricultural deposits), for further characterization within the CSH laboratory and for outsourced sample analysis as described in Section 2.2 below. Samples were collected as bulk or column samples, and all samples were collected as single stratum samples without crossing stratigraphic boundaries. Care was taken during the collection of column samples to clean/sterilize the extraction implement so as not to cross-contaminate samples.

The locations of the exterior test excavations were recorded using a Trimble GPS Pathfinder ProXH mapping-grade GPS unit with a TSCI Datalogger using real-time differential correction. This unit provides sub-meter horizontal accuracy in the field. GPS field data was then post-processed. GPS location information was converted into GIS shape files using Trimble’s Pathfinder Office software, version 5.6, and graphically displayed using ESRI’s ArcGIS, version 10.2.1. The approximate locations of the two interior test excavations were extrapolated based on triangulation of architectural components of the John R. Gilliland Sr. Building.

2.2 **Laboratory Methods**

Materials collected during AIS fieldwork were identified and catalogued at CSH's laboratory facilities on O‘ahu. Analysis of collected materials was undertaken using standard archaeological laboratory techniques. Materials were washed, screened, sorted, measured, weighed, described, and/or photographed.

2.2.1 Bulk and Column Sample Analysis

Sediment samples collected from a vertical series of natural alluvium deposits (Stratum II), including interpreted agricultural deposits (SIHP # -8840 Component 1), were examined within the CSH laboratory to aid in characterizing these deposits. Samples were collected as bulk or column samples. All samples were labeled with provenience information, and the volume of each sample was recorded so that comparisons could be made among samples. In the lab, bulk and column samples were first visually inspected. Many of the samples were additionally photo-documented, generating a visual record of the potential agricultural deposits. Select column samples were submitted for palynological analysis (see Section 2.2.4.1 below).

Wet screening of samples was performed on selected representative samples (n=7) to document material content. Scaled, close-up photographs of the selected samples were taken prior to wet screening for comparison with post-wet screening results. The samples, ranging from 0.5 to 2 liters, were placed in large (approximately 7-liter) 4-mm sealable (Ziploc-type) plastic bags. The bags were filled with tap water and allowed to soak for an hour with periodic agitation and massaging to break up sediment peds/masses in preparation for wet screening. Soaked and agitated samples were poured onto large, 1/16-inch mesh screens and sprayed with a water hose to work the finer-grained sediment through the mesh. Commonly, gravel-sized peds/masses of soil adhering to itself resulted; the largest of these peds/masses were broken apart by hand as wet screening continued. Smaller peds/masses were not broken down by hand. Sediment that did not pass through the 1/16-inch mesh was spread out on the screen and air-dried. Dried samples were inspected (without magnification) for artifacts, plant remains, charcoal, and limonite root casts and nodules. Post-wet screening, scaled, close-up photographs were taken for comparison. Results of this analysis are presented in Section 5.1: Bulk Sample Analysis.

2.2.2 Artifact Analysis

In general, artifact analysis focused on establishing, to the greatest extent possible, material type, function, cultural affiliation, and age of manufacture. As applicable, artifacts were washed, sorted, measured, weighed, described, photographed, and catalogued. Diagnostic (dateable or identifiable) attributes of artifacts were researched.

No traditional Hawaiian artifactual material was collected. Historical artifacts were analyzed using standard reference materials, as well as resources available on the internet; these included Elliott and Gould (1988), Munsey (1970), Bureau of Land Management/Society for Historical Archaeology (BLM/SHA) (2019), and Florida Museum of Natural History (2018), among others. Analyzed materials were tabulated and are presented in Section 5.2: Artifact Analysis.

2.2.3 Faunal Analysis

Faunal analysis focused on species identification and evidence of food consumption. Collected non-human vertebrate skeletal material was identified to the lowest possible taxa and analyzed

using an in-house comparative collection and reference texts (Adams and Crabtree 2008; France 2009). Identified faunal remains are discussed in Section 5.3: Faunal Analysis.

2.2.4 Floral Analysis

2.2.4.1 Palynological Analysis

Palynology is the branch of science concerned with the study of pollen, spores, phytoliths, and other palynomorphs. Palynomorphs are often preserved in soil/sediment samples and, following physical and chemical extraction, can be identified with a microscope. This information leads to the types of plants that made up the local environment, or the local watershed, at the time the sediment was deposited. A large amount of palynological research has been conducted on O‘ahu to examine human impacts on native vegetation.

Ten samples from two test excavations (T-7 and T-9) were submitted to BGP Consulting, LLC, in Flagstaff, Arizona for pollen analysis. The samples targeted a vertical series of natural alluvium deposits, including interpreted agricultural deposits (SIHP # -8840 Component 1). The results of the palynological analysis are presented in Appendix C and are discussed in Section 5.4.1: Pollen Analysis.

2.2.4.2 Wood Taxa Identification

Charcoal samples from two fire-related features (SIHP # -8840 Component 2, Features 2 and 4) were analyzed for species identification. Samples were sent to the Wood Identification Laboratory at International Archaeological Research Institute, Inc. (IARII), for taxa identification. The samples were viewed under magnification of a dissecting microscope and compared with anatomical characteristics of known woods in the Pacific Islands Wood Collection at the Department of Botany, University of Hawai‘i at Mānoa, as well as in published descriptions. Taxa identification of wood samples provides useful information for interpreting the environmental and cultural history of the area and helps to determine a general time frame of land use. Analysis by IARII also identifies short-lived plant species and/or plant parts that may be used for radiocarbon dating. Following analysis, samples were returned to the CSH laboratory. The results are presented in Appendix D and are discussed in Section 5.4.2: Wood Taxa Identification.

2.2.4.3 Radiocarbon Dating Analysis

Charcoal from SIHP # -8840 Component 2, Feature 4, fire-related feature, was submitted to Beta Analytic, Inc., of Miami, Florida, for radiocarbon dating analysis. Parenchyma charcoal was selected because it is not likely to have much inbuilt age, as soft storage tissues are not long-lived; hence, it provides a tighter timeframe for possible radiocarbon dates. The sample was analyzed using the accelerator mass spectrometry (AMS) method. The conventional radiocarbon age determined by Beta Analytic, Inc., was then calibrated to calendar ages using the IntCal 13 calibration program. The results are presented in Appendix E and are discussed in Section 5.4.3: Radiocarbon Dating Analysis.

2.2.5 Disposition of Materials

The Hawai‘i State rules governing AIS investigations (HAR §13-276) state the following regarding AIS collections from private lands:

> Arrangements shall be made with private landowners on the disposition of collections from their lands. If private landowners request archiving of material, then the archive shall be determined in consultation with the SHPD. [HAR §13-276-6]

All materials collected during the current AIS, including samples and artifacts, are the property of the landowner. Upon conclusion of the AIS investigation, all collected materials were temporarily stored at the CSH office in Waimānalo, O‘ahu. Disposition of the collection will be determined in consultation with the landowner. All data generated during the course of the AIS is stored at the CSH offices.

2.3 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historical photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historical maps at the Survey Office of the Department of Land and Natural Resources. Historical maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2019). This research provided the environmental, cultural, historical, and archaeological background discussed in the following section.

Section 3 Background Research

3.1 Traditional Background

The area that today comprises the portion of downtown Honolulu surrounding the mouth of Nu‘uanu Stream was known to Hawaiians as “Kou.” This area was a center of population and activity similar to Waikīkī, its preeminent neighbor to the southeast. Kou possessed shoreward fishponds and irrigated fields fed by streams descending from Nu‘uanu and Pauoa valleys (McAllister 1933:80). The land surrounding Nu‘uanu Stream was densely populated, with a concentration of *lo‘i* (irrigated taro patches) and *‘auwai* (irrigation ditches) that brought water to the agricultural fields (Figure 9 and Figure 10). There were several large fishponds, including Kawa and Kūwili, *makai* (seaward) of the current project, where Hawaiians raised fish. Additionally, nearby Honolulu Harbor was brimming with marine resources such as fish, crabs, shells, and seaweed. In addition, Kou/Honolulu had a long tradition as a royal center, where the *ali‘i* (chiefly class) would meet and entertain. Pukui (1983) recounts the poetical saying, *“Hui aka nā maka i Kou”* (“the faces will meet at Kou”), in reference to such gatherings (Pukui 1983:1128).

3.1.1 Place Names and Legends

Pukui et al. (1974:49–50) translate Honolulu as “protected bay,” referring to the protection of Honolulu Harbor. According to Westervelt (1915), Honolulu is a name made by the union of the two words “*Hono*” and “*lulu*”:

> Some say it means ‘Sheltered Hollow.’ The old Hawaiians say that ‘Hono’ means ‘abundance’ and ‘lulu’ means ‘calm,’ or ‘peace,’ or ‘abundance of peace.’ The navigator who gave the definition ‘Fair Haven’ was out of the way, inasmuch as the name does not belong to a harbor, but to a district having ‘abundant calm,’ or ‘a pleasant slope of restful land.’
>
> ‘Honolulu’ was probably a name given to a very rich district of farm land near what is now known as the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs of the time of Kakuhihewa, according to the legends. [Westervelt 1915:14]

Older names for the harbor are Kou and Māmala. Kākuhihewa was a *mō‘ī* (king, sovereign) of O‘ahu prior to the time of Kamehameha I. Kākuhihewa divided the island amongst his favorite chiefs and officers, who gave their names to the places they received; hence, the place now known as Honolulu was, until the time of Kamehameha I, called Kou after a chief who was an *ilāmuku* (marshal) under Kākuhihewa (Westervelt 1915:14). According to Westervelt (1915:14), “Ke-kai-o-Mamala was the name of the surf which came in the outer entrance of the harbor of Kou. It was named after Mamala, a chiefess who loved to play konane (Hawaiian checkers), drink awa [*kawa*; *Piper methysticum*], and ride the surf.”

The *ahupua‘a* (traditional land division) of Kou/Honolulu was subdivided into several smaller land divisions known as *‘ili*. The area between Maunakea Street and Nu‘uanu Stream, *makai* of King Street was known as Kapu‘ukolo. The area between Maunakea Street and Nu‘uanu Stream, *mauka* (inland, toward the mountains) of King Street to Beretania Street was called Kīkīhale. Pukui

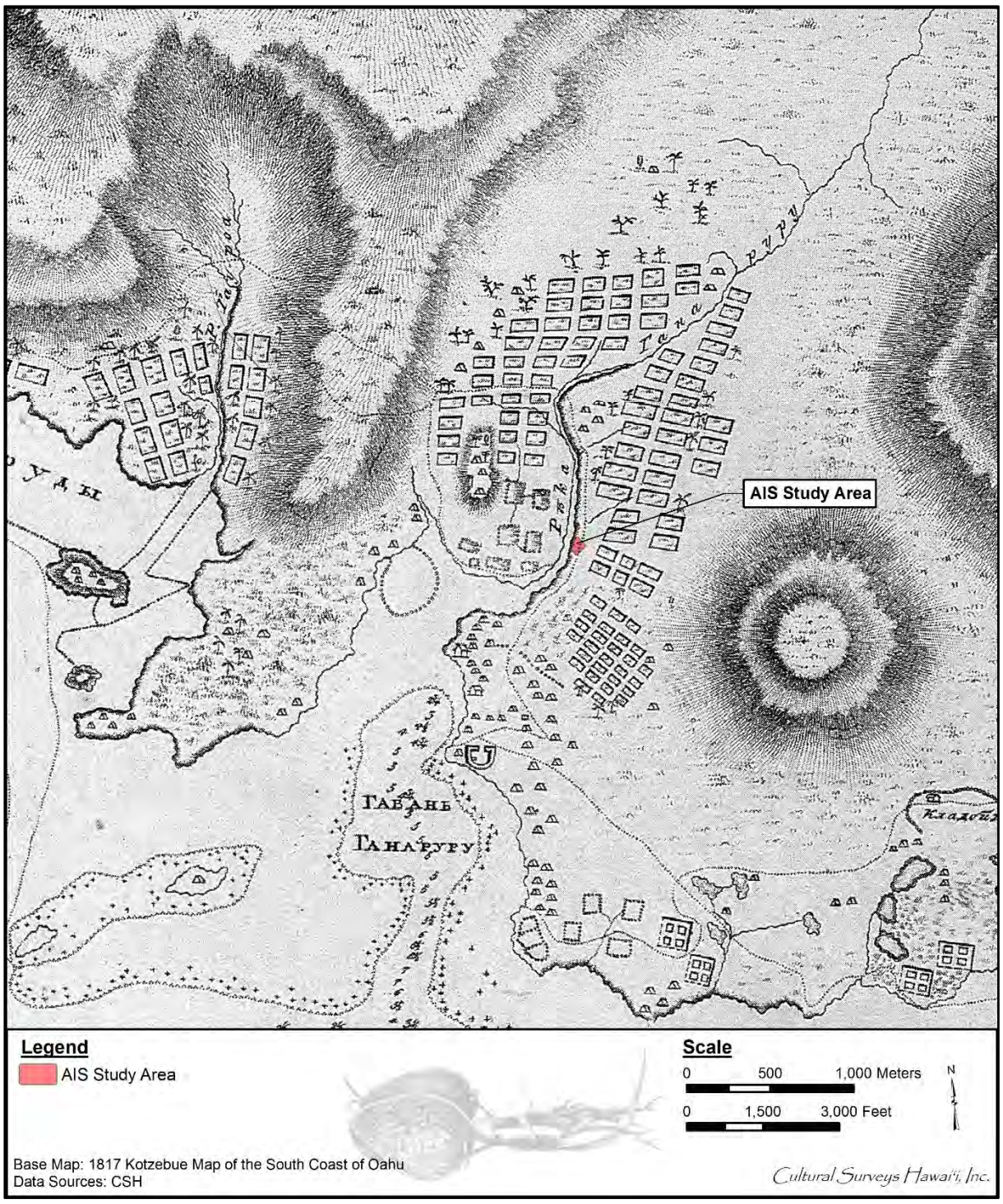

Figure 9. Portion of the 1817 map of the south coast of O‘ahu by Otto von Kotzebue, lieutenant of the Russian naval vessel, the *Rurick*, showing a concentration of taro fields (rectangles) around the banks of Nu‘uanu Stream and grass huts along the coast and the inland trails



Figure 10. Portion of the 1855 LaPasse map of the South Coast of Oahu, showing the AIS study area within a concentration of taro fields (rectangles) around the banks of Nu‘uanu Stream

et al. (1974:110) state that Kīkīhale was named for the daughter of the chief, Kou, for whom the area was named. The current project is within the *‘ili* of Kalāwahine (Figure 11), which Pukui et al. (1974) indicate as being named for a deity who guarded water sources. The literal translation is “the day [of] women” (Pukui et al. 1974:76). Some of these place names are mentioned in the legend of ‘Ai‘ai, described below (Thrum 1998:230–254).

Kū‘ula, the god presiding over the fish of the sea, had a son named ‘Ai‘ai. ‘Ai‘ai was the first to teach the Hawaiians how to make various fishing lines and nets and was the first to set up a *ko‘a kū‘ula*, a rock shrine, on which the fishermen would place their first catch as an offering to Kū‘ula. He was also the first to set up *ko‘a i‘a*, fishing stations, where certain fish were known to gather (Thrum 1998:231). Leaving his birthplace in Maui, ‘Ai‘ai traveled around the islands establishing *ko‘a kū‘ula* and *ko‘a i‘a*. He landed first at Ka‘ena Point, then traveled around the island of O‘ahu, stopping in Kaka‘ako (an *‘ili* now covered by One Waterfront Plaza) to visit his friend, Apua. Here, he met the famed O‘ahu chief, Kou, a skilled fisherman who caught the large *aku* (bonito; *Katsuwonus pelamis*) in the bay of Māmala (Honolulu Harbor). ‘Ai‘ai soon met a young woman named Puiwa. They married and had a son named Puniaiki.

One day, the family went to a dam on Nu‘uanu Stream to catch *‘o‘opu* (gobies) and *‘ōpae* (shrimp). When Puiwa left the newborn, Puniaiki, on the bank of the stream, the baby started to cry. ‘Ai‘ai told his wife to tend to the child, but she answered him back saucily. ‘Ai‘ai called on his ancestors, and a storm came up, flooding the dam and sweeping the child into the stream. Leaving his wife, ‘Ai‘ai went downstream to the *‘ili* of Kaumakapili. Here, he saw the chiefess Kīkīhale gather a large *‘o‘opu* from the stream. Kīkīhale’s guardian advised her to put it in a calabash with water and keep it as a pet. ‘Ai‘ai realized that the *‘o‘opu* was Puniaiki, his transformed child who had been swept downstream to Kīkīhale (referring to both the person and the *‘ili* named Kīkīhale). The next day, the chiefess’ guardian saw that the *‘o‘opu* had turned back into a child, and Kīkīhale instructed her to raise the child until it was an adult, so that she could take the young man for a husband. This came to pass, but the chiefess was not satisfied with her husband Puniaiki, since he did not bring fish home as the other men in the islands. Puniaiki was annoyed with her complaints and took the pearl fishhook, Kahuai, given to him by his father, ‘Ai‘ai, and went out with the men of Kou to fish for the *aku*. When Puniaiki held the pearl fishhook in his hand, “the akus, unprecedented in number, fairly leaped into the canoes. They became so filled with the fish, without labor, that they sank in the water as they reached Kapuukolo, and the men jumped overboard to float them to the beach” (Thrum 1998:247–248). This suggests Kapu‘ukolo was not only an *‘ili* name but also a canoe landing, a place to come ashore after *aku* fishing.

Kou is also mentioned in the legend of Hi‘iaka, beloved sister of the Hawaiian volcano goddess, Pele. Hi‘iaka and her companions had been traveling around O‘ahu on the land trails but decided to travel from Pu‘uloa (Pearl Harbor in ‘Ewa) to Waikīkī by canoe. At Pu‘uloa, Hi‘iaka met a party who was planning on traveling to the house of the chiefess Pele‘ula in Waikīkī. Hi‘iaka recited a chant, telling the people that although they were going by land, and she was going by sea, they would meet again in Kou:

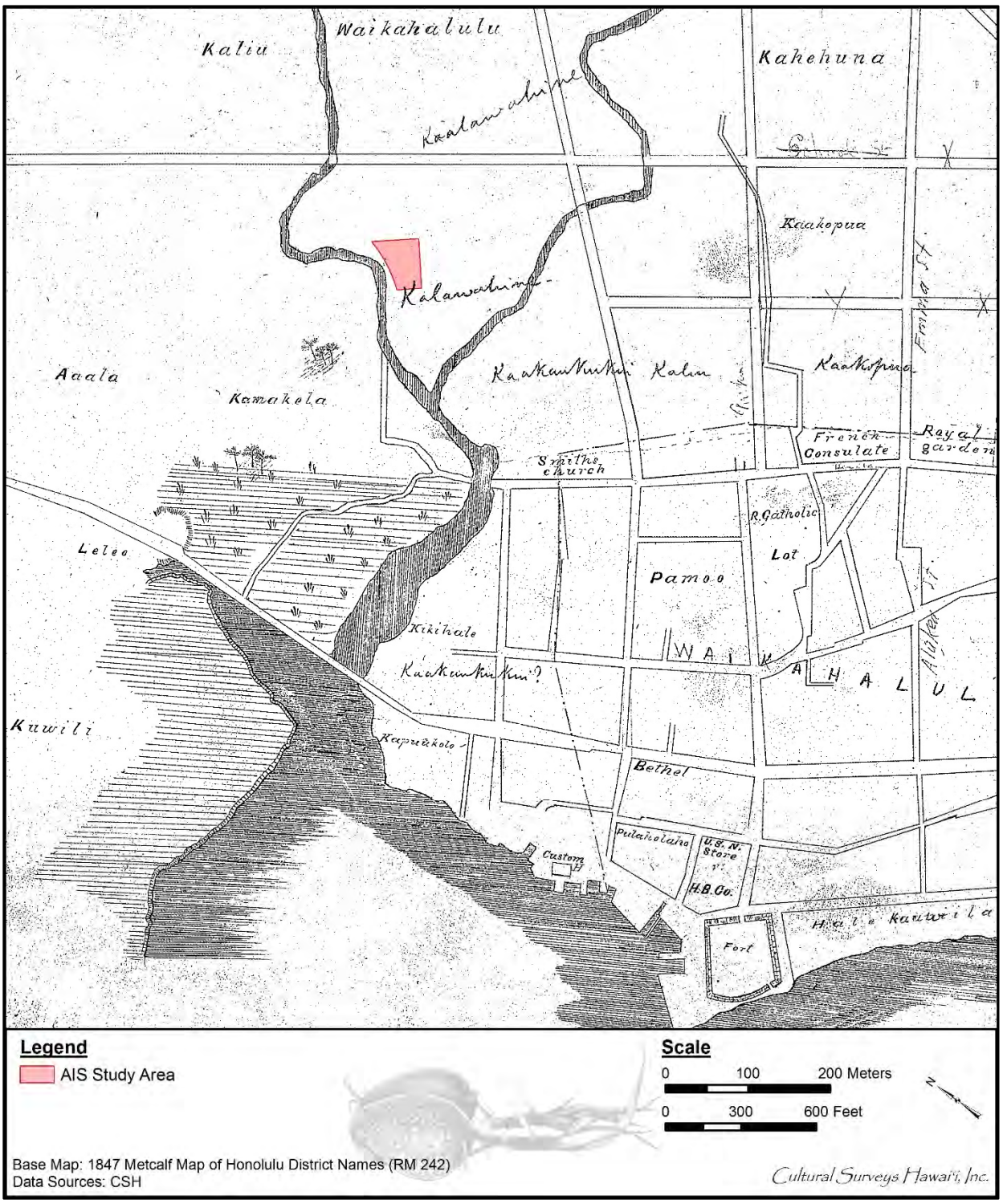

Figure 11. Portion of the 1847 Metcalf map of Honolulu District names (RM 242), showing the AIS study area within the *‘ili* of Kalāwahine

Kou is the coral flat	*‘O Kou ka papa*
Ka‘ākaukukui is the pool	*‘O Ka‘ākaukukui ka loko*
Some ‘alamihi [a black crab], indeed	*‘O ka ‘alamihi a‘e nō*
Wait all day until night	*‘O ka lā a pō iho*
Friends shall meet in Kou.	*Hui aku i Kou nā maka*.

[Ho‘oulumāhiehie 2008a:277; Ho‘oulumāhiehie 2008b:297]

3.1.2 *Ali‘i* and Battles

Nu‘uanu Valley, *mauka* of the current project, was the site of several battles during the pre-Contact period, usually between leeward Kona chiefs and windward Ko‘olau chiefs who moved along the Pali trail and pass to conduct raids into each other’s territories:

> Between Kahapa‘akai clear to the mouth of the valley were situated many celebrated *heiaus* (*luakini waihau*) where people went to worship. [These had been] erected in ancient days as war *heiaus* or *heiaus* for purifying the land; for Nu‘uanu had been a magnificent battleground in those old times. Here Pele-io-holani fought against Alapa‘i-nui, ruling chief of Hawaii, and so fought chiefs before and after his day. [Kamakau 1991:291]

Through a series of such battles, Kū‘ali‘i unified the island of O‘ahu around AD 1720-1740. In the Legend of Kalelealuaka, Kū‘ali‘i fought to overcome the district chief, Kākuihiwewa. An account from Thrum (1907:102) reported, “In a few days again came a report that Kualii had an army at a place called Kahapaakai, in Nuuanu. Maliuhaaino [the war chief of Kākuihiwewa] immediately marshaled his forces and started for the scene of battle the same evening.”

The hero Kalelealuaka had the ability to fly from one point to another in the blink of an eye. He became a warrior for the O‘ahu chief, Kākuhihewa, during a series of battles with the O‘ahu chief Kūali‘i. “Kalelealuaka flew to the battlefield, slaying many of the warriors, including the captain of Kūali‘i’s forces. Kūali‘i sued for peace and agreed to live as a subject under the dominion of Kākuihiwewa” (Thrum 1907:102).

However, in a second story of the battles in Nu‘uanu, it is Kūali‘i who is the victor:

> In the valley of Waolani, a side valley from the great Nuuanu, stood one of the sacred Heiaus called Kawaluna, which only the highest chief of the island was entitled to consecrate at the annual sacrifice. As Moi of Oahu the undoubted right to perform the ceremony was with *Kualii*, and he resolved to assert his prerogative and try conclusions with the Kona chiefs, who were preparing to resist what they considered an assumption of authority by the Koolaupoko chief. Crossing the mountain by the Nuuanu and Kalihi passes, *Kualii* assembled his men on the ridge of Keanakamano, overlooking the Waolani valley, descended to the Heiau, performed the customary ceremony on such occasions, and at the conclusion fought and routed the Kona forces that had ascended the valley to resist and prevent him. The Kona chiefs submitted themselves, and *Kualii* returned to Kailua. [Fornander 1996:280]

In 1783, the Maui chief Kahekili invaded O‘ahu, landing at Waikīkī. The chief of O‘ahu, Kahahana, resided at Kawānanakoa in upland Nu‘uanu at the time (Kamakau 1992:135). In

Fornander’s (1996) legendary account, Kahekili marched through several places in the vicinity of the current project:

> In the beginning of 1783—some say it was in the month of January—Kahekili, dividing his forces in three columns, marched from Waikiki by Puowaina, Pauoa, and Kapena [in Nu‘uanu], and gave battle to Kahahana near the small stream of Kaheiki. Kahahana’s army was thoroughly routed, and he and his wife Kekua-poi-ula fled to the mountains. [Fornander 1996:224–225]

Kahekili’s forces first moved toward Nu‘uanu Valley and reached Kulaokahu‘a, the arid coastal plain between Honolulu and Waikīkī. The great warrior Pe‘ape‘a, a follower of Kahekili who lived in Mānoa, heard of the Maui’s chief’s movements and ran toward the battle:

> *A lohe o Peapea, haalele iho la ia i ka wahine a holo mai la ma uka mai o Ualakaa, a Makiki, Pauoa, Kaheiki, e pili la me Maemae. Ilaila loaa iaia ka maka mua o na kanaka o Kahekili. A o ko Kahahana aoao hoi, i Waolani ka poe, i Maemae ka maka mua e iho mai ana.*
>
> When Peapea heard this he left his wife and ran above Ualakaa [Roundtop], Makiki, Pauoa, and Kaheiki, which is adjacent to Maemae. There he met the van of the army of Kahekili. As to the forces of Kahahana, the main army was at Waolani, while the front was descending from Maemae. [Fornander 1919:458–459]

At Ma‘ema‘e, which Fornander (1919) places around Wyllie Street (approximately 2 km *mauka* of the current project), Pe‘ape‘a came between the two forces and began to single handedly destroy Kahahana’s army:

> *Pela no kona hele luku ana a hiki i Luakaha, a Nuuanu. Hee o Kahahana ame kona mau alii a holo aku la, o ka nui ua pau i ka make ia Peapea. A puni ae la o Oahu nei ia Kahekili, lawe ae la o Peapea ia Kekuapoi, wahine a Kahahana i wahine nana, mamuli o kona koa ame ka ikaika, a noho iho la.*
>
> Thus he went slaughtering until reaching Luakaha [most *mauka ‘ili*] in Nuuanu. Kahahana and his chiefs were defeated and fled, the majority having been all slain by Peapea. Oahu being conquered by Kahekili, Peapea took Kekuapoi, Kahahana’s wife, as his own, on account of his courage and strength, and [they] lived together. [Fornander 1919:460–461]

3.1 Historical Background

3.1.1 Early Post-Contact Period

In the early post-Contact period, Kou was not a major destination for foreigners visiting the island. A discouraging factor for early trade on O‘ahu was political instability. The ruling chief Peleiōhōlani died around 1779, and his heir, Kumuhana, was almost immediately deposed in a *coup d’etat*. A period of political unrest followed. This included the successful invasion by Kahekili of Maui in 1783; the bloody crushing of the O‘ahu rebellion in 1786; the invasion by the Kaua‘i ruler, Ka‘eokūlani, in 1791; the passing of the rule to Kalanikūpule after Kahekili’s death in 1794; and finally, Kalanikūpule’s defeat by Kamehameha I at the Battle of Nu‘uanu in 1795 (Cordy 2002:42–44).

These events contributed to political and economic instability, which in turn delayed the development of Honolulu as a major port. Other events that diminished O‘ahu’s reputation as a port of call include the *Daedalus* killings in 1792; the mysterious death of Captain Kendrick in 1794; the seizure of the *Jackal* and *Prince Lee Boo* ships, which led to the deaths of Captains Brown and Gordon in 1795; and the wreck of the *Arthur* under Captain Henry Barber in 1796 (Beechert 1991:12–14). The earliest accounts of the south shore of O‘ahu recount the fear of attack; the difficulty of getting water and food, particularly yams (Portlock 1789); and, in one instance, the efforts of natives to seize a whaleboat (Dixon 1789:161).

3.1.1.1 Battle of Nu‘uanu

The Battle of Nu‘uanu, the most significant post-Contact battle, took place when Kamehameha, Hawai‘i Island chief, landed at Waikīkī to fight the forces of O‘ahu. This was Kamehameha’s final battle in his conquest of the island of O‘ahu, which took place in the valley *mauka* of the current project:

> Kamehameha landed his fleet and disembarked his army on Oahu, extending from Waialae to Waikiki. Consuming but a few days in arranging and organizing, he marched up the Nuuanu valley, where Kalanikupule had posted his forces, from Puiwa upwards, occupying Kaumuohena, Kapaeli, Kaukahoku, Kawananakoa, Luakaha, Kahapaakai, Kamoniakapueo, and Nuuanu. At Puiwa the hostile forces met, and for a while the victory was hotly contested; but the superiority of Kamehameha’s artillery, the number of his guns, and the better practice of his soldiers, soon turned the day in his favour, and the defeat of the Oahu forces became an accelerated rout and a promiscuous slaughter. Of those who were not killed, some escaped up the sides of the mountains that enclose the valley on either side, while a large number were driven over the pali of Nuuanu, a precipice of several hundred feet in height, and perished miserably. [Fornander 1996:347–348]

Thomas Thrum (1897) provides additional details regarding how the battle raged at Nu‘uanu:

> […] the position of the Oahu army was on the steep side of the hill, about three miles in the rear of the town of Honolulu. A stone wall protected them in front, and the steepness of the ground availed them against an assault. Believing themselves secure, they defied their enemies with insulting gestures and bravados. A field piece, which Young had brought to bear upon them, knocking the stones about their heads, disordered their ranks and they broke and fled. Its most fatal result was the death of Kaiana, who was killed by this ball. His loss spread consternation among his troops and rendered the victory comparatively easy. The forces of Kamehameha charged; in the onslaught many of the Oahuans were slain, and the rest pursued with great slaughter until they were driven to the end of the valley, which terminates in a precipice of six hundred feet, nearly perpendicular height, forming a bold and narrow gorge between the two forest-clad mountains. A few made their escape; some were driven headlong over its brink, and tumbled, mangled and lifeless corpses, on the rocks and trees beneath; others fought with desperation and met a warrior’s death […] [Thrum 1897:111]

3.1.1.2 Honolulu Harbor

Another factor for the delay in the development of Kou as a major port was the relatively late discovery of Honolulu Harbor, attributed to Captain William Brown in early 1793. Furthermore, Honolulu's prominence had to wait until Kamehameha I established peace and encouraged trade. Kamehameha defeated Kalanikūpule at the battle of Nu‘uanu in 1795 and in 1809, moved his court, government, and residence from Waikīkī to Honolulu. Hence, it was not until the first decade of the nineteenth century that newly arrived foreigners considered Honolulu a place of commercial importance. According to Kuykendall (1938:27), Honolulu was situated in a "rich and productive island and its protected harbor, the only accessible one in the entire group, [which] caused foreign ships to go there in preference to other places." However, into the 1820s, Honolulu remained more notable for its native culture than for Western urbanization. A visitor to Honolulu in 1819 wrote the following:

> The port of Onorourou [Honolulu], generally frequented today by all the European vessels that come to the islands, is without doubt the most favorable location with respect to shelter, commerce, and resources for the supply of ships. The town of Onorourou is located on a large, flat plain. It is on the shores of a bay of the same name. The houses, similar to the most part to those of Owhyhi [Hawai‘i] and of Mowi [Maui], are however interspersed with a certain number of houses built of stone that belong for the most part to Europeans or to Anglo-Americans. [de Freycinet 1978:42]

The 1830s marked a shift in the character of Honolulu as perceived by its inhabitants. By this time, Western commercial and missionary interests had supplanted the Native Hawaiian traditions that had once shaped the environment, and Western and urban ideals propelled Honolulu's growth. Such ideals found expression in events like the formal naming of streets, which commenced in September 1836. At that time, the *Sandwich Island Gazette* began soliciting suggestions for street names from its readers. Among those accepted were King Street, Beretania Street, and Garden Lane (Thrum 1884).

3.1.1.3 Francisco de Paula Marín

The history of the Gillilands in Hawai‘i (after whom the John R. Gilliland Sr. Building in the current AIS study area is named) begins first with Francisco de Paula Marín. Marín was a horticultural experimenter who acquired his knowledge as a youth working in the Andalusian vineyards of Spain. In 1793 or 1794, he traveled to Hawai‘i, where he was befriended by Kamehameha I. Marín served as Kamehameha's interpreter and assumed many government duties. Kamehameha, in turn, gave land to Marín for his agricultural experiments, and Marín introduced numerous plant species to the Islands (Gast and Conrad 1973). Marín had at least three wives of Hawaiian blood and many children. He was known for his flourishing gardens and vineyards, as well as for his reluctance to share those crops with friends and acquaintances; hence, the Hawaiian corruption of his name "Manini" has become a slang word for miserly (Encyclopaedia Britannica 2019).

Most of the current AIS study area is within land formerly owned by Marín, known as "The Vineyard" (see Figure 12 and discussion below of LCA 2938). Around 1813 or 1814, Marín travelled to California to obtain grape cuttings and other plants, which he brought back to O‘ahu. The site of the first planting of the grape cuttings was likely at his land on the harbor front (the

foot of present-day Fort Street); however, the following year (1815), he began a larger planting at his “new vineyard,” described as follows:

> The site of this planting was in the area known as Kalawahine, which had been allotted to Jonathan Winship [pioneer of the sandalwood trade, which Marín had encouraged to Kamehameha to enter] by the king. It was located at the confluence of Nuuanu and Pauoa streams, close to what is now Kukui and River streets […]. Marin had asked Kalanimoku [high chief, similar to a prime minister] for land in which to plant his vines, and Kalanimoku arranged with Winship for the use of part of the Kalawahine holding. [Gast and Conrad 1973:50]

From that time onward, wine-making was almost a year-round activity for Marín. Years later, when a new street adjacent to its *mauka* boundary was constructed, it was called Vineyard Street.

Jacques Arago visited the vineyard in 1819 and described it as follows:

> Yesterday, I made a very interesting excursion, and visited the vineyard of Marin […]. It is situated on the slope of a beautiful hill. The foot of which is watered by a small river bordered by palma christi [castorbean; *Ricinus communis*], banana and superb cocoa-nut trees. I gathered some of the grapes from the vine and found them excellent. [Hee 1955 in Gast and Conrad 1973:52]

Ten years later (1829), C.S. Stewart visited the vineyard and described it as follows:

> We had scarcely passed a hundred rods from the village before we found something new to admire in the yard of Mr. Marini. After crossing a small stream which bounds it on one side, our path led us the whole length of another. It is well planted and cultivated, and yields grapes sufficient to make considerable quantities of wine. Along the fences in some parts are bushes of the damask rose in full bloom, which appeared to fine advantage, in contrast with the pale yellow blossom of the cotton tree, with which they are interspersed. The vineyard is also skirted with pineapples, in different stages of maturity […] [Stewart n.d. in Gast and Conrad 1973:52]

3.1.2 Mid-1800s

3.1.2.1 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848, the crown and the *ali‘i* received their land titles. *Kuleana* (commoner) awards for individual parcels within the *ahupua‘a* were subsequently granted in 1850. These awards were presented to tenants, Native Hawaiians, naturalized foreigners, non-Hawaiians born in the Islands, or long-term resident foreigners who could prove occupancy on the parcels prior to 1845 (Chinen 1958).

Land Commission Award (LCA) documentation provides information on land use within the AIS study area. Historical maps show the majority of the AIS study area as within LCA 2938 to Huanu, for the heirs of Lahilahi (Gilliland ‘Ohana [Family]) (Figure 12 and Figure 13). Huanu is the “grandson of Marin” (see above discussion of Francisco de Paula Marín), and this claim is for “farm land in the vineyard” (Waihona ‘Aina 2019). According to LCA documentation, “P. Manini [another name for Marín] formerly held this land from Kamehameha I, having received it from

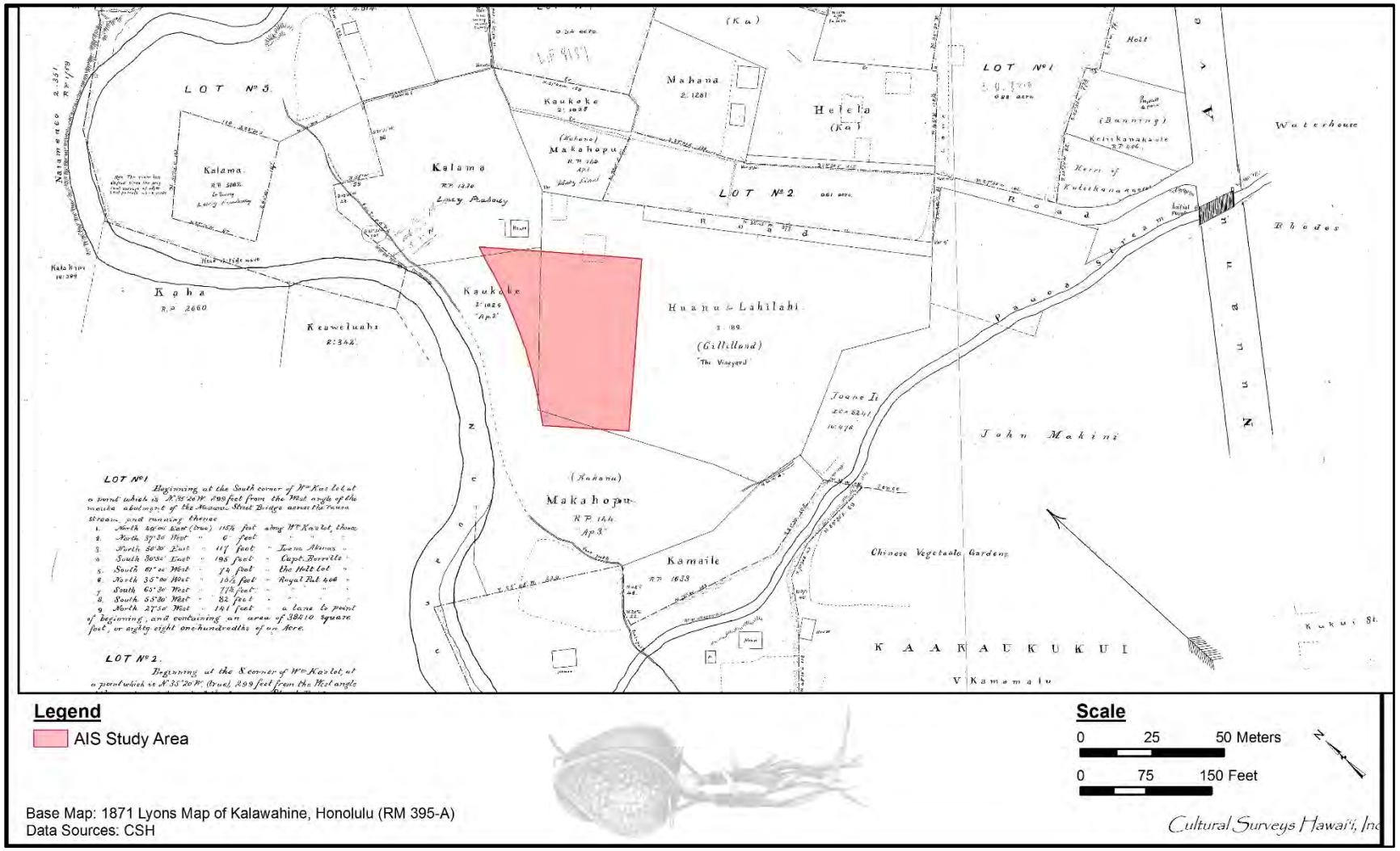

Figure 12. 1871 Lyons map of Kalawahine, Honolulu (RM 395-A), showing LCAs in the vicinity of the AIS study area

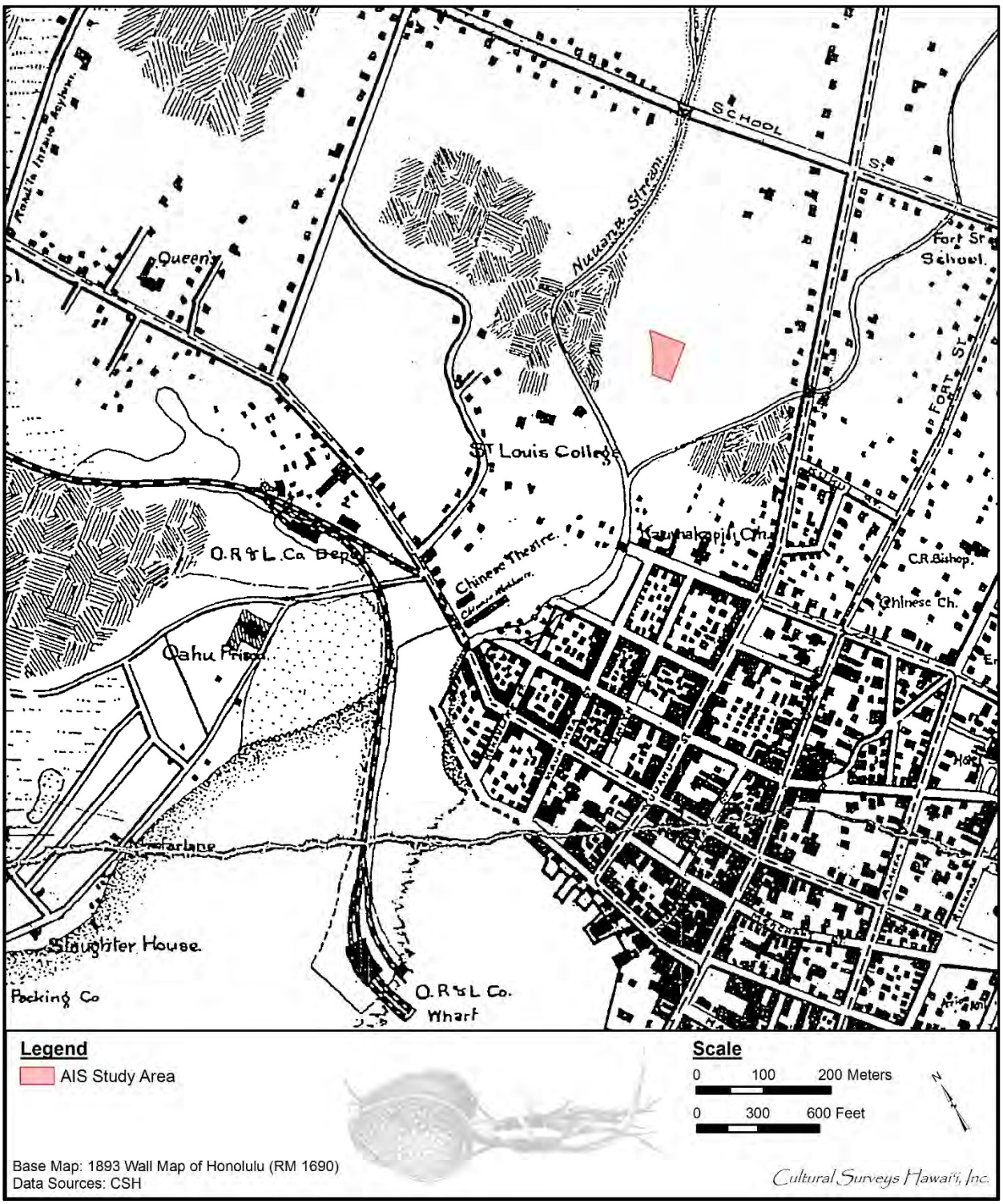

Figure 13. 1893 Dodge and Wall map of Kamanuwai Block and a Part of Kamakakela (RM 1651), showing LCAs in the vicinity of the AIS study area

him. On death of Manini, it came to his daughter, Lahilahi, and on her death to her children […]. The lot is fenced round and has been cultivated and never disputed" (Waihona ‘Aina 2019). The parcel comprises 2.311 acres.

Most of the ‘Ewa (northwest) portion of the AIS study area is within LCA 11082:3 to Kaukoke. The parcel is 330.8 *anana* (Hawaiian unit of measurement equivalent to the distance between the fingertips of the outstretched arms, approximately 2 yards [Mattimoe and Nagao 1967]). In addition, small sections in the west corner of the AIS study area appear to overlap with LCA 141:2 and 3 to Makahopu (also called Makahoku). According to LCA documentation, Makahopu "made the fence and a house and planted food […]. There are some lahala [*Pandanus tectorius*] trees planted on the land by Kaahumanu's orders" (Waihona ‘Aina 2019). ‘Āpana (lot) 2 is 105.9 *anana*, while ‘Āpana 3 is 1,133.7 *anana*. Additionally, the far north corner of the AIS study area may be within LCA 715:1 to Kalama. This claim for four taro patches and a house site comprises 1.03 acres. LCA documentation is included in Appendix B.

Landscape features (solid and dashed lines) depicted within the AIS study area on the 1871 Lyons map and the 1893 Dodge and Wall map (see Figure 12 and Figure 13) may represent the boundaries between LCAs and/or agricultural or house plots within LCAs. A structure is also indicated as partially within the northeast portion of the AIS study area.

3.1.2.2 Mentions of Kalāwahine in Hawaiian Language Newspapers

Two notices published in *Ka Hae Hawaii* in 1861 describe the prohibition of people and animals, including horses, cows, mules, and donkeys, from trespassing upon the fields of Kalāwahine (*Ka Hae Hawaii* 10 and 31 July 1861). The second notice additionally describes a prohibition on the collection of firewood at the mountain in Kalāwahine, without permission from the *konohiki* (land supervisor) P. Naone. These prohibitions were placed by "L. Haalelea," presumably referring to Liwai (Levi) Ha‘alelea, the son of Ha‘alou, governor of Moloka‘i under Kalaimoku. Ha‘alelea was a Hulumanu (court favorite) of Kamehameha III and was elevated to chief upon his marriage to Kekauonohi, daughter of Kamehameha I, around 1848 (Barrere 1994).

A 31 October 1861 notice in *Ka Hoku o Ka Pakipika* announces the auction of the estate of Po, which included five *lo‘i* at Kalāwahine.

In addition, two birth and death announcements for residents of Kalāwahine appeared in *Ka Nupepa Kuokoa*. Nawahinelua was born on 22 April 1862 (*Ka Nupepa Kuokoa* 10 May 1862), while Kaili passed away on 25 June 1865 (*Ka Nupepa Kuokoa* 6 July 1865).

3.1.3 Late 1800s

3.1.3.1 Increased Urbanization

The first efforts to deepen Honolulu Harbor were made in the 1840s. The idea of using the dredged material composed of sand and crushed coral to fill in low-lying lands was quickly adopted. From 1857 to 1870, the "Esplanade" between Fort and Alakea streets was created on 22 acres of former reef and tideland. By 1874, Sand (Quarantine) Island, site of the first immigration station, had been created over "reclaimed" land on reefs.

In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the Islands. Charles Wilkes, commander of the U.S.

Exploring Expedition, visited Hawai‘i in 1841 and related that Honolulu was “very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia” (Wilkes 1856:373). Honolulu was in a period of rapid change during the latter half of the nineteenth century, and Reverend Sereno Bishop (1916) offered a unique perspective on the changes in the layout of Honolulu and the buildings that lined the streets:

> When I returned to Honolulu in 1853, after an absence of thirteen years, I was struck by the many changes […]. The major portion of the residents of Honolulu still lived in thatched houses [in 1840]. In fact the town was almost entirely composed of this kind of dwellings […]. When I went away there were only Punchbowl Road, Beretania Street, King Street and Merchant Street. This was the condition of the city in 1840. [Bishop 1916:58]

Beginning at the start of the whaling era (ca. 1820) and extending into the 1840s and 1850s, when seamen came ashore for “rest and relaxation,” the downtown area from Nu‘uanu Street west to Nu‘uanu Stream was a district of “dilapidated native huts and tenements, tiny bar-rooms, coffeeshops, and run-down boarding houses, all turning to the harbor for their opportunities and income” (Daws 2006:239). However, there was some movement of wealthy Caucasian residents into the lower section of Nu‘uanu in the mid- to late nineteenth century. Malcolm Brown (1918) noted the following:

> Towards the latter part of the 1800’s, Nuuanu became the fashionable residential district, and there were many beautiful homes lining Nuuanu Ave. and the cross streets in the valley […]. The houses were big because there were many children in most families, and the house lots were large because they needed pasture space for their horses. [Brown 1918:28]

By the late 1800s, historical maps show increasingly dense land use and urbanization in the vicinity of the current project, particularly *makai* of the subject parcel (Figure 14 through Figure 17). St. Louis College, approximately 100 m west of the current project, was established in 1883 by Right Reverend Hermann, D.D. (Doctor Divinitatis), Bishop of Olba. Hermann recruited teachers from the United States and intended for the school to be a first-class preparatory, classical, and commercial school. The school initially comprised a single two-story brick building; however, due to the influx of students, additional accommodations were later constructed (Alexander 1896). The gradual expansion of the campus can be seen in Figure 15 through Figure 17.

3.1.3.2 Realignment of Nu‘uanu Stream

Another change in the late nineteenth century was the realignment of Nu‘uanu Stream. In the late nineteenth century, spurred by the deaths during the recent cholera epidemic, the government began to plan and institute public improvements to the roads, bridges, sewer systems, and streams in the western Honolulu area. Thomas Thrum (1896), editor of the *Hawaiian Almanac and Annual*, reported on these improvements in his annual retrospect of the preceding year:

> The new spirit of public improvements […] has been pushed with vigor. The relaying of larger water mains through a number of streets and completion of the new pumping plant, auxiliary to the reservoir system, was effected in time to do valuable service during the cholera period by shutting off the reservoir supply with its possible contamination, and flushing the mains with artesian water […]. The

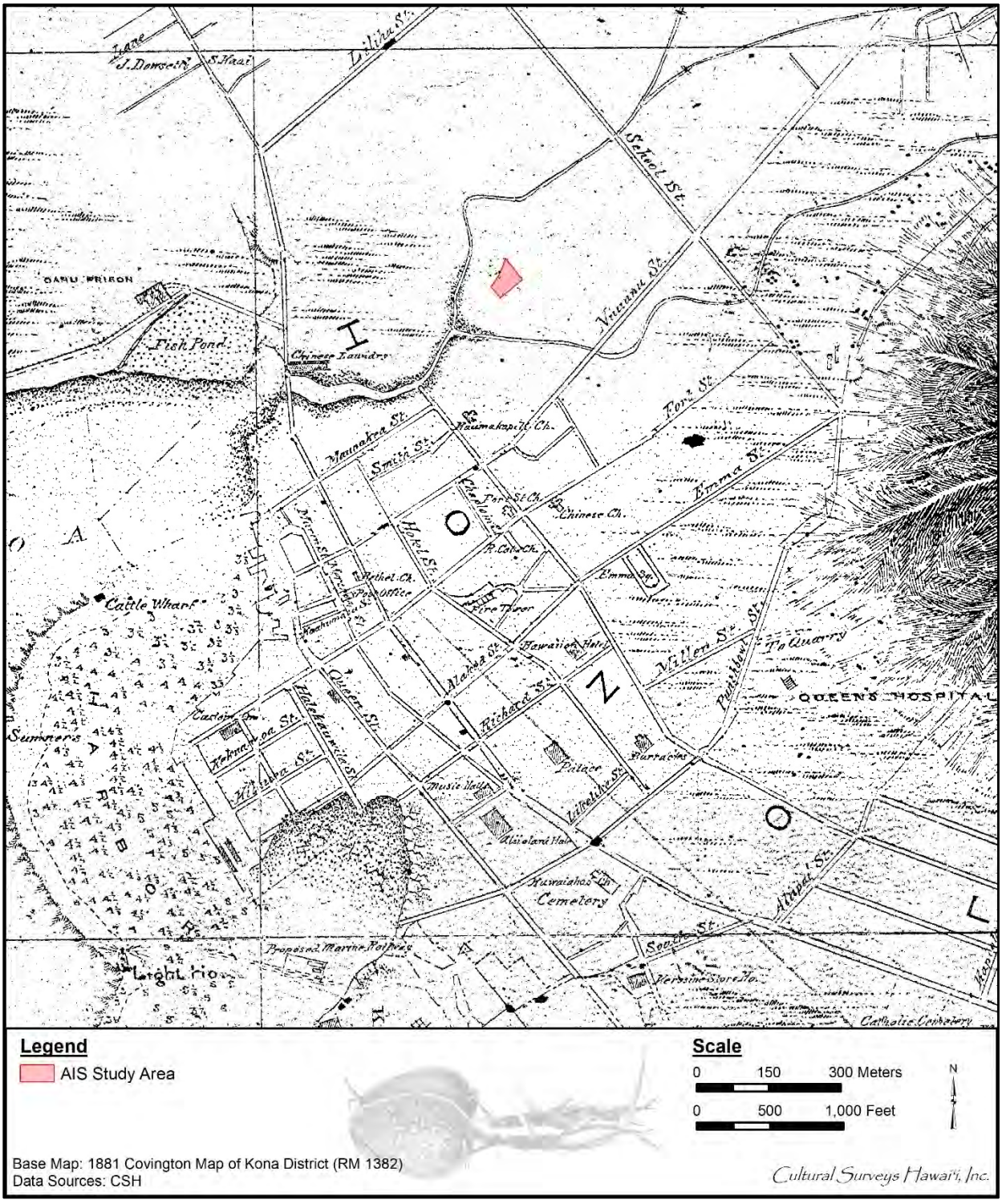

Figure 14. Portion of the 1881 Covington map of Kona District (RM 1382), showing urban development *makai* of the AIS study area

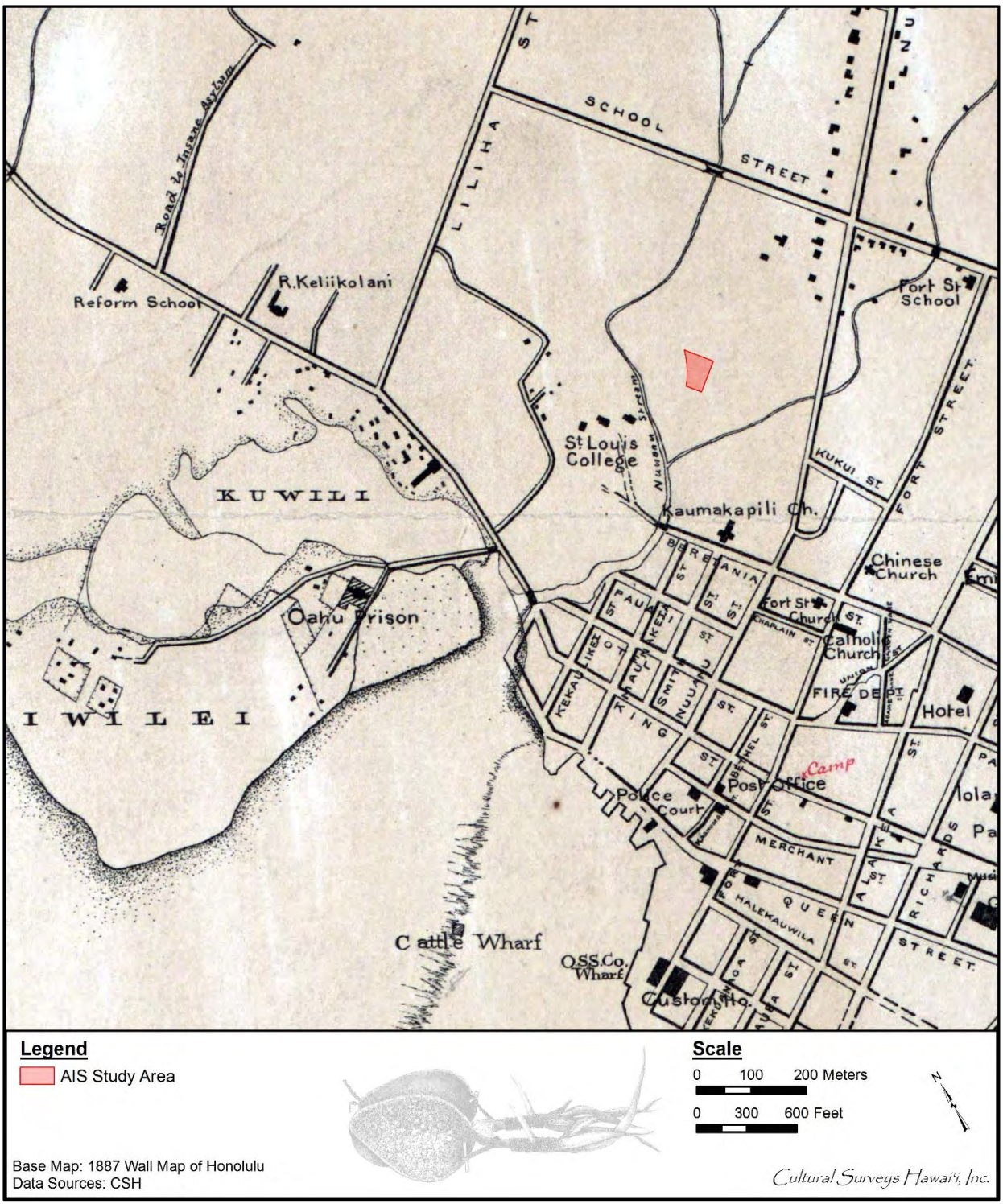

Figure 15. Portion of the 1887 Wall map of Honolulu, showing urban development *makai* of the AIS study area

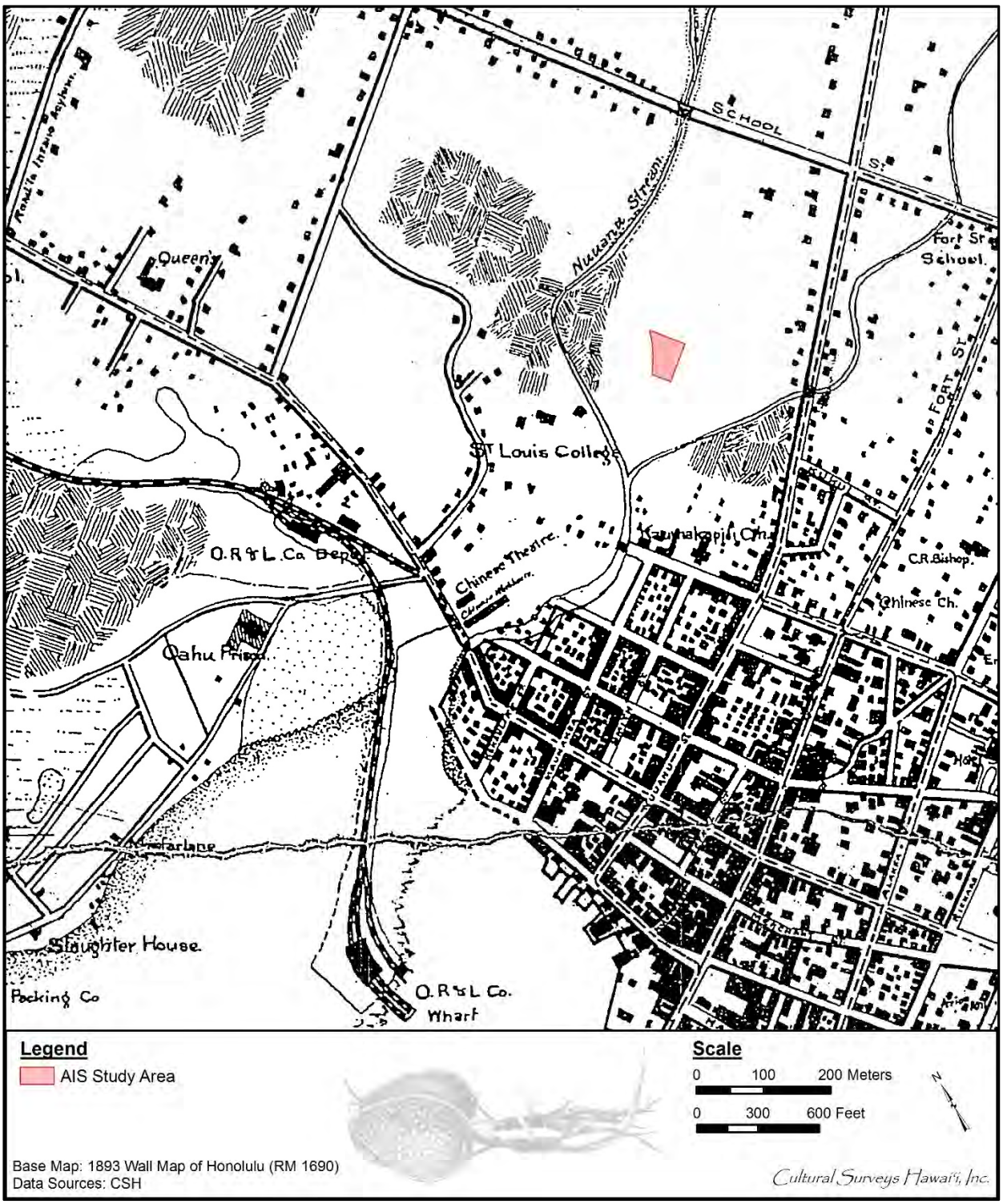

Figure 16. Portion of the 1893 Wall map of Honolulu (RM 1690), showing urban development *makai* of the AIS study area

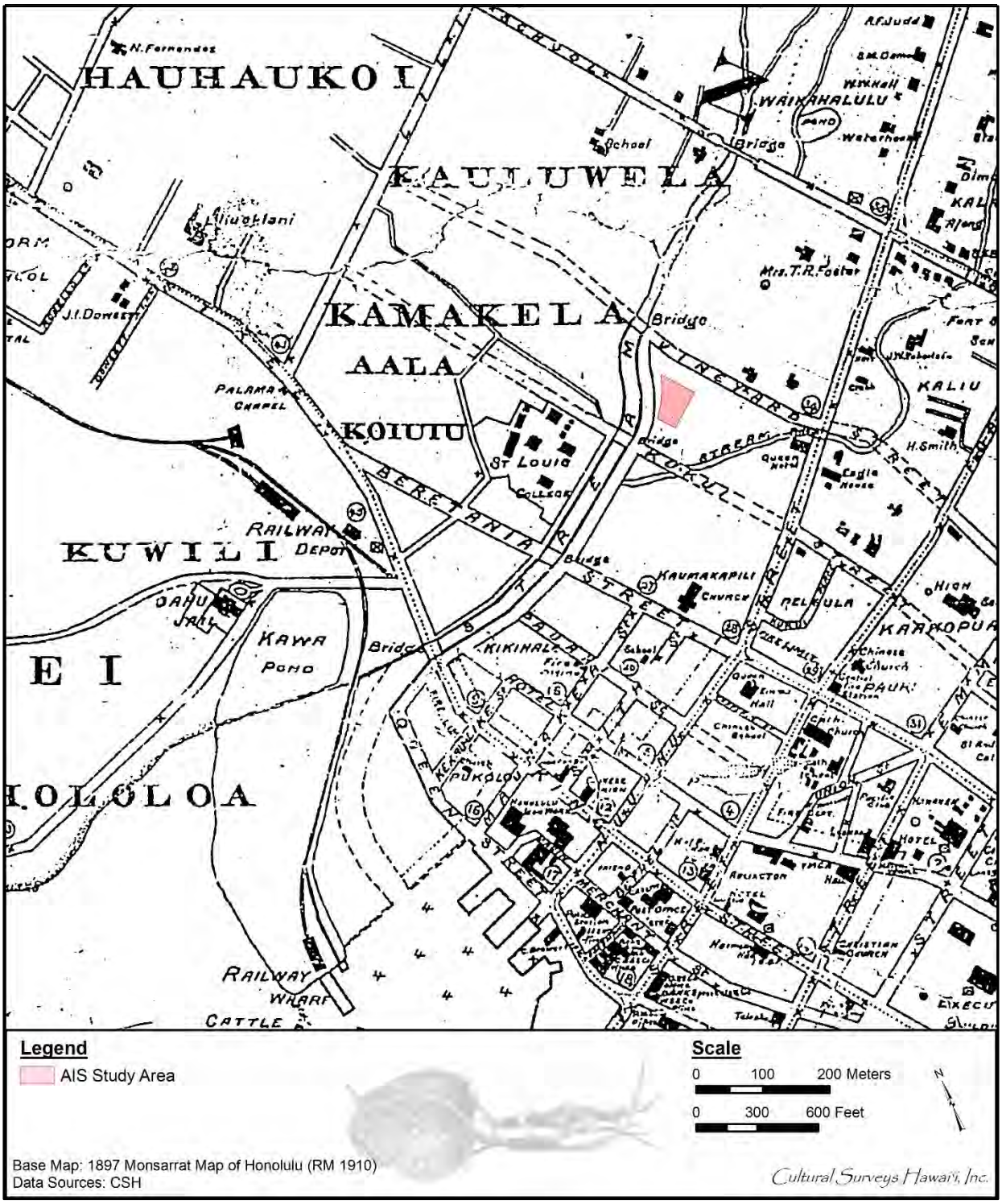

Figure 17. Portion of the 1897 Monsarrat map of Honolulu (RM 1910), showing urban development surrounding the AIS study area

> enlargement of the inner harbor by dredging, with contemplated increased wharfage facilities along the extension of Queen street toward the King street bridge has already been entered upon. The dredging serves the further beneficial purpose of filling in the low land partly occupied, till recently, by the old wash houses, on the northern side of Nuuanu stream which is to be assigned to park [Aala Park] purposes for the benefit of the residents in that part of the city and the improvement of its sanitary condition. This, with the change of the wash houses to Iwilei, and the hurried occupancy of the new market, and destruction of the old one, were imperative health measures adopted during the cholera visitation. [Thrum 1896:144]

Beginning in 1896, Nu‘uanu Stream was dredged, and the water course was changed. The stream was diverted from approximately 100 m west of the current AIS study area to nearly adjacent to it (see Figure 11 through Figure 17). A stone wall was built on both sides of the stream, and dredged material was used to create River Street, adjacent to the current AIS study area (Hurst 1992). Due to the infilling and stabilization of the Nu‘uanu stream banks, more substantial wood structures could be built, replacing the adobe cottages and dilapidated shacks of the early years.

3.1.4 1900s to Present

Honolulu in the late nineteenth century consisted of many unpaved streets and several small lanes (that no longer exist) between major roads. Bishop Street, the main road now between Fort and Alakea streets, did not exist. However, by 1919, Honolulu had wide paved streets with blocks of contiguous brick and stone stores along all major downtown roads. The first section of Bishop Street, between Fort and King streets, was built in 1900. This street quickly became the financial sector of the city, and many of the “Big Five” companies (Castle & Cooke, Alexander & Baldwin, C. Brewer & Company, American Factors [now Amfac], and Theo H. Davies & Company) built their headquarters and their banks on this street (Ames 1996:27). By 1918, the section from the harbor to King Street had been completed and paved (Ames 1996:119). In 1919, the *mauka* extension of Bishop Street from Hotel to Beretania streets began. The city condemned all the property in the way of this new thoroughfare and, in 1927, razed all of the buildings (Ames 1996:120).

3.1.4.1 Chinatown

In 1852, there were only about 71 Chinese living around Honolulu, most of whom had come to the Islands as merchants and continued to carry out this trade. That year, sugar planters began to import large numbers of Chinese “coolies” to work on their sugar plantations. Once their contracts were fulfilled, some of the workers moved to Honolulu to open their own businesses in the area that came to be known as Chinatown. The unsanitary and over-populated area alarmed the white business class, who noted that “[m]ost Chinese businesses were housed in decaying buildings on the depressed lower blocks of Nu‘uanu and Maunakea Street, and in Chinatown the womanless coolies congregated to gamble, smoke opium or simply pass the time” (Daws 2006:300). By the 1870s, a sizeable population of Chinese immigrants had settled in Honolulu, concentrated in the blocks between Nu‘uanu and Maunakea streets (see Figure 16). An 1878 census recorded 1,299 Chinese in Honolulu; the total city population numbered 14,114.

In 1899, the first case of bubonic plague was identified in Hawai‘i, in a Chinese bookkeeper named You Chong. After an examination by Dr. G.H. Herbert, who noted a high temperature and

swelling in the groin, the patient died the next night. After an autopsy, the diagnosis of bubonic plague was determined. Since the disease had broken out in the immigrants' area of Honolulu, all Chinese and Japanese were barred from leaving Honolulu for other ports. Two other cases were reported the same day, and the Board of Health laid down a strict quarantine for Chinatown (area bound by Nu‘uanu, Kukui, River, and Queen streets; just *makai* of the current project). Approximately 7,000 people, primarily Chinese and Japanese immigrants, lived and worked in this area (Iwamoto 1967:122–124). A third ethnic group who inhabited this area were Hawaiians, numbering approximately 1,000, on land their families had occupied for generations (Mohr 2005:63).

From 12 December 1899 to 31 March 1900, 71 cases of bubonic plague were reported; 61 people died, 41 of whom lived within the established Chinatown quarantine area. The Board of Health concluded they could not contain the plague and decided the best remedy was to set "sanitary fires" to infected wooden buildings. Forty-one controlled fires were set between 31 December 1899 and 13 August 1900 as follows:

> Therefore, on December 30, after careful deliberation, the Board of Health chose fire as the 'surest, most thorough, and most expeditious' method. Fire would destroy the plague germs, kill rats, cleanse the soil and open it up to the purifying influence of sun and air, and would prevent any occupancy of the premises until a safe period of time had elapsed. [Iwamoto 1967:124]

Infected patients were moved to a quarantine camp at Kaka‘ako. Some people, not necessarily patients, whose houses were burned were housed at the barracks of the Kaka‘ako Rifle Range. Their belongings were stored in the cellars of Kaumakapili Church, approximately 200 m south of the current project (see Figure 14 through Figure 17).

On 20 January 1900, a fire set between Kaumakapili Church and Nu‘uanu Avenue quickly got out of control. Rising winds swept burning embers to the roof of the church; the fire then jumped to several other blocks and then to the wharfs:

> By 1:30 p.m. the fire began making its way from Beretania Street along Achi Lane toward Kukui Street. People feared that the *mauka* section of the city would be destroyed. Chinatown refugees rushed back to save belongings, but were driven back by fire and smoke; they formed a seething mob near the bridge and Kukui Street […]. The Chinese consul and vice consul also circulated among the people and tried to pacify them, since at this time the Chinese believed that the Board of Heath had purposely burned their homes. [Iwamoto 1967:130–131]

No one was killed in the fire, but Chinatown was destroyed. Many people were homeless and bereft of all belongings, which were lost when Kaumakapili Church burned to the ground. No additional patients were identified with the disease in April 1900, and the Hawaiian Islands were declared free of the plague (Iwamoto 1967:125, 129).

The Chinatown Historic District (SIHP # -9986) is approximately 200 m *makai* (southwest) of the current project. The buildings are typically two or three stories, with older buildings made of brick, wood, or cut stone, and newer buildings made of concrete or steel. Despite the relatively small population of Chinese currently living in Chinatown, this area still serves as the principle

center for the business and social life of the Chinese community of the island (Historic Hawai‘i Foundation 2015-2016).

3.1.4.2 Foster Botanical Garden

Foster Botanical Garden comprises 21.02 acres of land adjoining Nu‘uanu Stream in downtown Honolulu. The garden can be divided into two sections. The southern section, called Foster Garden, is 13.55 acres. The northern section, called Lili‘uokalani Garden, is 7.475 acres. Although there are no major architectural features within the garden, the historic landscaping, which includes a large number of historic trees, makes this area significant to the history of Hawai‘i (Follmer 1988).

In 1855, William Hillebrand, a German physician and botanist, settled on approximately 6 acres of purchased and leased land west of Nu‘uanu Avenue and east of Nu‘uanu Stream. Hillebrand propagated trees and cultivated a botanical garden there until he returned to Germany some 20 years later. In 1880, ship owner Thomas Foster and his part-Hawaiian wife, Mary, purchased the property. Mary Foster expanded the existing garden by increasing the acreage of the property and planting additional trees. In 1919, she leased 2 acres to the Hawaiian Sugar Planters' Association for an experiment station (Follmer 1988).

In 1884, Princess (later Queen) Lili‘uokalani purchased the land that came to be known as Lili‘uokalani Garden from the estate of Queen Kalama, wife of Kamehameha III. During most of her adult life, Lili‘uokalani kept a small house on the property, just above the falls. In 1912, five years before her death, the newly established Lili‘uokalani Trust transferred the Queen's land to the Civic Federation of Honolulu as a park and recreation ground. The Civic Federation then acquired additional lots in the area and, in 1916, transferred 2.75 acres of land to the City of Honolulu. The City subsequently added another 4.75 acres to the garden (Follmer 1988).

In 1930, Mary Foster bequested her home and garden, comprising 5 acres, to the City of Honolulu; an additional 8.5 acres was subsequently added. Foster Botanical Garden (SIHP # -1389) is the core of a botanical garden system that collectively contains the most diverse tropical plant collection in the United States (Follmer 1988). It is approximately 50 m *mauka* (northeast) of the current project, just across Vineyard Boulevard (Figure 28 through Figure 31).

3.1.4.3 Development within the Current AIS Study Area

A review of twentieth century historical maps and aerial photographs (Figure 18 through Figure 31) indicates urban development within the AIS study area by 1906. At that time, a tenement was at the center of the AIS study area, while several dwellings and stores were along the northwestern boundary; a kitchen facility was in between the tenement and the stores (see Figure 18 and Figure 20). The stores included a Plumbing and Tin Shop, a restaurant, and a Mattress Factory (see Figure 20 and Figure 23). By 1950, additional dwellings were within the eastern and southeastern portions of the AIS study area, and a parking area for automobiles was at the south corner (see Figure 27). The stores along the northwestern boundary, although in the same location, were described as having concrete floors by that time; hence, these buildings may have been remodeled or rebuilt between 1927 and 1950.

The John R. Gilliland Sr. Building was constructed within the AIS study area in 1958; it is visible on 1968 and 1982 aerial photographs (see Figure 29 and Figure 31). Fung Associates (Hibbard and Chiu 2016) assessed this two-story commercial building as eligible for listing on the National Register under Criterion C. They assert that the building is architecturally significant as

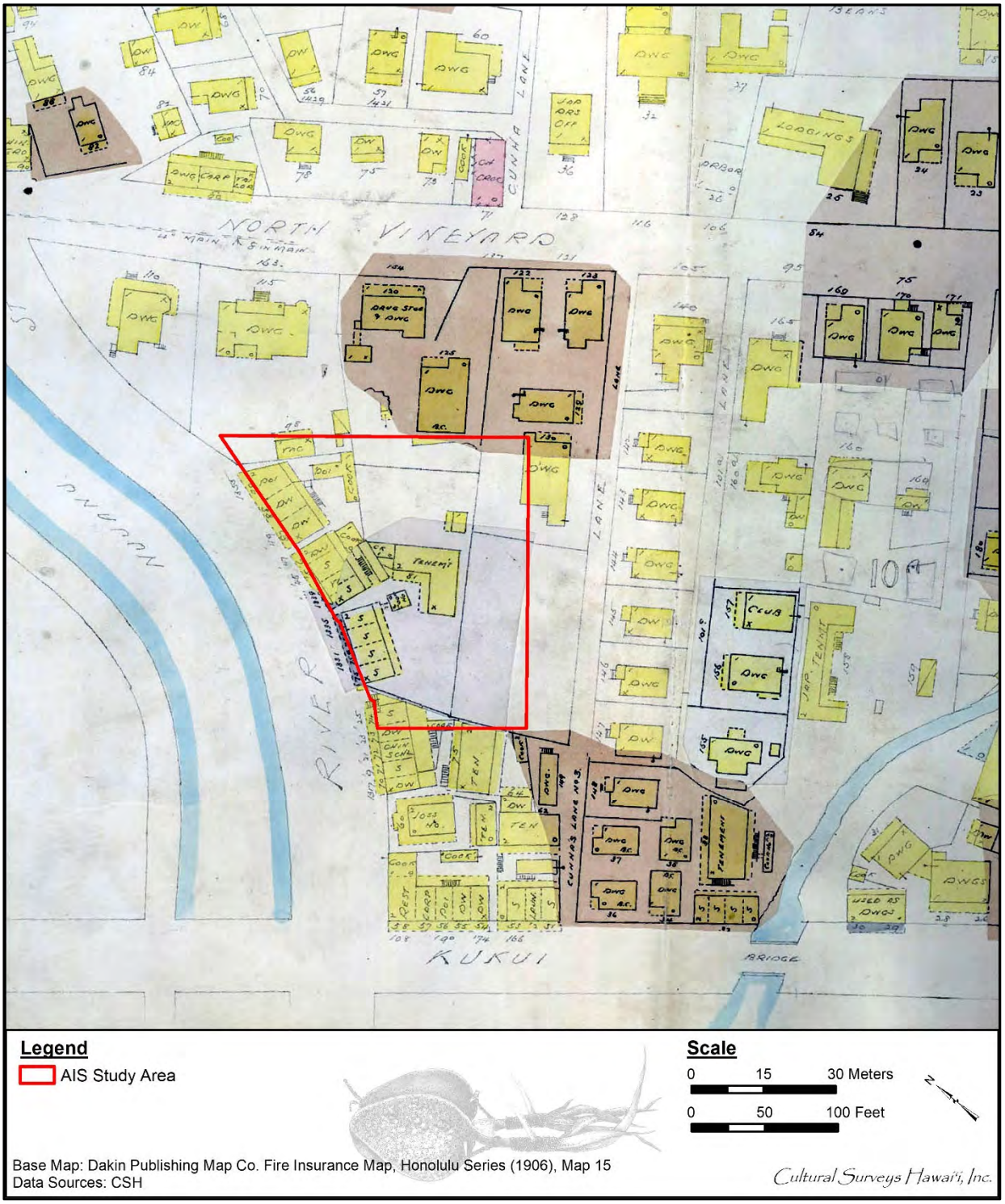

Figure 18. 1906 Dakin Publishing Map Company fire insurance map, Honolulu Series, Map 15, showing the AIS study area

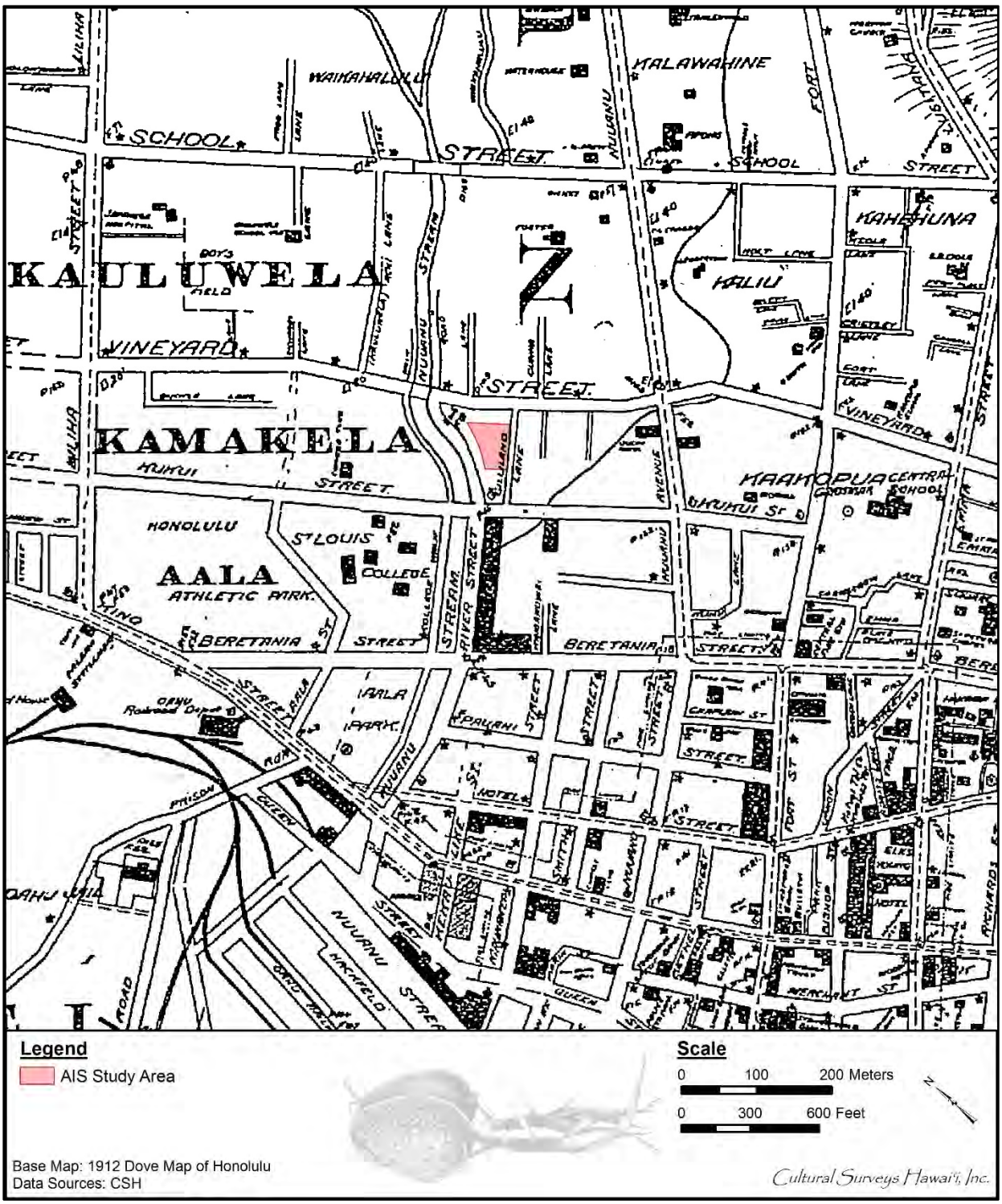

Figure 19. Portion of the 1912 Dove map of Honolulu, showing the AIS study area

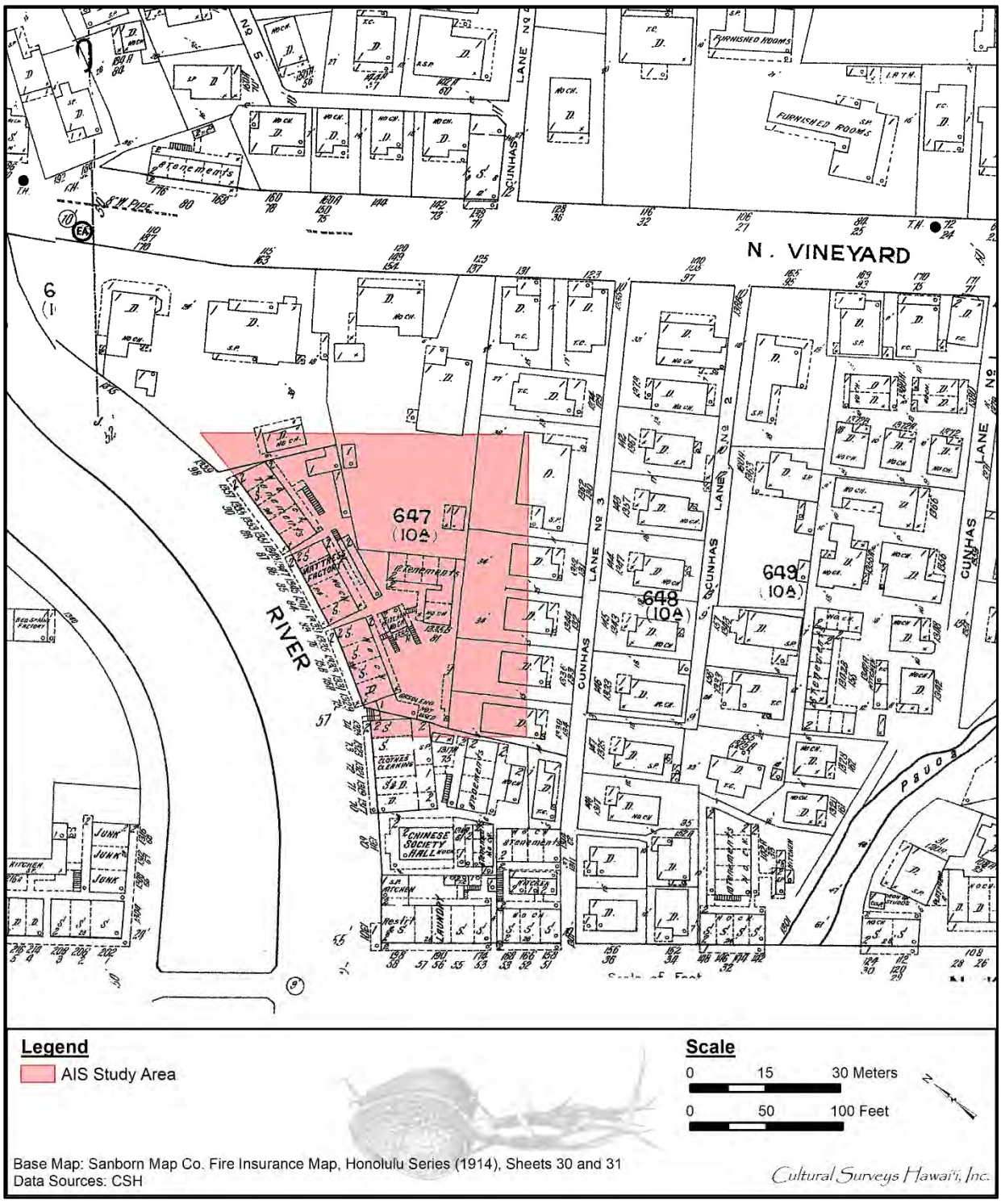

Figure 20. 1914 Sanborn Map Company fire insurance map, Honolulu Series, Sheets 30 and 31, showing the AIS study area

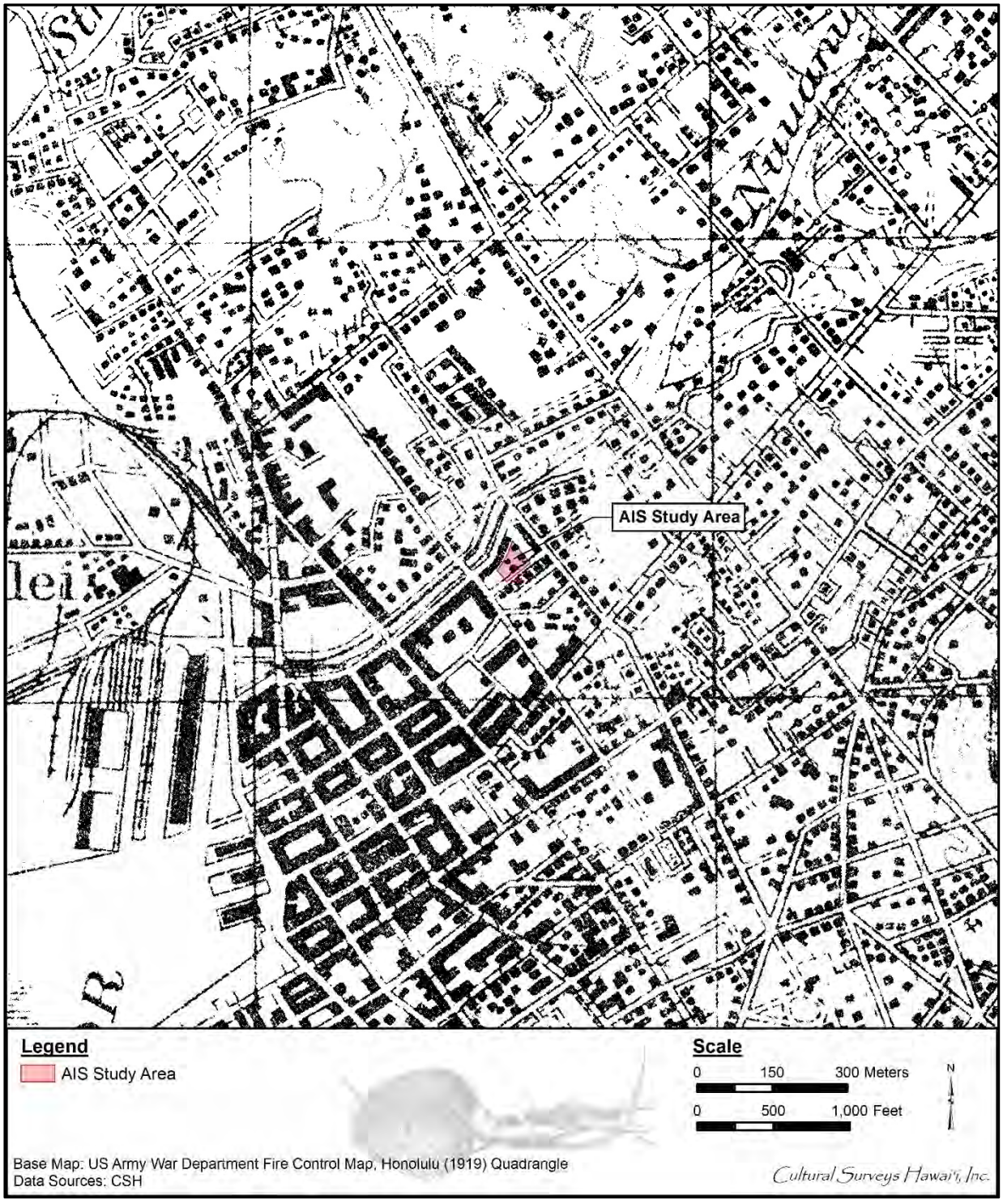

Figure 21. Portion of the 1919 U.S. Army War Department fire control map, Honolulu quadrangle, showing the AIS study area

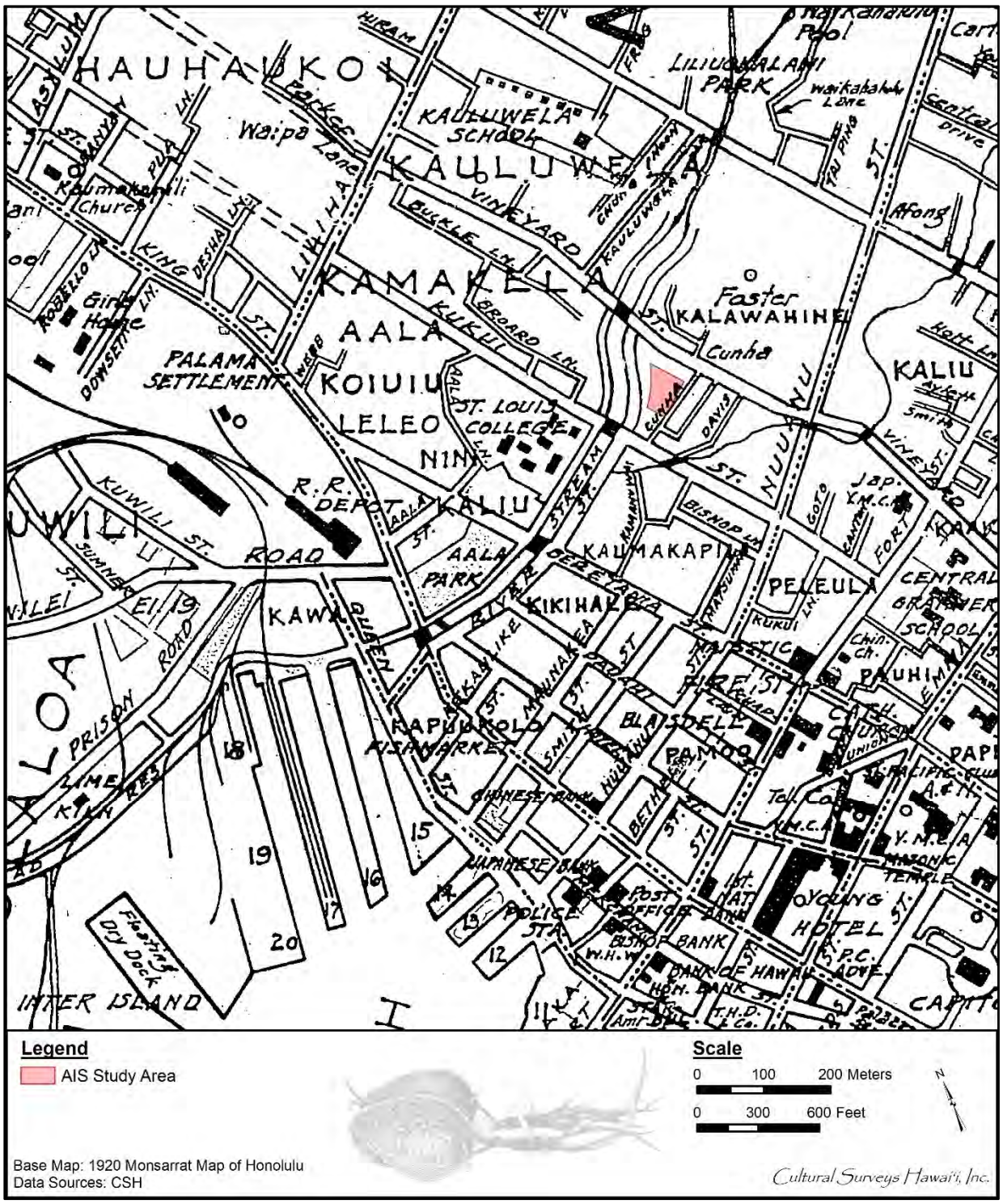

Figure 22. Portion of the 1920 Monsarrat map of Honolulu, showing the AIS study area

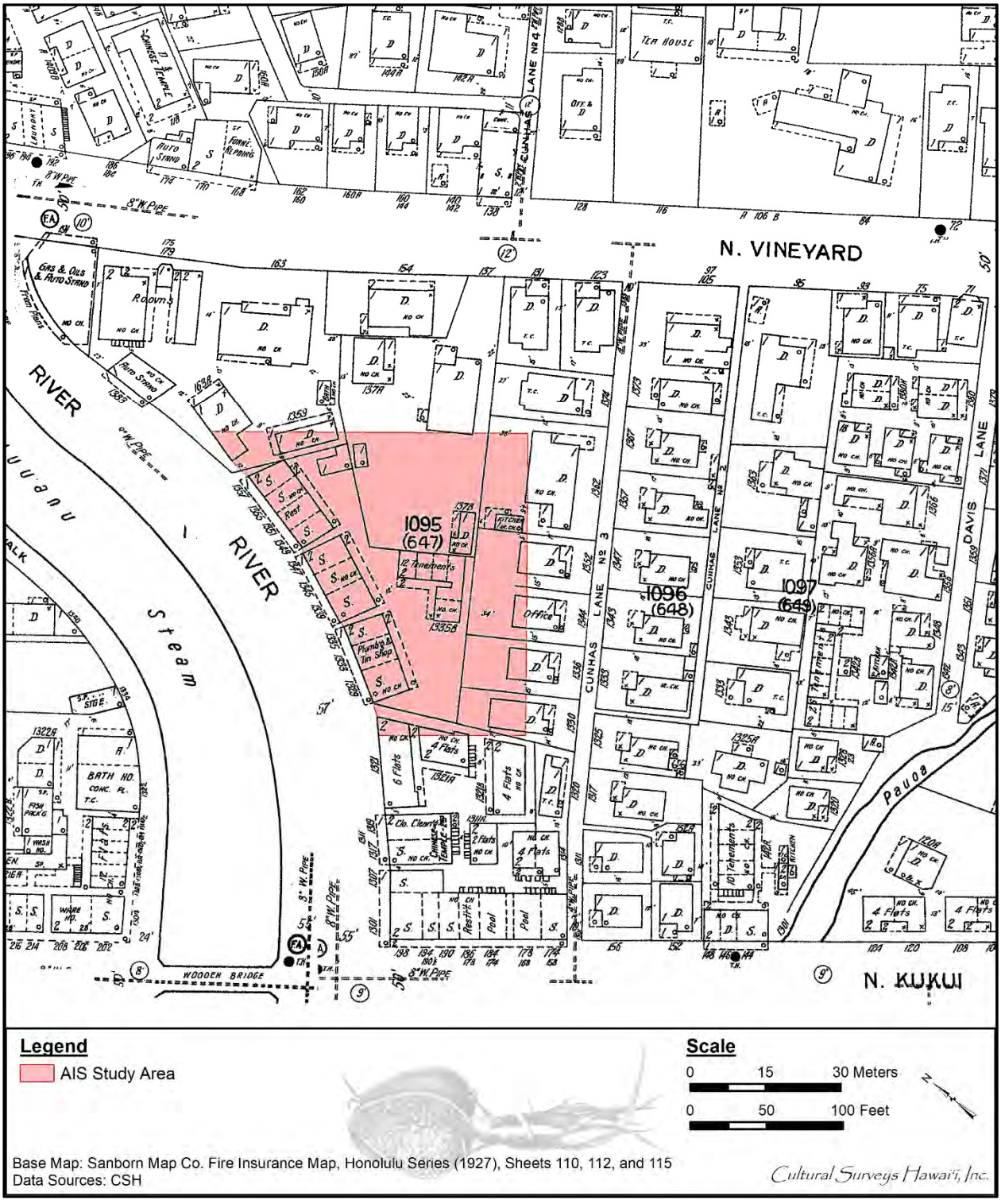

Figure 23. 1927 Sanborn Map Company fire insurance map, Honolulu Series, Sheets 110, 112, and 115, showing the AIS study area

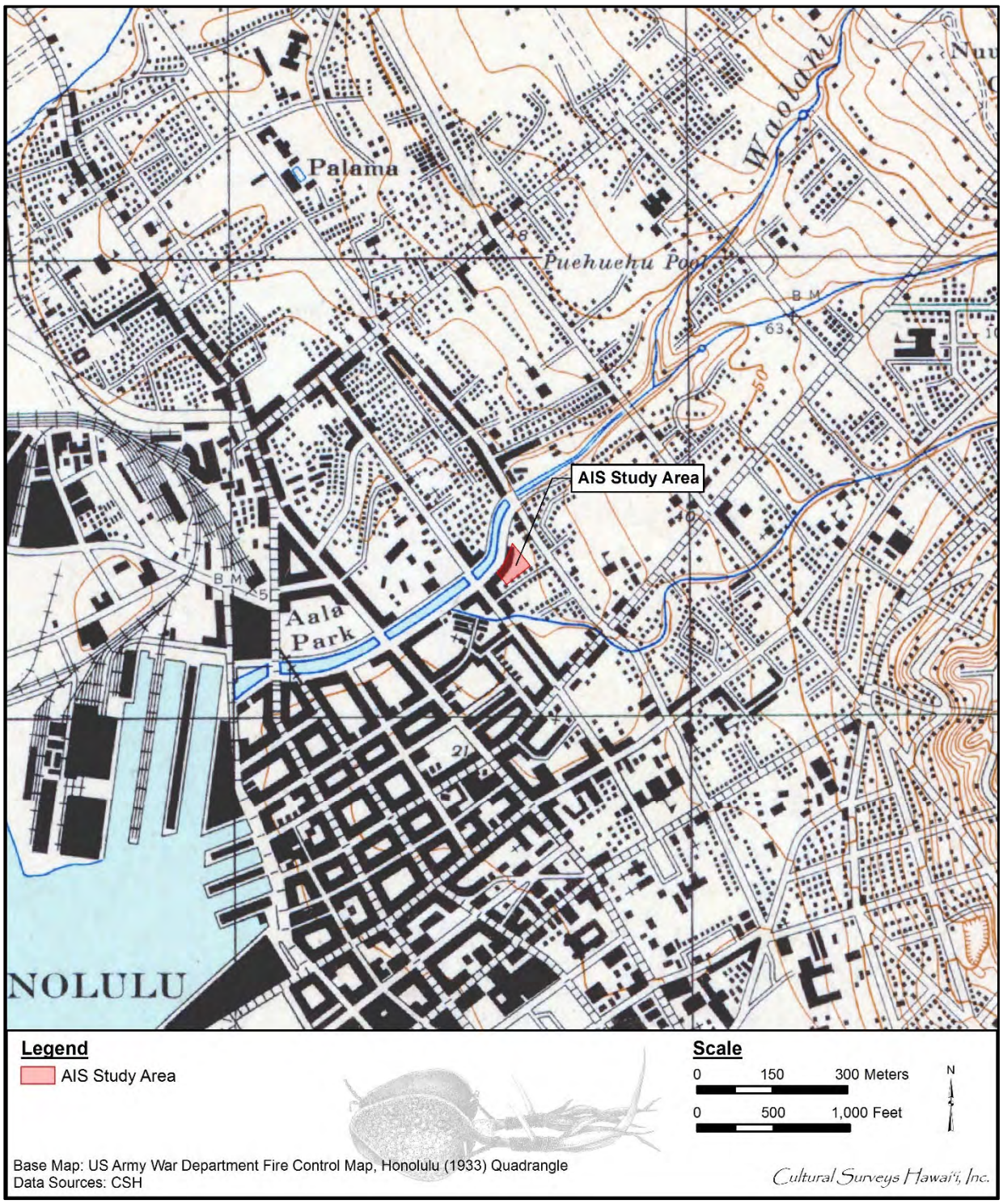

Figure 24. Portion of the 1933 U.S. Army War Department fire control map, Honolulu quadrangle, showing the AIS study area

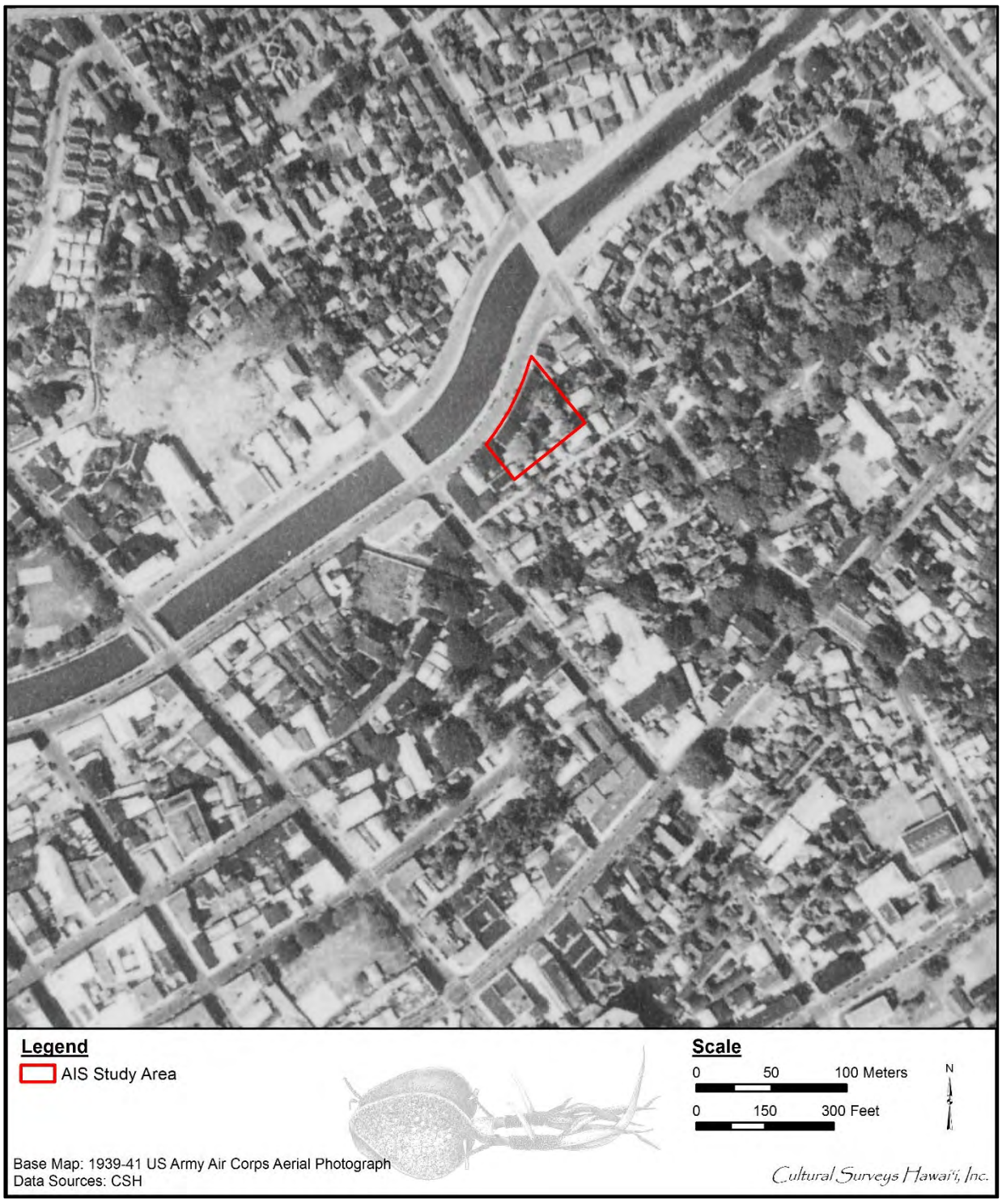

Figure 25. 1939-41 U.S. Army Air Corps aerial photograph, showing the AIS study area



Figure 26. Portion of the 1943 U.S. Army War Department terrain map, Honolulu quadrangle, showing the AIS study area

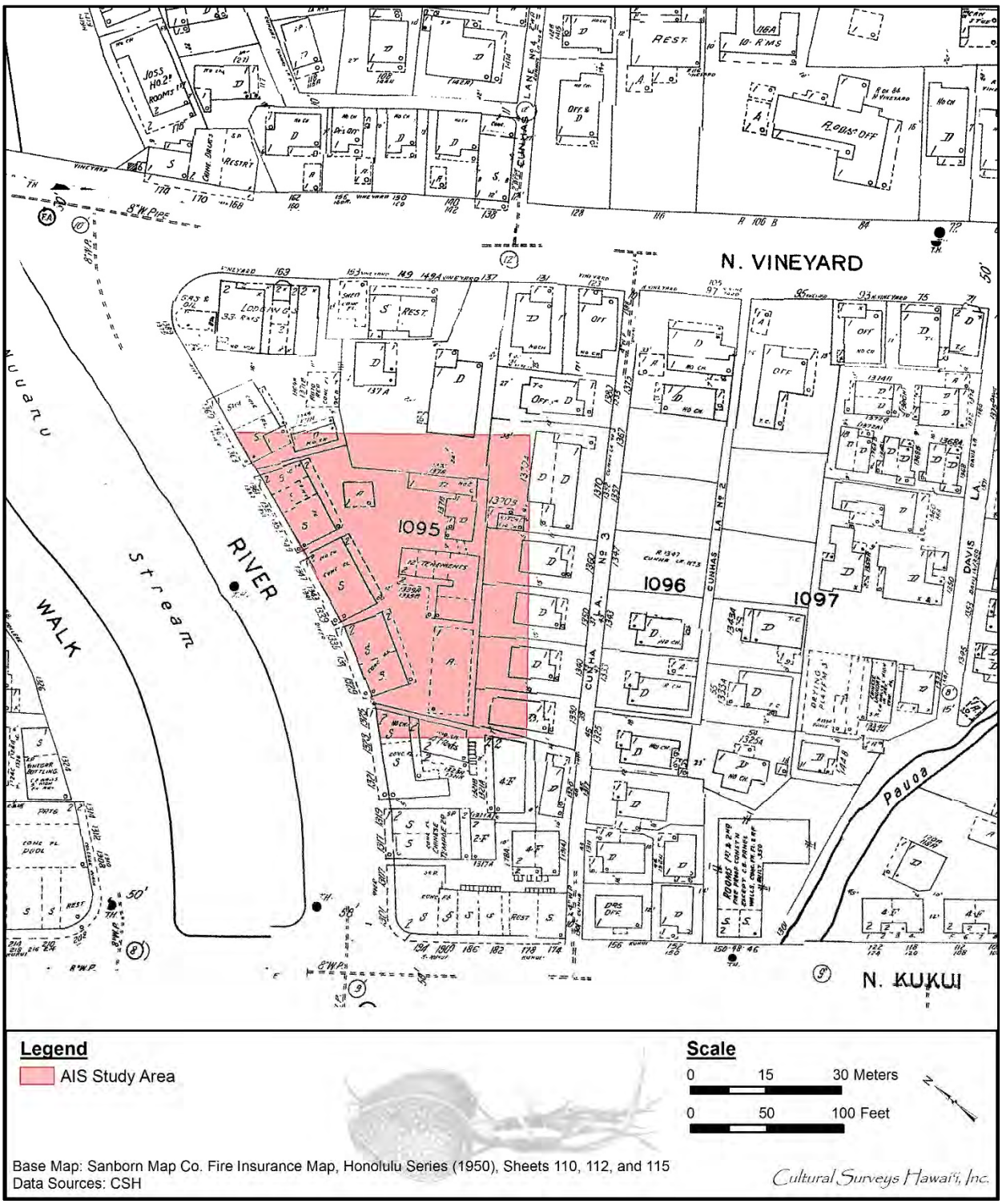

Figure 27. 1950 Sanborn Map Company fire insurance map, Honolulu Series, Sheets 110, 112, and 115, showing the AIS study area

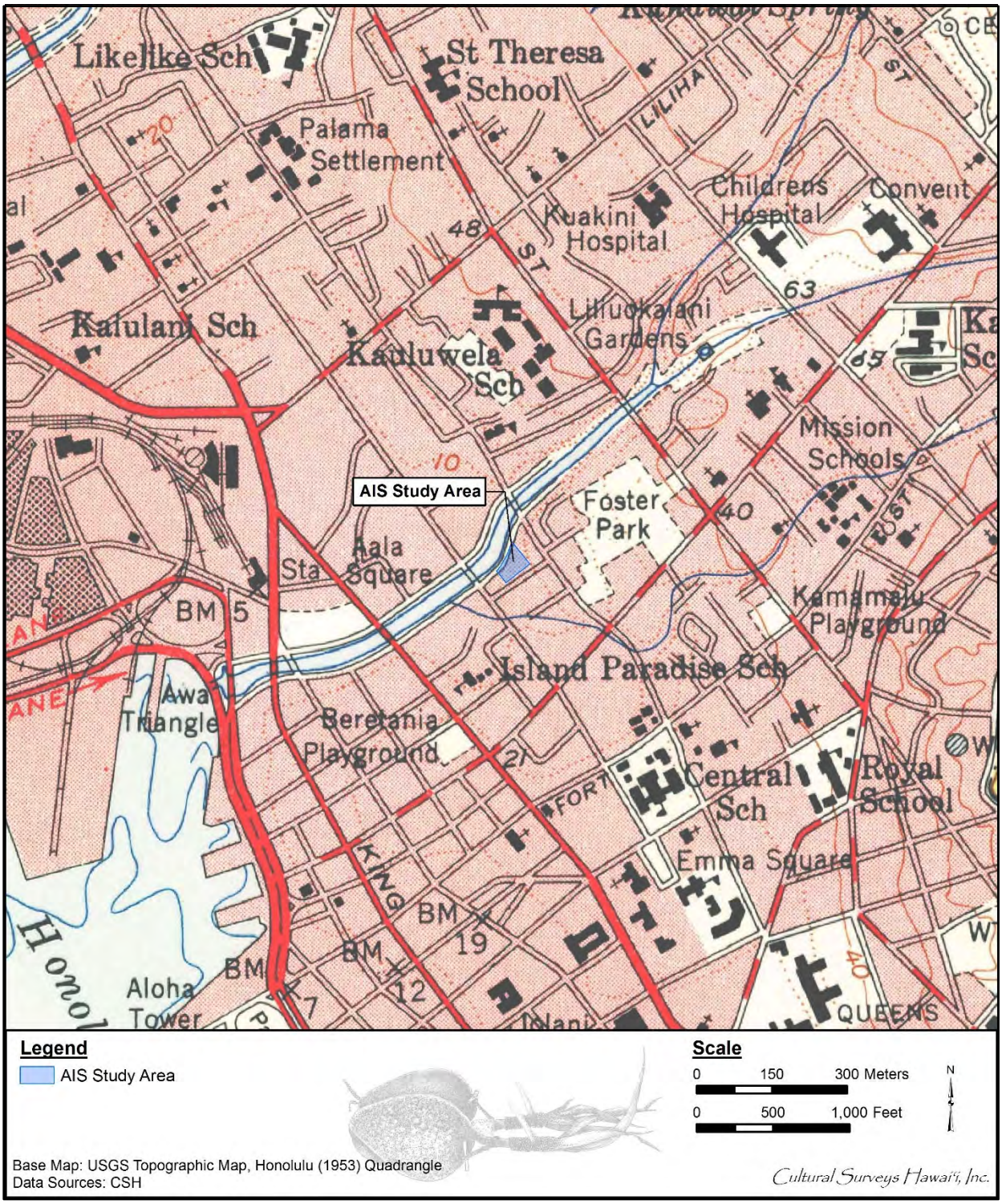

Figure 28. Portion of the 1953 Honolulu USGS topographic quadrangle, showing the AIS study area

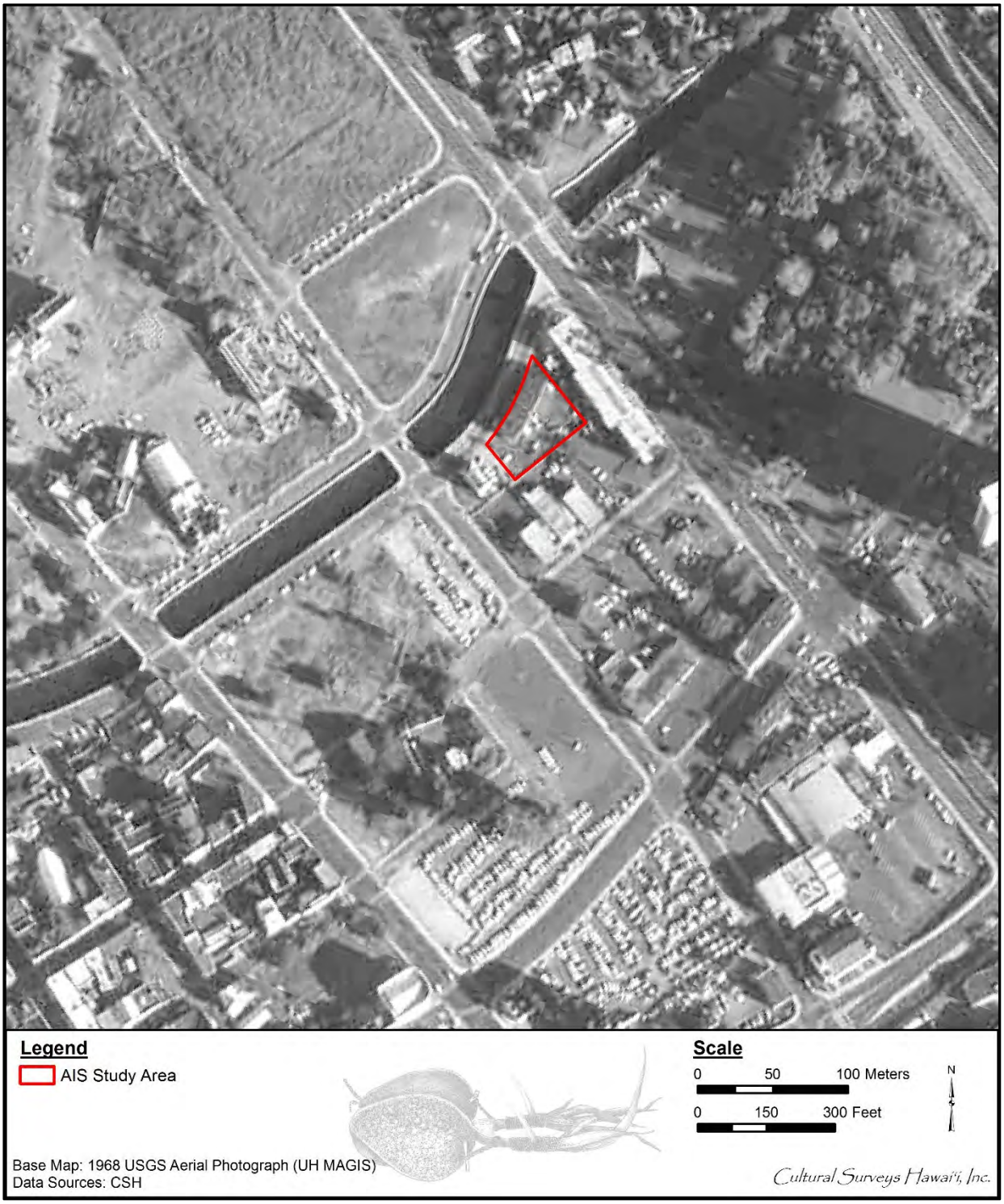

Figure 29. 1968 USGS aerial photograph (UH MAGIS), showing the AIS study area

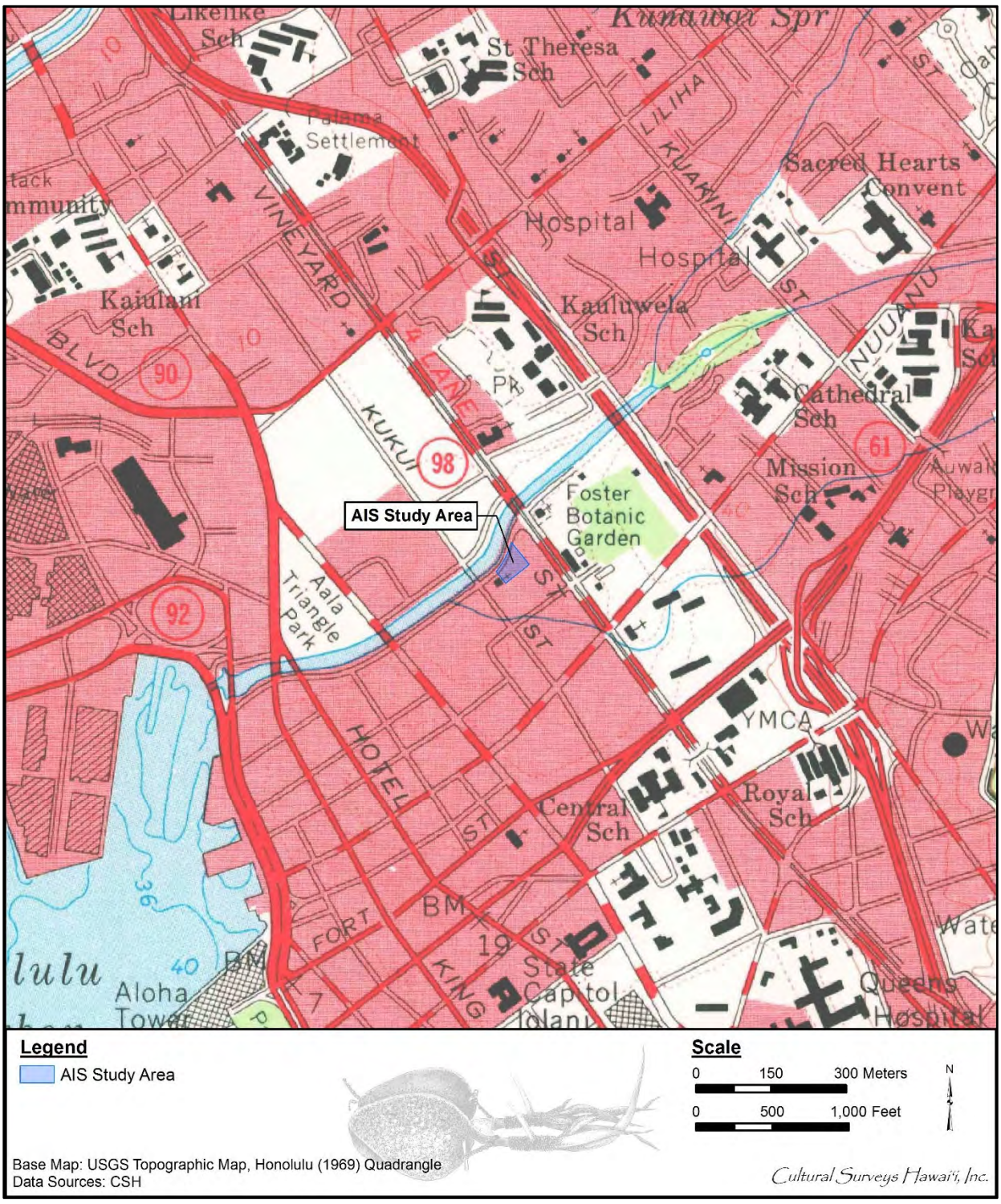

Figure 30. Portion of the 1969 Honolulu USGS topographic quadrangle, showing the AIS study area

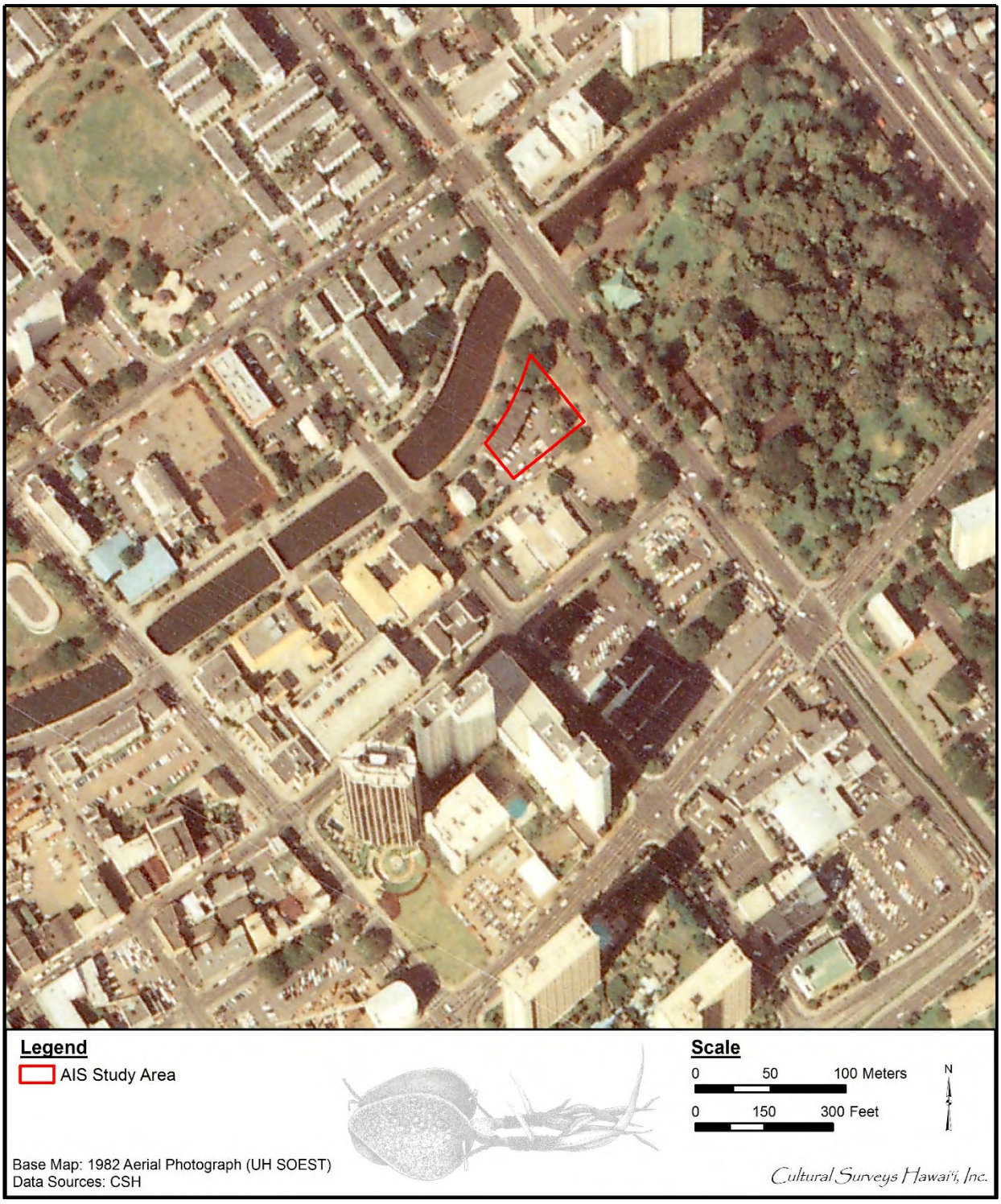

Figure 31. 1982 aerial photograph (UH SOEST), showing the AIS study area



Figure 32. The John R. Gilliland Sr. Building within the AIS study area (from Hibbard and Chiu 2016)

a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s, and that it is typical of its period in design, materials, workmanship, and construction methods.

The John R. Gilliland Sr. Building is also a good example of the architectural work of Kenneth Sato. Sato was born in Kahuku on O‘ahu and received a civil engineering degree from the University of Hawai‘i. He owned the Kewalo Steel Company and designed a number of churches, apartments, and low-rise commercial buildings. He also worked on a number of public schools and bridges for the Territory of Hawaii. Other works by Sato include the Miyamoto buildings at 1331 Nu‘uanu Avenue and the Door of Faith Church on Young Street in Honolulu (Hibbard and Chiu 2016).

As of the 2016 study by Fung Associates, only two spaces on the ground floor of the building were occupied: Uptown Café and Hanagasa Inn, with both restaurants serving local/Asian food. Chikara Mochi formerly occupied the space south of Hanagasa Inn. Hibbard and Chiu (2016) also noted three Royal Ponciana trees (*Delonix regia*) lining the sidewalk fronting the building (i.e., the River Street southeast sidewalk) (see Figure 32), and the asphalt-paved parking lot occupying the rear portion of the property. According to Hibbard and Chiu (2016), the rear parking lot was improved and enclosed in 1966 by a concrete masonry unit (CMU) retaining wall.

3.2 **Previous Archaeological Research**

No previous archaeological studies have been conducted within or adjacent to the current AIS study area. Below is a discussion of previous studies in the vicinity, which are depicted on Figure 33 and summarized in Table 1. Historic properties previously identified in the vicinity are depicted on Figure 34.

3.2.1 Erkelens et al. 1994; Goodwin 1997; Goodwin and Allen 2005

In 1994, IARII conducted an AIS for the Kekaulike Revitalization project, Diamond Head Block in the Chinatown Historic District (SIHP # 50-80-14-9986) (Goodwin 1997). The survey identified more than 100 features, designated as SIHP # -4875. At least one of the features was assessed as pre-Contact, while others were determined to be from the first approximately 70 years following Western Contact. Other residential and commercial features dated to the first 50 years of Chinese immigration, along with several from the twentieth century.

The survey also identified human skeletal remains, which were part of a secondary burial containing the incomplete remains of three individuals (Erkelens et al. 1994). Represented in these remains were a male aged 24-30, a female aged 15-18, and a female aged 3-4. These individuals were likely moved from their original context during construction of a post-1900 water line; hence, the original internment may have occurred during the nineteenth century. Erkelens et al. (1994) hypothesize that the individuals may have been victims of the 1860 Chinatown fire.

IARII subsequently conducted data recovery from 2 August to 30 September and 7 October 1994 (Goodwin and Allen 2005). Staff archaeologists recovered artifacts and charcoal that indicated the area was in use as early as the thirteenth century, with heavy occupation occurring from the early to mid-nineteenth century. Four compounds and a blacksmith’s shop, dating partly to the early nineteenth century, were excavated. The 8,552 collected artifacts were associated with a variety of ethnic groups (Hawaiian, Euro-American, and Asian). They included porcelains, earthenware, stoneware, lithics, fishhooks, pendants, a *poi* (taro corm paste) pounder, metal, coins, beads, bottles, glass shards, bone, and shell. Identified features included post molds, living floors, firepits, refuse pits, and fence lines. The large amount of faunal bone recovered included species present in the pre-Contact period (pig, dog, turtle, chicken, shark, fish, and Pacific rat), as well as post-Contact introductions (cow, horse, goat, sheep, domestic cat, and the Norway/roof rat).

Human fetal remains were found in a refuse deposit (Feature 338) during data recovery. Osteological analysis determined the fetus was carried into the second or beginning of the third trimester of pregnancy before a premature birth or miscarriage; there was no evidence of deliberate burial (Erkelens et al. 1994). Artifacts within Feature 338 suggest it dates to 1850-1880.

3.2.2 Kennedy et al. 1994; Riley et al. 1995

Kennedy et al. (1994) conducted an AIS for the Kekaulike Revitalization project, ‘Ewa Block, bounded by King, River, Hotel, and Kekaulike streets (Kennedy et al. 1994). Investigations consisted of nine backhoe trenches and three hand-excavated test units. Two historic properties were identified: SIHP # -4587, a small pond, and SIHP # -4588, a multi-component historic property consisting of 53 features of various functions spanning the pre- to post-Contact periods. The features included 20 post holes, three pits of indeterminate function, three fire pits, three cut stone walls, seven crushed coral foundations, a burn layer (possibly from the 1900 or 1902

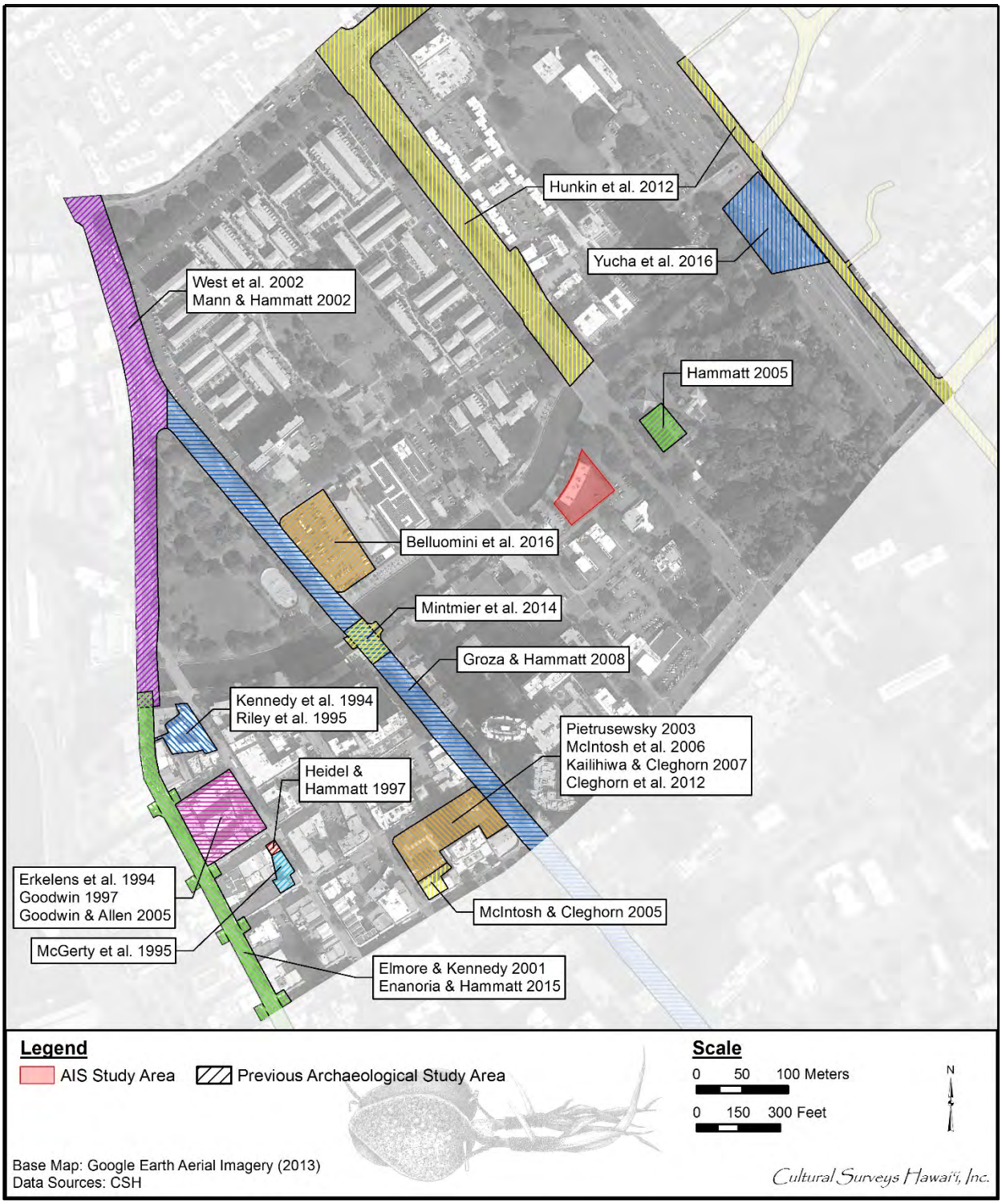

Figure 33. Previous archaeological studies in the vicinity of the AIS study area (Google Earth 2013)

Table 1. Previous archaeological studies in the vicinity of the AIS study area

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Erkelens et al. 1994	Burial report	Kekaulike revitalization, Diamond Head (DH) block	Documented four sets of human skeletal remains associated with SIHP # -4875
Kennedy et al. 1994	Archaeological inventory survey	Kekaulike revitalization, ‘Ewa block	Identified SIHP # -4587, a small fishpond, and SIHP # -4588, a multi-component historic property consisting of 53 features dating from pre-Contact period to twentieth century, including three human burials
McGerty et al. 1995	Archaeological assessment (no finds AIS)	Chinatown Community Service Center	Background research of project area and immediate surroundings indicated pre-Contact agriculture and habitation and urban development associated with Chinatown; AIS recommended
Riley et al. 1995	Data recovery	Kekaulike revitalization, ‘Ewa block	Documented 55 features spanning early pre-Contact period through twentieth century; C14 dating of SIHP # -4587, fishpond, yielded an early tenth century date; dating of SIHP # -4588, coral reef stone platform, yielded an eleventh century date
Goodwin 1997	Archaeological inventory survey	Kekaulike revitalization, DH block	Identified SIHP # -4875, consisting of over 100 features and six culturally enriched strata; majority of features interpreted as Native Hawaiian from early post-Contact period but also included historical and modern features and structural remnants; documented a single burial
Heidel and Hammatt 1997	Archaeological testing	1,700-sq-ft lot in Chinatown	No historic properties identified in four test excavations
Elmore and Kennedy 2001	Archaeological monitoring	King St, between River St and Bethel St	Identified one in situ, flexed human burial (SIHP # -5781) between Maunakea St and Smith St

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Mann and Hammatt 2002	Archaeological monitoring	King St rehabilitation	Identified one incomplete, previously disturbed, human burial (SIHP # -6317) near intersection of King St and Punchbowl St and a pit feature containing non-human skeletal remains at corner of King St and Richards St (no SIHP # assigned)
West et al. 2002	Archaeological monitoring	King St, between Liliha St and River St	Identified Honolulu Rapid Transit & Land Company (HRT&L) trolley (SIHP # -5942) and associated artifacts
Pietrusewsky 2003 (in Kailihiwa and Cleghorn 2007)	Osteological analysis	Smith-Beretania parking lot	Identified remains of two children, five young adults, and 16 adults of Asian, Caucasian, and/or Polynesian descent (SIHP # -6772)
Goodwin and Allen 2005	Data recovery	Kekaulike revitalization, DH block	Excavated four house compounds and a blacksmith’s shop (SIHP # -4875); C14 dating indicated area in use as early as thirteenth century; four human burials documented
Hammatt 2005	Burial report	Foster Botanical Gardens (180 N Vineyard Blvd)	Human bone fragments recovered from backdirt and reinterred on botanical garden grounds (SIHP # -1389)
McIntosh and Cleghorn 2005	Archaeological inventory survey	Pearl St. One Bldg	Identified SIHP # -6691, a four-component historic property composed of two disturbed sets of human remains, two historical trash pits, charred remains of Chinatown structure destroyed in 1900 Chinatown fire, and remnant of historic building that partially collapsed in 2001
McIntosh et al. 2006	Archaeological inventory survey	Smith-Beretania parking lot	Documented SIHP # -6772, which includes trash pits, a cooking feature, building structural foundations, traditional and historic artifacts, and abundant midden deposits
Kailihiwa and Cleghorn 2007	Archaeological monitoring	Smith-Beretania parking lot	Documented SIHP # -6772, including 23 sets of human remains
Groza and Hammatt 2008	Archaeological monitoring	Beretania St between King St and Alapa‘i St	No historic properties identified, likely due to prior disturbance

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Cleghorn et al. 2012	Data recovery	Smith-Beretania parking lot	Documented SIHP # -6772, consisting of pits, privies, and other features with traditional Hawaiian artifacts and two human burials
Hunkin et al. 2012	Archaeological monitoring	Kalihi/Nu‘uanu sewer project	Identified an isolated human bone fragment in fill (no SIHP # assigned)
Mintmier et al. 2014	Archaeological monitoring	Intersection of Beretania St and River St	No historic properties identified
Enanoria and Hammatt 2015	Archaeological monitoring	King St between Bethel St and River St	No historic properties identified
Belluomini et al. 2016	Archaeological inventory survey	American Savings Bank Campus (300 N Beretania St)	Identified SIHP # -7933, human remains and associated features; SIHP # -7934, LCA boundary wall remnants; and SIHP # -7935, building foundation remnants
Yucha et al. 2016	Archaeological monitoring	H-1 from Middle St to Ward Ave	No historic properties identified

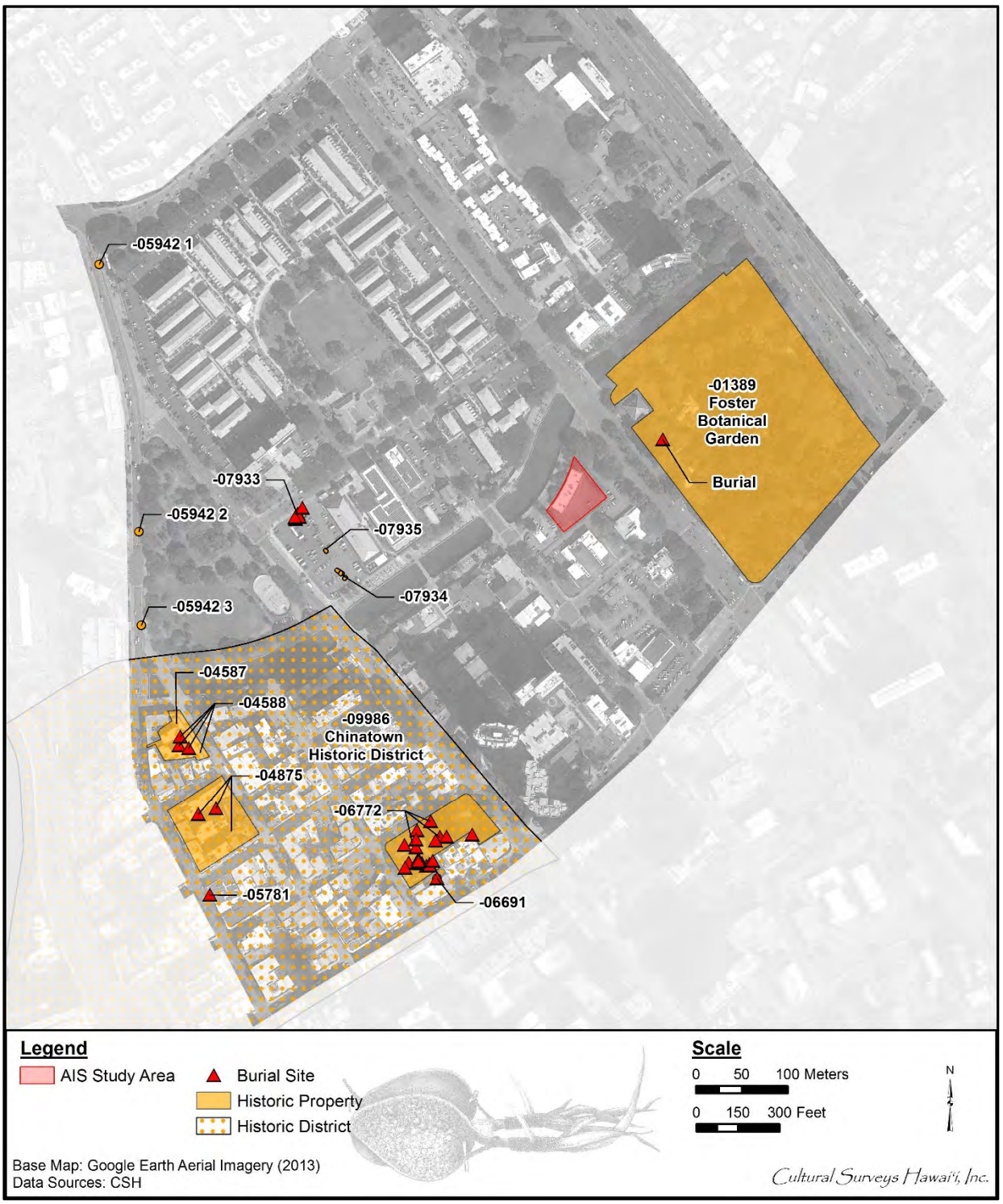

Figure 34. Aerial photograph with overlay of historic properties, historic districts, and human burials in the vicinity of the AIS study area

Chinatown fires), historic trash pits, and three human burials (two likely historical and one likely traditional Hawaiian) (Kennedy et al. 1994).

Subsequently, Riley et al. (1995) conducted data recovery for SIHP #s -4587 and -4588. Sixty-four test units were excavated, and 55 features documented; these inlcuded three additional human burials. Radiocarbon dating of charcoal from SIHP # -4587 yielded a much earlier date than expected, within the tenth century. As the dated charcoal was obtained from behind the pond wall, the radiocarbon date was believed to represent the construction or renovation of the pond. Investigations indicated use of the pond continued up to the 1860s, when it was in-filled.

Analysis of the documented features of SIHP # -4588 indicated an extensive timeline of occupation of the study area. Features ranged from the tenth and eleventh centuries (as evidenced by the pond and a coral reef stone platform with the remnants of a possible human burial), to the seventeenth and eighteenth centuries (as evidenced by a hard-packed living surface with associated traditional Hawaiian artifacts), through the nineteenth century (as evidenced by a latrine pit, a Kaua‘i *poi* pounder, and traditional style fishhooks made from copper), and up to the twentieth century.

Osteological analysis of the three human burials identified during data recovery and the three burials documented during the AIS identified five of the six individuals as being of Chinese descent. The other individual was in a “pre-Western contact” context and was assessed as likely Native Hawaiian.

3.2.3 McGerty et al. 1995

In 1995, McGerty et al. (1995) conducted background research for the Chinatown Community Service Center project. Research included a review of previous archaeological studies in the vicinity, *mo‘olelo* (stories) of the area, archival documents, and historical maps. The study indicated that pre-Contact land use comprised agriculture and habitation. During the historical period, which saw the growth of urban Honolulu Town, the area (known as Kikihale) transformed into a portion of Chinatown and contained a shifting complex of small businesses.

3.2.4 Heidel and Hammatt 1997

In 1997, CSH conducted archeological testing at a 1,700-sq-ft parcel (TMK: [1] 1-7-003:014) in Chinatown (Heidel and Hammatt 1997). Four test trenches yielded no cultural features or materials, with the exception of a historical basement filled with modern debris and sediment. The report does not present a possible association or date of occupation for the basement, and no SIHP number was assigned (Heidel and Hammatt 1997).

3.2.5 Elmore and Kennedy 2001

Elmore and Kennedy (2001) conducted archaeological monitoring for miscellaneous sidewalk improvements on King Street, between River Street and Bethel Street. One in situ human burial, designated as SHIP # -5781, was identified between Maunakea Street and Smith Street, beneath the *mauka* lane of King Street. Based on the burial’s flexed position and lack of post-Contact artifacts, the burial was assessed as likely Native Hawaiian. Artifacts recovered from the backdirt pile included glass and ceramic fragments, a shark tooth, possible drilled shell fragments, a possible shark tooth tool, and one fishhook; however, none could be definitively associated with the burial.

3.2.6 Mann and Hammatt 2002

In 2002, CSH conducted archaeological monitoring for the King Street Rehabilitation project on sections of King Street, between Dillingham Boulevard and South Street (Mann and Hammatt 2002). One human burial, designated as SIHP # -6371, was identified near the intersection of South King Street and Punchbowl Street, *makai* of Honolulu Hale. The skeletal remains were incomplete and poorly preserved due to previous disturbance by construction activities; the SHPD took custody of the remains. In addition, a pit feature containing a substantial quantity of non-human skeletal remains was documented at the corner of South King Street and Richards Street; no SIHP number was assigned.

3.2.7 West et al. 2002

In 2002, Garcia and Associates (GANDA) conducted archaeological monitoring for the installation of water mains along King Street, between Liliha Street and River Street (West et al. 2002). One previously recorded historic property, structural remnants of the Honolulu Rapid Transit & Land Company Trolley (SIHP # -5942), was documented in multiple locations. Documented remnants include railroad ties, metal hardware, and bricks. Small sections of the trolley track (not in situ) were exposed atop fill material, which overlay coral bedrock. Identified cultural material included glass bottles and jars, handmade leather shoes, ceramics, faunal bone (pig, cow, and chicken), shell, wood, charcoal, Belgian Block cobblestones, and metal hardware.

3.2.8 Pietrusewsky 2003; McIntosh et al. 2006; Kailihiwa and Cleghorn 2007; Cleghorn et al. 2012

In 2001, Pacific Legacy conducted an AIS for Block 10, Smith-Beretania Parking Lot, in Chinatown (McIntosh et al. 2006). Six backhoe excavations yielded abundant post-Contact structural materials and artifacts with 68 associated subsurface features, designated as SIHP # -6772. The features included trash pits, cooking features, and building structural foundations with associated European, American, and Asian artifacts; traditional Hawaiian artifacts; and abundant midden deposits. Most of the structural remnants dated between 1850 and 1900 and were likely associated with the buildings destroyed in the 1900 Chinatown fire. Post-Contact artifacts consisted of glass, metal, ceramic, and bone, indicating a wide variety of functions. Fewer Native Hawaiian artifacts were recovered; these included *poi* pounder fragments, an *‘ulu maika* (game stone), cowrie shell lures, a complete stone adze, and a complete conch shell trumpet.

Subsequently in 2001, Pacific Legacy conducted data recovery for Block 10, Smith-Beretania Parking Lot, to mitigate the impacts to SIHP # -6772 (Cleghorn et al. 2012). Data recovery excavations identified numerous pits, privies, and miscellaneous features with traditional Hawaiian and post-Contact artifacts. Two human burials, one adult and one child, were also documented.

In 2002, Pacific Legacy conducted archaeological monitoring for Block 10, Smith-Beretania Parking Lot (Kailihiwa and Cleghorn 2007). Additional features, deposits, and human remains associated with SIHP # -6772 were identified; these consisted of six non-burial features and 22 human burials. In addition, 20 “find spots” (locations where collected artifacts were not associated with a cultural layer or deposit) were documented. The human remains were primarily identified near the south wall of the Smith-Beretania apartment structure.

Dr. Michael Pietrusewsky (2003) analyzed the human remains and determined they could represent individuals of Asian, Caucasian, and/or Polynesian descent. His analysis revealed the remains included two children, five young adults, and 16 adults; hence, he suggests a portion of the study area may have served as a family cemetery. All burials were inventoried, excavated, mapped, and reburied on the property.

3.2.9 Hammatt 2005

In 2004, CSH received a call from Terry Hildebrand of the City and County of Honolulu Department of Design and Construction, reporting a discovery of human remains during trenching activities at Foster Botanical Gardens (SIHP # -1389) (Hammatt 2005). Dr. Sara Collins of the SHPD noted that the remains, which included a maxilla fragment and portion of a long bone, were found in a previously disturbed context. CSH archaeologists screened the backdirt in which the maxilla fragment was found and recovered additional remains, including a long bone, clavicle, fragments of a mandible, loose teeth, and rib fragments. The remains were reinterred on the grounds of the botanical garden near the western side of the Kuan Yin Temple.

3.2.10 McIntosh and Cleghorn 2005

In 2005, Pacific Legacy conducted an AIS at the corner of Nu‘uanu Avenue and Pauahi Street (McIntosh and Cleghorn 2005). A multi-component historic property, SIHP # -6691, was identified. SIHP # -6691 comprises the incomplete remains of two disturbed human burials within two historical trash pits; the charred remains of a structure destroyed in the 1900 Chinatown fire; and structural remnants of a historical building that partially collapsed in 2001. McIntosh and Cleghorn (2005) concluded the burials had been previously disturbed and incorporated into later trash pits, likely during the early 1900s.

3.2.11 Groza and Hammatt 2008

In 2008, CSH conducted archaeological monitoring for the Rehabilitation of Streets project on an approximately 1,800-m (5,900-ft) segment of Beretania Street, between North King Street and Alapa‘i Street (Groza and Hammatt 2008). No historic properties were identified, and extensive fill deposits were encountered. In the eastern portion of the study area, the natural sediment consisted of volcanic cinder from the Sugar Loaf/Tantalus series. In the western portion, the natural sediment was silty clay loam with clay inclusions, likely alluvial deposits from nearby Nu‘uanu Stream.

3.2.12 Hunkin et al. 2012

In 2011, CSH conducted archaeological monitoring for the Kalihi/Nu‘uanu Sewer Rehabilitation project, which extended from Middle Street in Kalihi west toward Pi‘ikoi Street near the eastern boundary of Punchbowl Crater (Hunkin et al. 2012). No historic properties were identified. The study area’s subsurface deposits appeared to have been disturbed by past land use, including extensive earthmoving activity and importation of fill sediments. However, a single isolated human bone fragment was discovered in fill material. The custody of this skeletal fragment was transferred to the SHPD on 4 August 2008, and treatment of the fragment was carried out under the SHPD’s authority. No SIHP number was assigned.

3.2.13 Mintmier et al. 2014

Pacific Consulting Services, Inc. (PCSI), conducted archaeological monitoring for traffic infrastructure improvements at the intersection of Beretania and River streets, partially within the Chinatown Historical District, SIHP # -9986. No contributing features/components of SIHP # -9986, nor any new historic properties, were documented. Eighteen glass and ceramic artifacts were collected and dated to the late nineteenth to mid-twentieth century.

3.2.14 Enanoria and Hammatt 2015

In 2013, CSH conducted archaeological monitoring for rehabilitation and replacement of water, gas, sewer, and drain lines along King Street and at each of the cross-street intersections between River and Bethel streets (Enanoria and Hammatt 2015). In general, the documented stratigraphy consisted of a series of fill sediments associated with the construction of the existing asphalt surface and the construction of subsurface utilities, overlying disturbed natural alluvium, natural volcanic cinder, and the coral shelf. No historic properties were identified.

3.2.15 Belluomini et al. 2016

In 2016, CSH conducted an AIS for the American Savings Bank Campus at 300 North Beretania Street. Subsurface testing identified three historic properties: SIHP #s -7933, -7934, and -7935. SIHP # -7933, identified in the northwest portion of the study area, consists of seven human burials (Burials 1–7) and six associated features (Features 8–13). SIHP # -7934, identified in the southeast portion of the study area, consists of structural remnants interpreted as LCA boundary walls and designated as Features 1–3. SIHP # -7935 consists of the structural remnants of a building foundation, identified in the central portion of the study area.

3.2.16 Yucha et al. 2016

Between 2013 and 2014, CSH conducted archaeological monitoring for the H-1 Resurfacing project from Middle Street to Ward Avenue. As archaeological monitoring was conducted only for excavations conducted deeper than the overlying asphalt/concrete surfaces, monitoring was limited to the area of the Nu‘uanu Stream Bridge widening and lighting replacement activities, identified as Project Area 3. The archaeologists documented a series of highly disturbed fill deposits that averaged more than 100 cm in depth. No historic properties were identified.

3.3 Background Summary and Predictive Model

The current project is within the portion of downtown Honolulu surrounding the mouth of Nu‘uanu Stream, known to Hawaiians as “Kou.” This area was a center of population and activity similar to Waikīkī. Kou had a long tradition as a royal center, where the *ali‘i* would meet and entertain. Kou also possessed shoreward fishponds and irrigated fields, and nearby Honolulu Harbor was brimming with marine resources. The land surrounding Nu‘uanu Stream was particularly densely populated, with a concentration of *lo‘i* and *‘auwai*. Historical maps show the AIS study area as within that dense cluster of *lo‘i*.

In the early post-Contact period, Kou was not a major destination for foreigners visiting the island. However, in 1809, Kamehameha moved his court, government, and residence from Waikīkī to Honolulu, and newly arrived foreigners began to consider Honolulu a place of commercial importance. By the 1830s, Western commercial and missionary interests had supplanted the Native Hawaiian traditions that had once shaped the environment, and Western and urban ideals propelled

Honolulu’s growth. The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. Historical maps indicate most of the ‘Ewa (northwest) portion of the AIS study area was within LCA 11082:3 to Kaukoke, while small sections in the western corner appear to overlap with LCA 141:2 and 3 to Makahopu. LCA documentation indicates these parcels included a house, a fence, and agricultural plots. In addition, the far north corner of the AIS study area may have been within LCA 715:1 to Kalama, who claimed four taro patches and a house site. Landscape features (solid and dashed lines) depicted on late nineteenth century maps as within the AIS study area may represent the boundaries between the LCAs and/or agricultural or house plots within the LCAs. A building or structure is also indicated as partially within the northeast portion of the AIS study area.

However, the majority of the AIS study area was within LCA 2938 to Huanu, for the heirs of Lahilahi (Gilliland ‘Ohana). Huanu was the grandson of Francisco de Paula Marín, and the claim was for “farm land in the vineyard” (Waihona ‘Aina 2019). The history of the Gillilands in Hawai‘i (after whom the John R. Gilliland Sr. Building in the current AIS study area is named) begins first with Francisco de Paula Marín, a Spanish horticultural experimenter. In 1793 or 1794, Marín traveled to Hawai‘i, where he was befriended by Kamehameha I. He served as Kamehameha’s interpreter and assumed many government duties. Kamehameha, in turn, gave land to Marín for his agricultural experiments, and Marín introduced numerous plant species to the Islands. Marín’s land within the current AIS study area was known as “The Vineyard,” which he planted with grape cuttings sourced from California in 1815. Visitors to the vineyard also reported seeing damask rose (*Rosa damascena*) bushes, cotton (*Gossypium* sp.) trees, and pineapples (*Ananas comosus*) growing on the parcel.

By the late 1800s, historical maps show increasingly dense land use and urbanization in the vicinity of the current project, particularly *makai* of the parcel in an area that came to be known as Chinatown. By the 1870s, a sizeable population of Chinese immigrants had settled in Honolulu, concentrated in the blocks between Nu‘uanu and Maunakea streets. Today, this area still serves as the principle center for the business and social life of the Chinese community of the island.

Another change in the late nineteenth century was the realignment of Nu‘uanu Stream. Beginning in 1896, Nu‘uanu Stream was dredged, and the water course was changed, with the stream diverted from approximately 100 m west of the current project to nearly adjacent to it. A stone wall was built on both sides of the stream, and dredged material was used to create River Street, adjacent to the current AIS study area.

A review of twentieth century historical maps and aerial photographs indicates development within the AIS study area by 1906. At that time, a tenement was at the center of the AIS study area, while several dwellings and stores were along the northwestern boundary; a kitchen facility was in between the tenement and the stores, which included a Plumbing and Tin Shop, a restaurant, and a Mattress Factory. By 1950, additional dwellings were present in the eastern and southeastern portions of the AIS study area, and a parking area for automobiles was in the south corner. The stores along the northwestern boundary were by that time described as having concrete floors.

The John R. Gilliland Sr. Building was constructed within the AIS study area in 1958. In 2016, Fung Associates assessed this two-story commercial building as eligible for listing on the National Register under Criterion C, as a very good example of a small retail/office building constructed in

Hawai‘i in a modern style in the 1950s. It is also a good example of the architectural work of Kenneth Sato, who designed several notable buildings in the Islands. According to the study, the rear parking lot was improved and enclosed by a CMU retaining wall in 1966.

Mauka (northeast) of the AIS study area, across Vineyard Boulevard (named for Marín's vineyard), is Foster Botanical Garden (SIHP # -1389), which is the closest previously identified historic property to the current AIS study area (approximately 50 m away). In 2004, human remains were encountered during trenching activities in the southern portion of the garden (Hammatt 2005). The remains were found in a previously disturbed context and were reinterred on the grounds; no SIHP number was assigned. No previous archaeological studies have been conducted within or adjacent to the current AIS study area. However, previous studies in the vicinity have documented pre- and post-Contact habitation layers with associated features, including human burials; infrastructure remnants with associated artifacts; historical trash pits; buried fishpond sediment; LCA boundary wall remnants; and disturbed/displaced human remains.

Based on this background research, it was anticipated that the current AIS could identify buried agricultural deposits and features associated with taro and/or grape cultivation; pre- and/or post-Contact habitation layer(s) with associated features, potentially including human remains; landscape features or structural remnants associated with LCA boundaries; and twentieth century structural remnants with associated artifacts and/or historical trash pits.

Section 4 Results of Fieldwork

The fieldwork component of the Halewai‘olu Senior Residences AIS was conducted between 1 and 30 July 2019 under the general supervision of Matt McDermott, M.A. (Principle Investigator), and Ena Sroat, B.A. (Project Director). The subsurface testing program consisted of 15 test excavations (T-1 through T-12, including T-2B, T-2C, and T-9B), comprising 13 exterior excavations and two interior excavations (Figure 35). The maximum depth of the excavations ranged from 160 to 252 cm below surface (cmbs). The water table was encountered in ten of the 15 test excavations, between 193 and 247 cmbs.

4.1 Historic Properties Identified

One archaeological historic property was newly identified during the Halewai‘olu Senior Residences AIS: SIHP # 50-80-14-8840, subsurface cultural deposits (see Figure 35). SIHP # -8840 consists of three components, designated as Components 1–3. SIHP # -8840 Component 1 consists of agricultural deposits, including possible agricultural berms. SIHP # -8840 Component 2 consists of two habitation layers with associated pit features and a human burial site. SIHP # -8840 Component 3 consists of historical infrastructure remnants associated with the residential and commercial growth of Honolulu.

4.2 Stratigraphic Overview

Stratigraphy within the AIS study area was designated using a Roman numeration system (e.g., Stratum I, II, III), with substrata designated using an alphabetic system (e.g., Stratum Ia, Ib, Ic). Although the alphabetic substrata designations within the Roman numeral designations may vary between test excavations, the Roman numeral stratigraphic designations correlate across the study area, so that stratigraphic patterns can be clearly documented and discussed (Table 2 and Table 3).

All current land surfaces and fill deposits, as well as SIHP # -8840 Component 3 infrastructure remnants, are designated as Stratum I; these are associated with the modern development of the area. All SIHP # -8840 Component 3 infrastructure remnants are given feature numbers; former surfaces and fill deposits are also given stratum designations. The underlying vertical series of natural alluvial deposits is designated as Stratum II; this includes interpreted habitation layers (SIHP # -8840 Component 2) and agricultural deposits (SIHP # -8840 Component 1). Like Stratum I, Stratum II was documented in all 15 test excavations. The Stratum II deposits likely represent overflow or flooding episodes of nearby Nu‘uanu Stream. The two uppermost alluvial deposits, Strata IIa and IIb, contain evidence of cultural use in some areas; within those

Table 2. Stratigraphic designations

Stratum	Sediment Description
I	Modern developed land, fills, and infrastructure remnants (SIHP # -8840 Component 3)
II	Naturally deposited alluvium, including habitation layers (SIHP # -8840 Component 2) and agricultural deposits (SIHP # -8840 Component 1)
III	Streambed

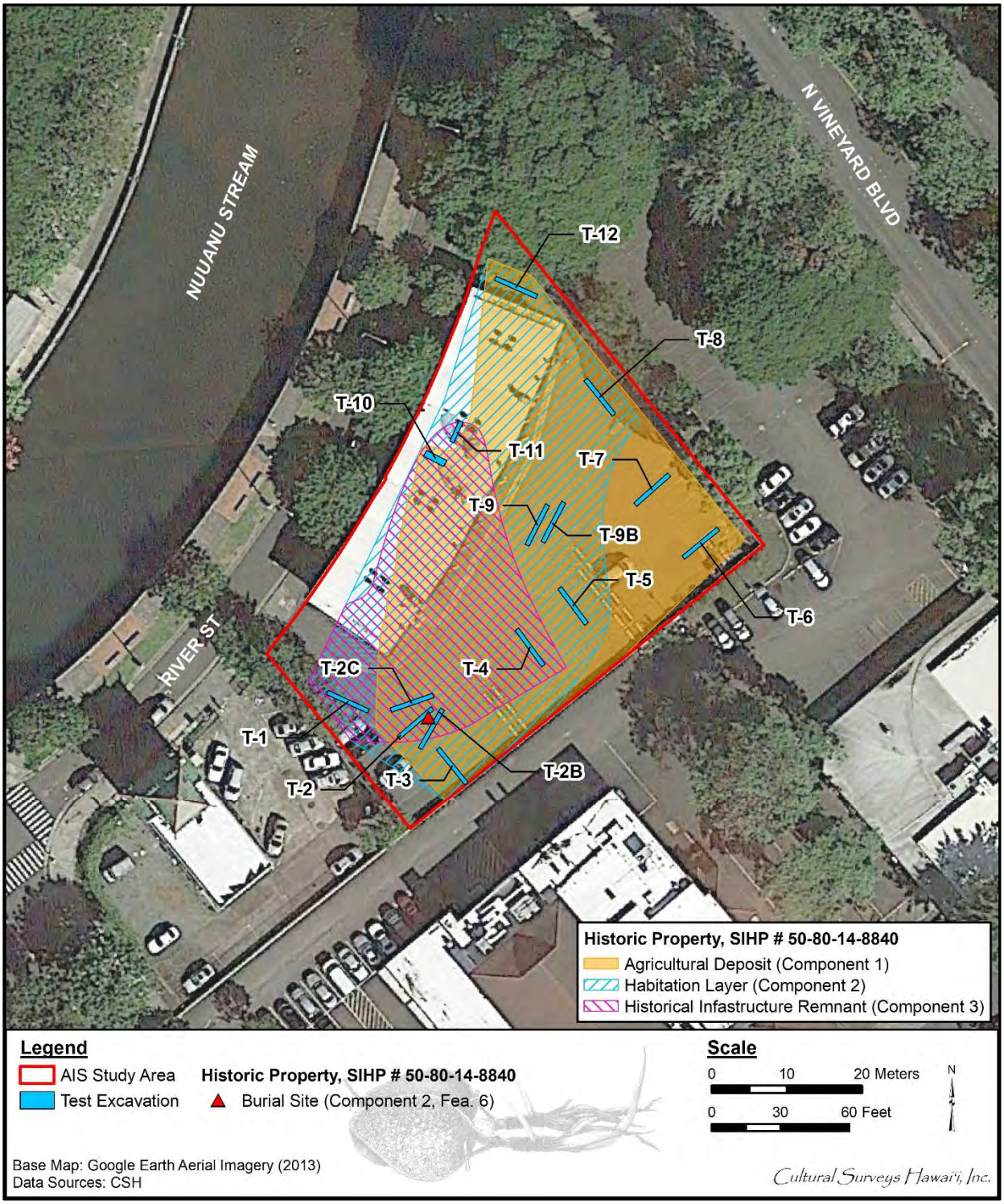

Figure 35. Aerial photograph of the Halewai‘olu Senior Residences AIS study area, showing the locations of AIS test excavations and the distribution of SIHP # -8840 Components 1–3 (Google Earth 2013)

Table 3. Summary of test excavations and stratigraphy

Test Excavation	Location w/in AIS Study Area	Fill Strata and Infrastructure Remnants (SIHP # -8840 Component 3)	Habitation Layers (SIHP # -8840 Component 2)	Agricultural Deposits (SIHP # -8840 Component 1)	Culturally Sterile, Natural Deposits
T-1	West corner	Ia–Ie, If–Ig (Fea. 1)	IIa (Feas. 1–4)	–	IIb–IId, III
T-2	South corner	Ia–Id, Fea. 2	IIa (Feas. 5, 6), IIb (Fea. 7)	IIc	IId, III
T-2B	South corner, just east of T-2	Ia–If, Fea. 2	IIa (Feas. 8, 9), IIb (Fea. 10)	IIc	III
T-2C	South corner, just north of T-2	Ia–If	IIa (Fea. 11)	–	IIb, III
T-3	South corner	Ia–Ie	IIa	IIc	IIb
T-4	Southeast portion	Ia–Ic, Fea. 3	IIa	IIc, IIe	IIb, IId
T-5	Southeast portion	Ia–Id	IIa	IIc, IIf	IIb, IId–IIe
T-6	East corner	Ia–Ie	–	IIc	IIa–IIb, IId
T-7	Northeast portion	Ia–Ic	–	IIc–IId	IIa–IIb, IIe–IIf
T-8	Northeast portion	Ia–Ic	IIa	IIc–IId, IIg	IIb, IIe–IIf
T-9	Central portion	Ia–Ic	IIa (Feas. 12–14)	IIc–IIf	IIb, III
T-9B	Central portion, just east of T-9	Ia–Ic	IIa (Fea. 15)	IIc–IIe	IIb, III
T-10	Inside Gilliland Bldg	Ia–Ib, Ic (Fea. 4), Id–Ie, Fea. 5	IIa (Feas. 16, 17)	IIc	IIb, III
T-11	Inside Gilliland Bldg, northeast of T-10	Ia–Ib, Ic (Fea. 4), Id–Ie, If (Fea. 6), Ig–Ih	IIa (Feas. 18, 19)	–	IIb, III
T-12	North corner	Ia–Id	IIa	IIc	IIb, IIIa–IIIb

excavations, they are designated as part of SIHP # -8840 Component 2, habitation layers. The underlying strata (Strata IIc–IIg) represent at least three periods of agricultural use, likely associated with wetland taro agriculture along the banks of Nu‘uanu Stream. In test excavations where these layers contain evidence of agriculture (e.g., oxidized [red] mottling), they are designated as part of SIHP # -8840 Component 1.

The most recent agricultural deposit (Stratum IIc in T-2, T-2B, T-3 through T-8, T-10, and T-12; Stratum IId in T-9 and T-9B) was identified almost ubiquitously across the AIS study area, within 12 of the 15 test excavations. It contains a dense latticework of oxidized (red) mottling, believed to be the result of chemical interactions between taro roots and the surrounding soil, and in some areas, cinder gravel. The layer generally presents as dark brown silty clay loam. Deeper (i.e., older) agricultural deposits were identified within a discrete zone in the central/*mauka* portion of the AIS study area (within T-4, T-5, and T-7 through T-9B). These strata contain a similar latticework of oxidized (red) mottling, although generally less dense than the overlying stratum.

The basal stratum, Stratum III, is interpreted as a streambed and may represent a former braid delta of Nu‘uanu Stream, pre-dating the deposition of the Stratum II alluvium. Stratum III was documented in nine test excavations (T-1, T-2, T-2B, T-2C, T-9, T-9B, and T-10 through T-12) in the northwestern portion of the AIS study area, closest to Nu‘uanu Stream. Stratum III typically presents as very dark grayish brown sandy clay, sandy clay loam, or silty clay loam. This stratum is distinct from the overlying alluvial series for its inclusion of abundant waterworn basalt gravel and cobbles.

4.3 Subsurface Testing Results

4.3.1 Test Excavation 1 (T-1)

Test Excavation 1 (T-1) is an exterior excavation near the southwestern boundary of the AIS study area. It is oriented northwest-southeast and is 6 m long by 0.85 m wide, with a maximum depth of 230 cmbs. The water table was encountered at 200 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly (basalt) loamy sand base course (Stratum Ib), very gravelly sand (crushed coral) base course (Stratum Ic), a second layer of extremely gravelly (basalt) loamy sand base course (Stratum Id), and cobbly (basalt) silty clay fill (Stratum Ie), overlying an oil-rolled crushed coral surface with associated very gravelly (basalt) sandy loam base course (Strata If and Ig; SIHP # -8840 Component 3, Feature 1), atop silty clay (Stratum IIa; SIHP # -8840 Component 2), three layers of silty clay loam (Strata IIb–IId), and very gravelly (basalt) silty clay loam (Stratum III) (Figure 36 through Figure 39 and Table 4).

The oil-rolled, crushed coral surface and associated base course (Strata If and Ig) are designated as SIHP # -8840 Component 3, Feature 1. Strata If and Ig were documented within all four trench walls, although they were absent from the northeast corner of the excavation (see Figure 36 through Figure 40). Each layer is approximately 10 cm thick, and the base course (Stratum Ig) contains pig (*Sus scrofa*) bone, brick, glass, and ceramic fragments. The pig bone and a grab sample of artifacts were collected. Diagnostic artifacts are of primarily Asian origin and date from the mid-nineteenth to twentieth century. One machine-made bottle fragment (Accession [Acc.] # 132) dates to post-1908, indicating the layer was deposited after that time.

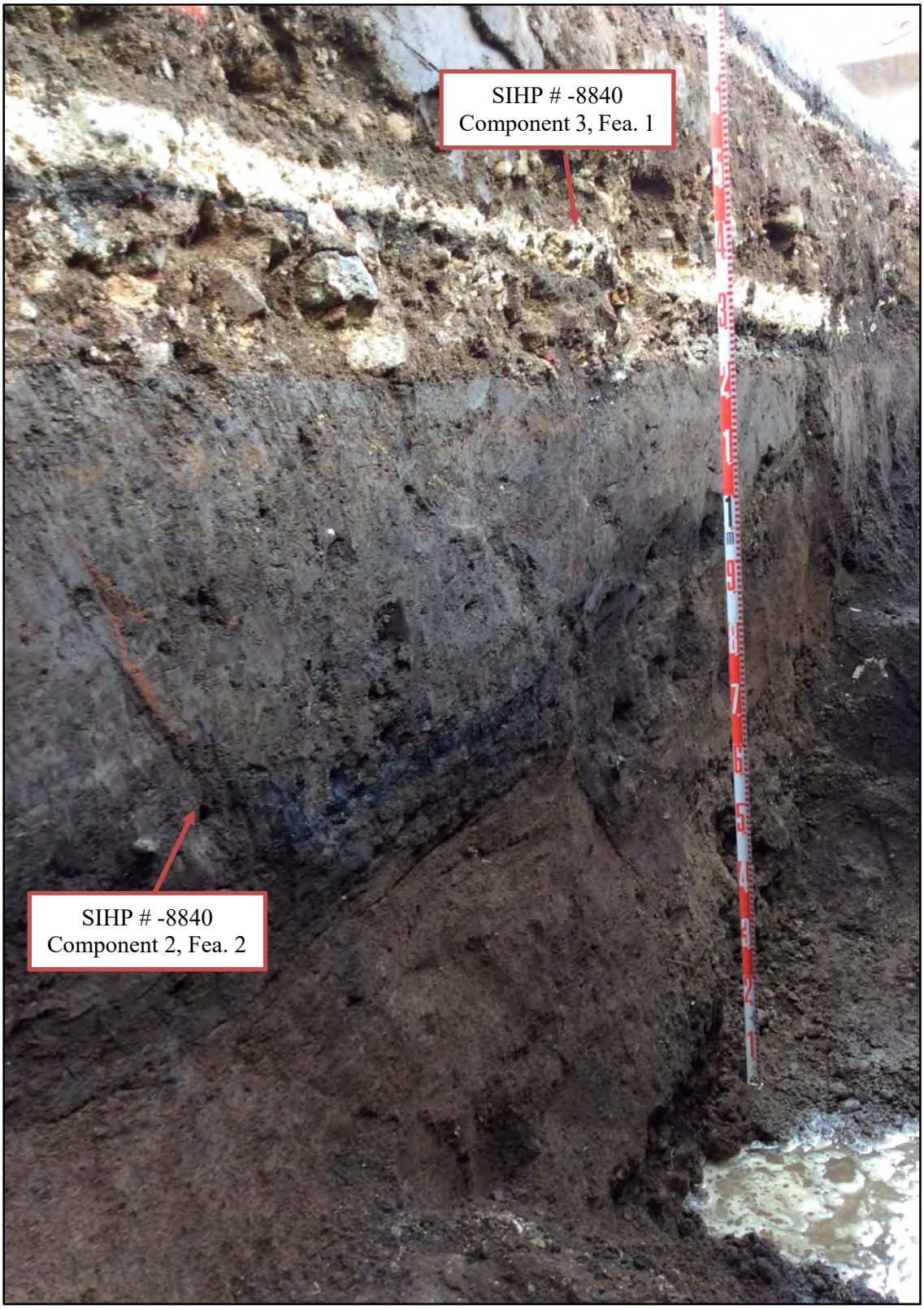

Figure 36. T-1 northeast wall, view to east

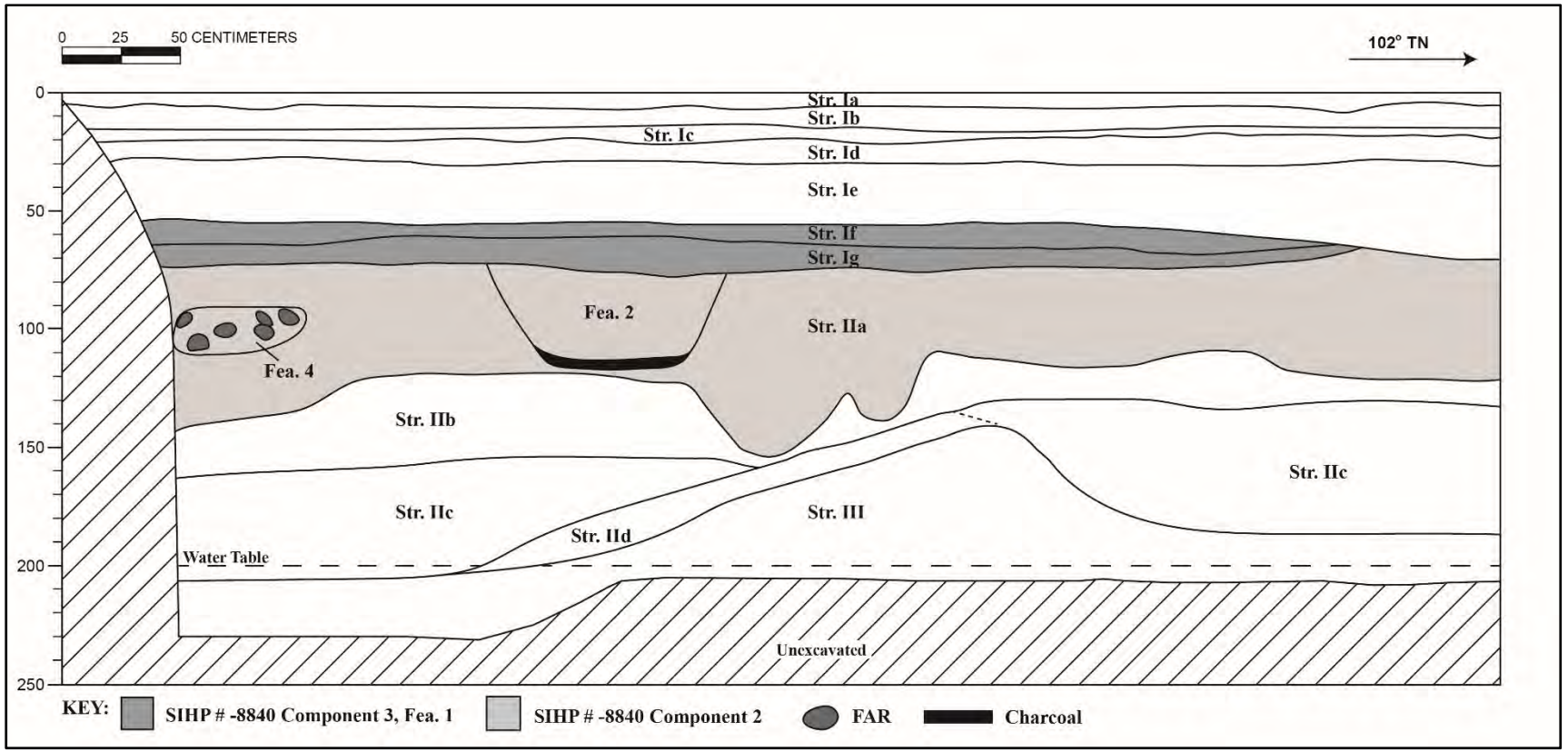

Figure 37. Profile of T-1 northeast wall



Figure 38. T-1 southwest wall, view to south

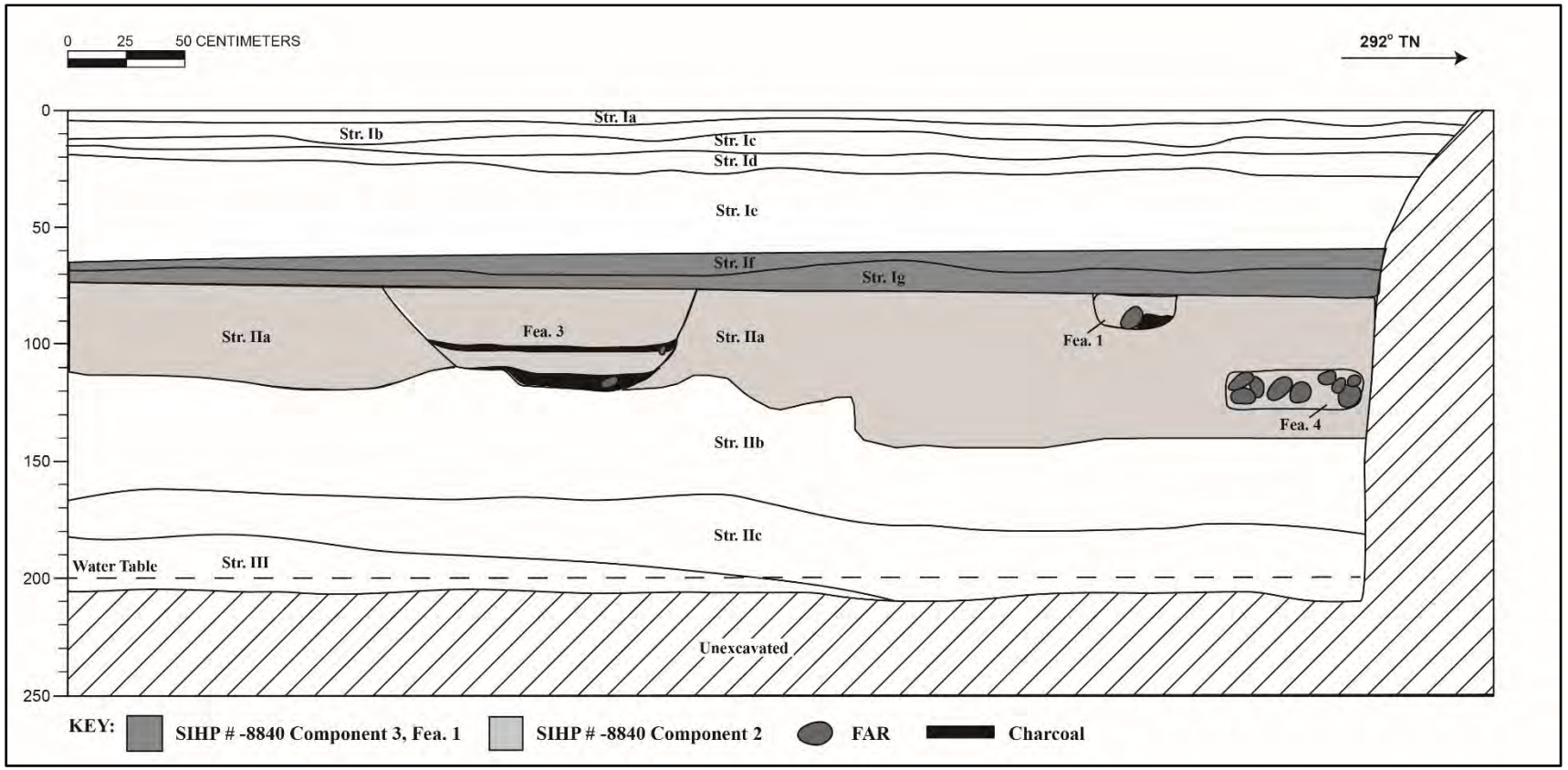

Figure 39. Profile of T-1 southwest wall

Table 4. T-1 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	5–16	Base course; 10YR 3/1, very dark gray; extremely gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	11–20	Base course; 10YR 6/3, pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Id	16–30	Base course; 5YR 3/3, dark reddish brown; extremely gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ie	20–71	Fill; 10YR 4/4, dark yellowish brown; cobbly silty clay; moderate, medium, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; fill derived from alluvium, containing basalt cobbles
If	54–71	SIHP # -8840 Component 3, Feature 1; 10YR 8/2, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, discontinuous lower boundary; no roots observed; oil-rolled crushed coral surface
Ig	60–81	SIHP # -8840 Component 3, Feature 1; 10YR 3/4, dark yellowish brown; very gravelly sandy loam; weak, very fine, granular structure; moist, friable consistence; no cementation; slightly plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course with pig (*S. scrofa*) bone and brick, glass, and ceramic fragments
IIa	70–155	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay; strong, medium, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, irregular lower boundary; few, fine roots; habitation layer with charcoal flecking and four associated pit features (Features 1–4)
	77–93	SIHP # -8840 Component 2, Feature 1; 10YR 3/2, very dark grayish brown; cobbly silty clay; fire-related feature containing fire-affected rock (FAR) and charcoal
	71–115	SIHP # -8840 Component 2, Feature 2; 10YR 3/2, very dark grayish brown; silty clay; fire-related feature containing charcoal

Stratum	Depth (cmbs)	Description
	76–120	SIHP # -8840 Component 2, Feature 3; 10YR 3/2, very dark grayish brown; cobbly silty clay; fire-related feature containing FAR and charcoal
	111–127	SIHP # -8840 Component 2, Feature 4; 10YR 2/2, very dark brown; cobbly silty clay loam; fire-related feature containing FAR and charcoal
IIb	109–181	Natural; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; very plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIc	130–205	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
IId	135–205	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
III	140–230 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; few, fine roots; streambed with waterworn basalt gravel and cobbles



Figure 40. SIHP # -8840 Component 3, Feature 1, oil-rolled crushed coral surface and associated base course (Strata If and Ig), in T-1 southwest wall, view to southwest

Stratum II (a–d) is naturally deposited alluvium, while the underlying Stratum III is interpreted as a streambed, based on the presence of waterworn basalt gravel and cobbles. Because Stratum IIa contains charcoal flecking and four associated pit features, it is designated as part of SIHP # -8840 Component 2, habitation layers. The four features, interpreted as fire-related features, are designated as SIHP # -8840 Component 2, Features 1–4 (Figure 41 through Figure 44). Features 1–3 originate at the upper boundary of the stratum, while Feature 4 is within the lower/middle portion of the stratum. While the upper boundaries of Features 1–3 may have been truncated by the deposition of the overlying fill deposit, based on their matrices, they appear to originate within Stratum IIa; their position at the upper boundary of the layer indicates they are more recent than (i.e., they post-date) Feature 4. The features are described below.

Feature 1 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 41). It was documented between 77 and 93 cmbs and measures 35 cm across. A thin, heat-altered band of reddened sediment, a fire-affected basalt cobble, and a 6-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 2 is a basin-shaped pit feature identified in the northeast wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 36, Figure 37, and Figure 42). It was documented between 71 and 115 cmbs and measures 1 m across. A thin, heat-altered band of reddened sediment and a 4-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. Several small, non-diagnostic bottle glass fragments (not collected) and fire-affected basalt cobbles were also observed within the pit. A charcoal sample was collected.

Feature 3 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 43). It was documented between 76 and 120 cmbs and measures 1.5 m across. Multiple heat-altered bands of reddened sediment and layers of charcoal ranging from 5–10 cm thick were observed within the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 4 is a pit feature identified in both sidewalls of T-1, within Stratum IIa/SIHP # -8840 Component 2 (see Figure 37 and Figure 44). It was documented between 111 and 127 cmbs and measures 55 cm across; the exposed portion is 85 cm long, spanning the width of the trench. This



Figure 41. SIHP # -8840 Component 2, Feature 1, fire-related feature, in T-1 southwest wall, view to west



Figure 42. SIHP # -8840 Component 2, Feature 2, fire-related feature, in T-1 northeast wall, view to northeast

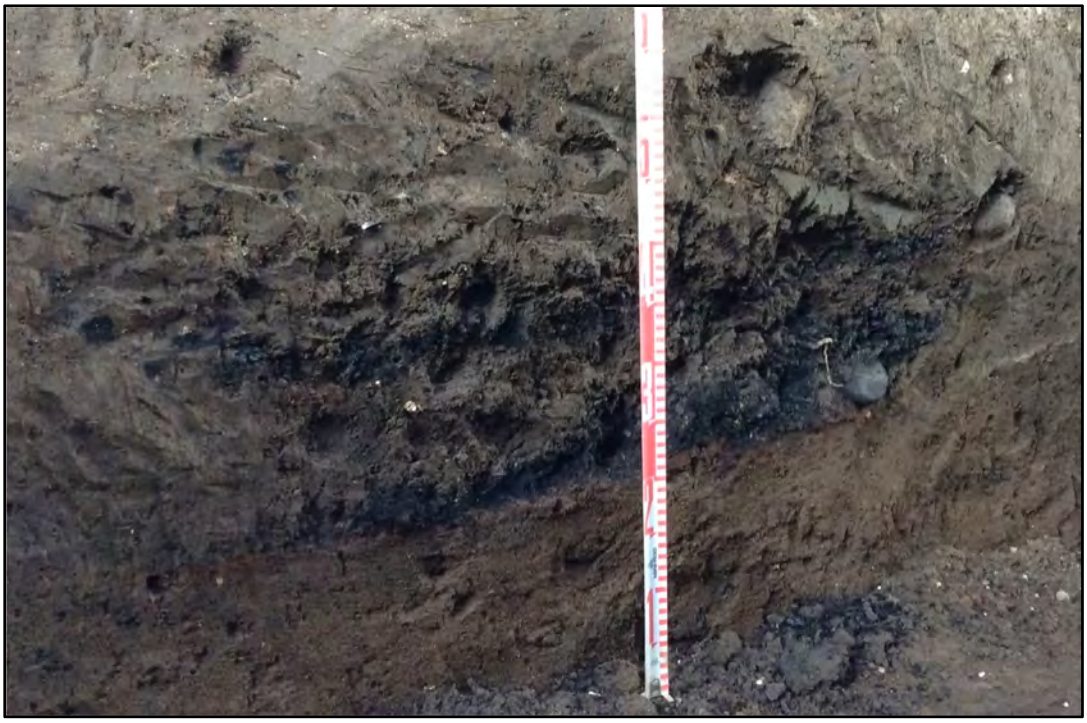

Figure 43. SIHP # -8840 Component 2, Feature 3, fire-related feature, in T-1 southwest wall, view to west



Figure 44. SIHP # -8840 Component 2, Feature 4, fire-related feature, in T-1 southwest wall, view to west

pit is lined with fire-affected basalt cobbles, and charcoal flecking was observed in the matrix surrounding the cobbles; a charcoal sample was collected. This feature is interpreted as a fire-related feature.

Charcoal samples from SIHP # -8840 Component 2, Feature 2 (Sample 1) and Feature 4 (Sample 2), were submitted to the Wood Identification Laboratory at IARII for taxa identification (see Section 5.4.2 for full results). Most of Sample 1 is *kiawe* (*Prosopis pallida*); the rest is indeterminate hardwood. As *kiawe* was likely introduced to Hawai‘i in 1828 (Wagner et al. 1990 in Huebert 2019), the feature was therefore used after that date. In contrast, Sample 2 contains wood from native and endemic species including *‘ōhi‘a lehua* (*Metrosideros polymorpha*), *koa* (*Acacia* cf. *koa*), *kōpiko* (*Psychotria* sp.), and possibly *hau* (*Hibiscus* sp.); no post-Contact introductions were identified within the sample.

The wood identification results are in agreement with the stratigraphic contexts of Features 2 and 4. Although both features were identified within Stratum IIa, Feature 2 originates at the upper boundary of the layer, while Feature 4 is within the middle portion; hence, Feature 2 post-dates Feature 4. The identification of charcoal from a historically introduced species (*kiawe*; *P. pallida*) within Feature 2 securely dates that feature to the post-Contact period, while the apparent lack of historical introductions within the underlying Feature 4 suggests it dates to the pre- or early post-Contact period.

A subsample derived from Sample 2 (Feature 4) was submitted to Beta Analytic, Inc., for radiocarbon dating analysis. The portion of Sample 2 identified as parenchyma charcoal was submitted because it is not likely to have much inbuilt age, as soft storage tissues are not long-lived. The radiocarbon analysis yielded two-sigma calibrated date ranges of AD 1728-1810 (53.5% probability), 1646-1690 (26.0%), and 1925-post 1950 (15.9%). While diagnostic artifacts recovered from overlying fill deposits suggest Stratum IIa functioned as a surface into the 1930s (see Section 5.2.4), the most recent date (1925-post 1950) can likely be discarded. The identification of pit features within different vertical portions of the quite thick stratum suggests the layer was not deposited all at once, but rather over a (potentially extended) period of time. As Feature 4 was identified within the lower portion of Stratum IIa, it would therefore date to the early part of that time period. Furthermore, the cobble-lined fire pit is consistent with traditional Hawaiian fire-related features. Hence, the radiocarbon analysis, like the wood taxa analysis (discussed above), supports a pre- or early post-Contact date for Feature 4.

4.3.2 Test Excavation 2 (T-2)

Test Excavation 2 (T-2) is an exterior excavation near the south corner of the AIS study area. It is oriented northeast-southwest and is 6.1 m long by 0.76 m wide, with a maximum depth of 220 cmbs. The water table was encountered at 214 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) loamy sand base course (Stratum Ib), very gravelly loamy sand (mixed crushed coral) base course (Stratum Ic), very cobbly (basalt) sandy clay loam fill (Stratum Id; demolition fill), and a hollow tile wall with concrete base (SIHP # -8840 Component 3, Feature 2), overlying silty clay loam (Stratum IIa; SIHP # -8840 Component 2), sandy loam (Stratum IIb; SIHP # -8840 Component 2), another layer of silty clay loam (Stratum IIc; SIHP # -8840 Component 1), and terrigenous sand (Stratum IId), atop very cobbly (basalt) sandy clay (Stratum III) (Figure 45 through Figure 50 and Table 5).

Stratum Id is a demolition fill layer containing basalt gravel and cobbles, glass and ceramic fragments, and pig (*S. scrofa*) bone; the pig bone and three complete glass bottles were collected. One machine-made beer bottle (Acc. # 44) dates to post-1921, indicating deposition of the layer after 1921. A hollow tile wall with a concrete base, designated as SIHP # -8840 Component 3, Feature 2, was also identified within Stratum Id (see Figure 49 through Figure 52). The wall remnant was documented at the *makai* (southwest) end of T-2, extending roughly east-west from the southwest endwall into the southeast sidewall. It was documented between 37 and 70 cmbs. The exposed portion is 3.1 m long with a maximum width of 20 cm. The hollow tile portion comprises a single course and is approximately 20 cm thick. The underlying concrete base is 15 cm thick. No associated builder’s pit was observed; rather, it appeared the wall was founded on Stratum IIa prior to the deposition of the Stratum Id fill. Other portions of this structural remnant were documented in nearby T-2b (see Section 4.3.3) and possibly also in T-4 (see Section 4.3.6).

A review of historical maps suggests SIHP # -8840 Component 3, Feature 2, may have served as a boundary marker between dwellings in the southeastern portion of the AIS study area and tenements in the central portion of the AIS study area, indicated with a solid line on the 1906 Dakin map (see Figure 18 and Figure 163) and the 1914, 1927, and 1950 Sanborn maps (see Figure 20, Figure 23, Figure 27, and Figure 164 through Figure 166). Although Feature 2 lines up quite well with the boundary as depicted on the 1950 Sanborn map, it appears to be several meters to the east on the earlier maps. It is possible the boundary shifted over time, or that the margin of error is greater for older maps; alternatively, Feature 2, which was likely constructed after 1910 (see T-2B discussion in Section 4.3.3 below), may not be associated with this boundary.

Stratum II (a–d) is naturally deposited alluvium, although the upper portion of Stratum IIa has been disturbed or reworked. Stratum IIa contains charcoal flecking, red brick fragments, and two pit features (Features 5 and 6), one of which contains human skeletal remains (Feature 6); hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. While the upper boundary of Feature 5 may have been truncated, based on its matrix, it appears to originate within Stratum IIa; its position at the upper boundary of the layer indicates it is more recent than (i.e., post-dates) Feature 6, which extends from the lower boundary of the stratum. In addition, a concentration of metal, basalt, and charcoal was noted within Stratum IIa/SIHP # -8840 Component 2 in the northwest wall but was not designated as a feature (Figure 53). Features 5 and 6 are described below.

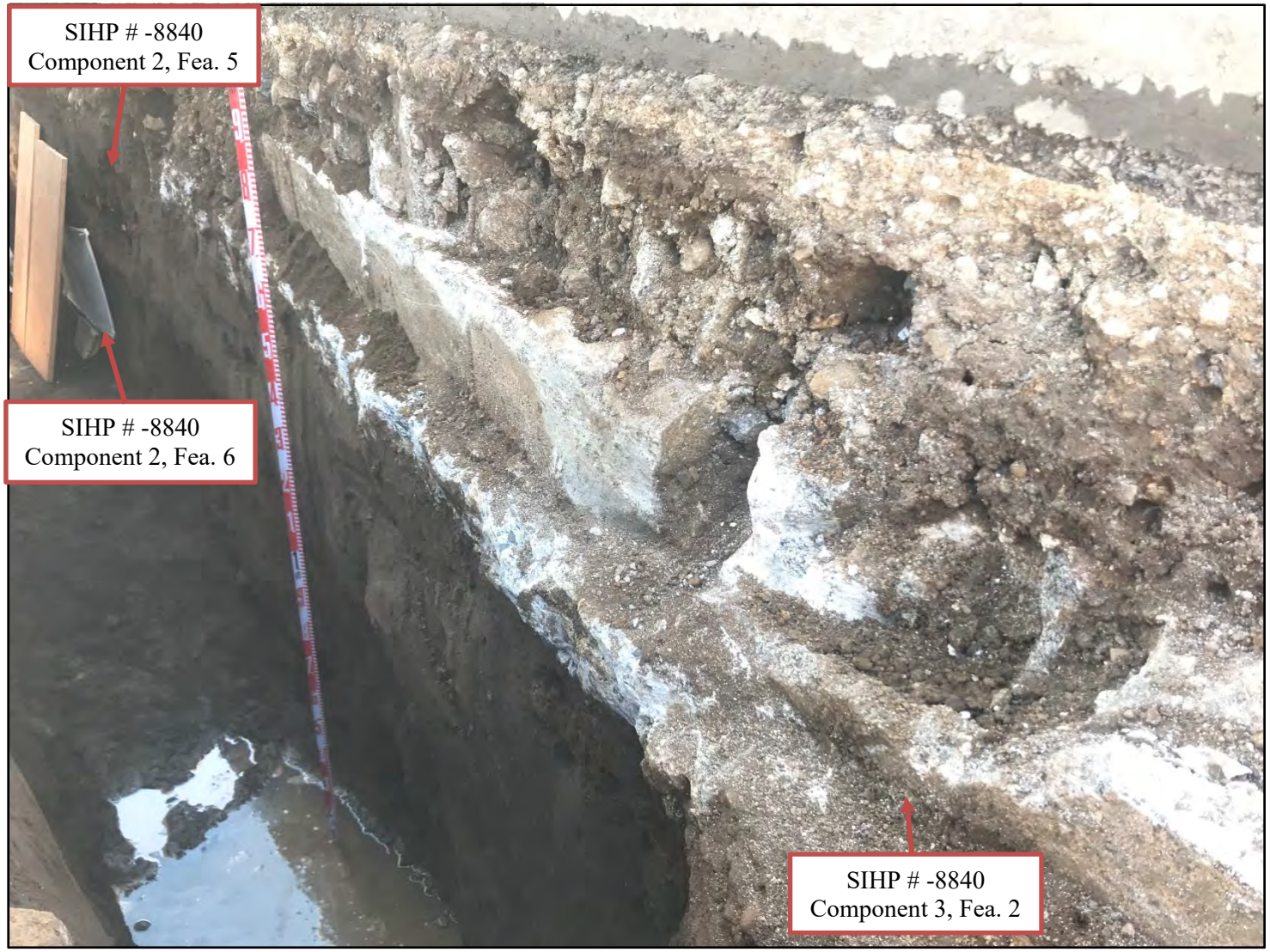

Figure 45. T-2 southeast wall, view to east

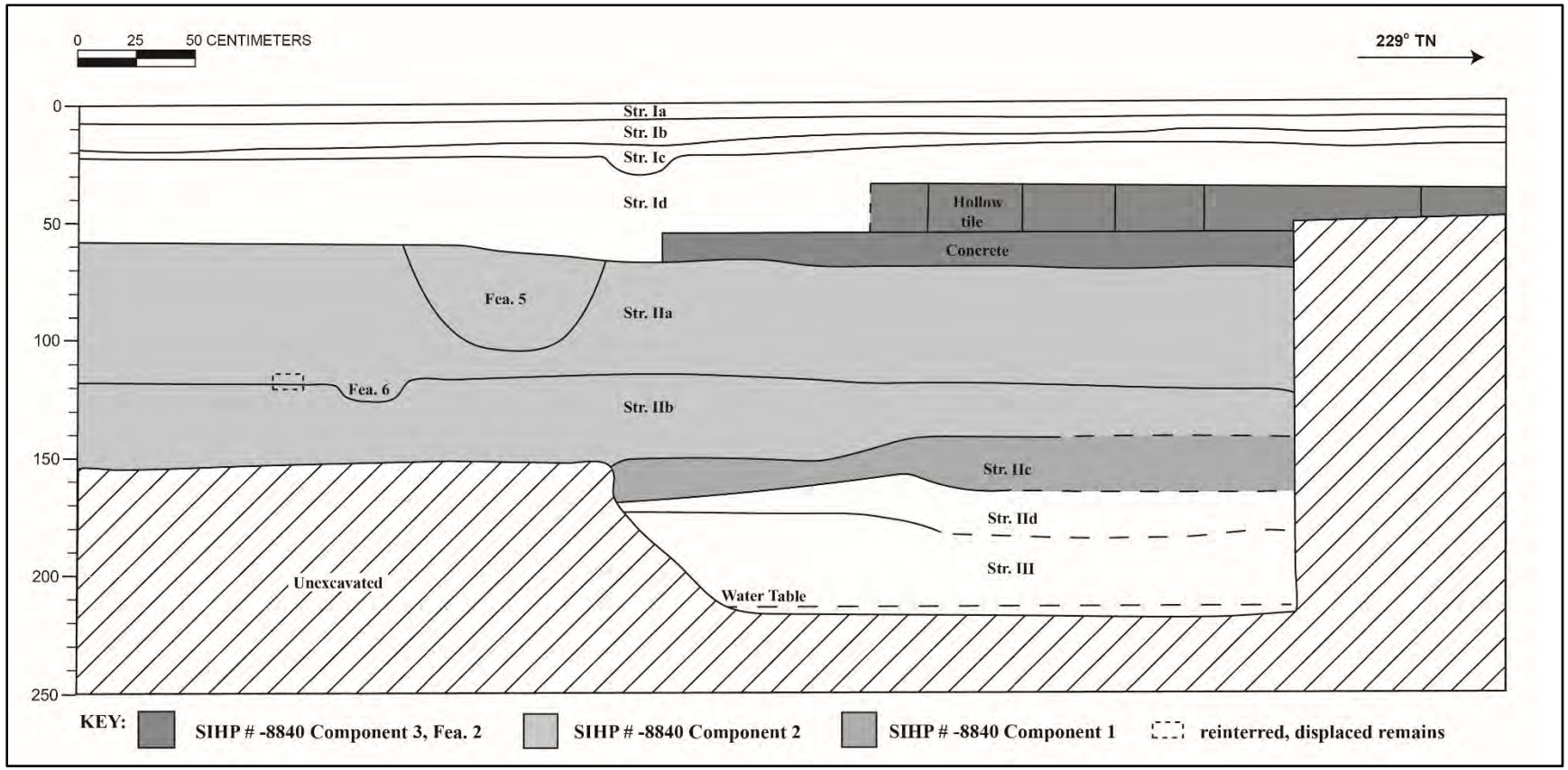

Figure 46. Profile of T-2 southeast wall

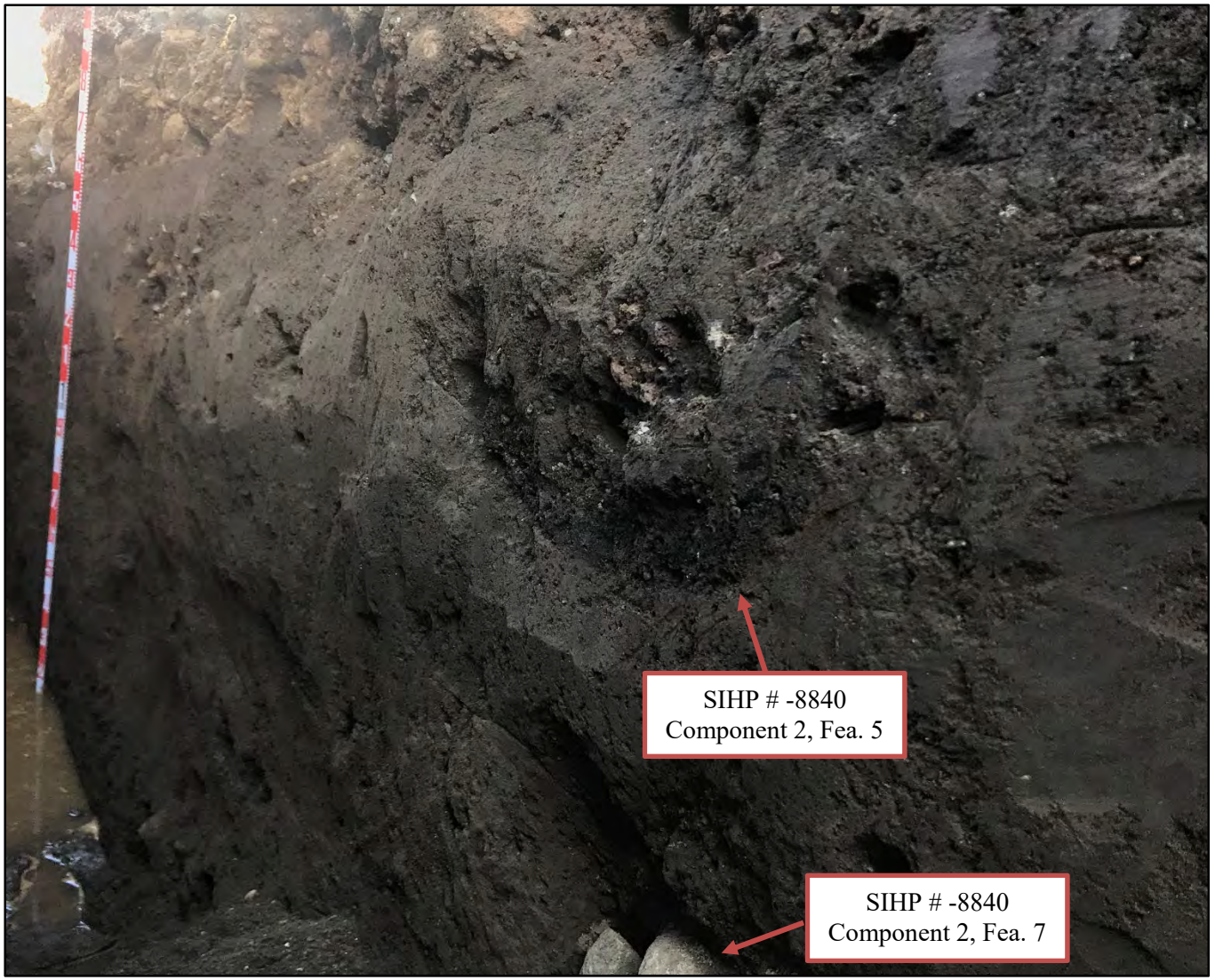

Figure 47. T-2 northwest wall, view to west

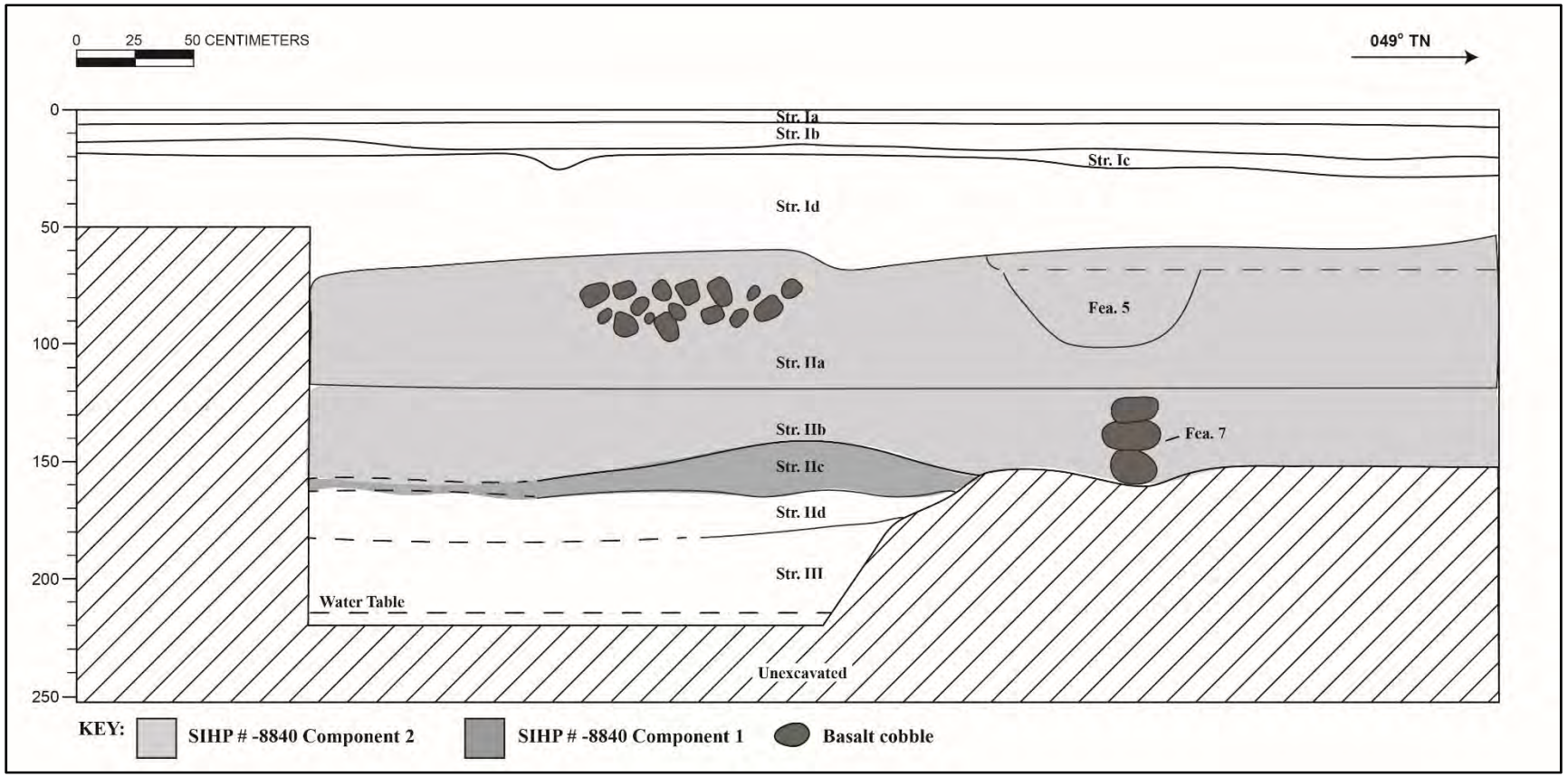

Figure 48. Profile of T-2 northwest wall



Figure 49. Plan view of T-2

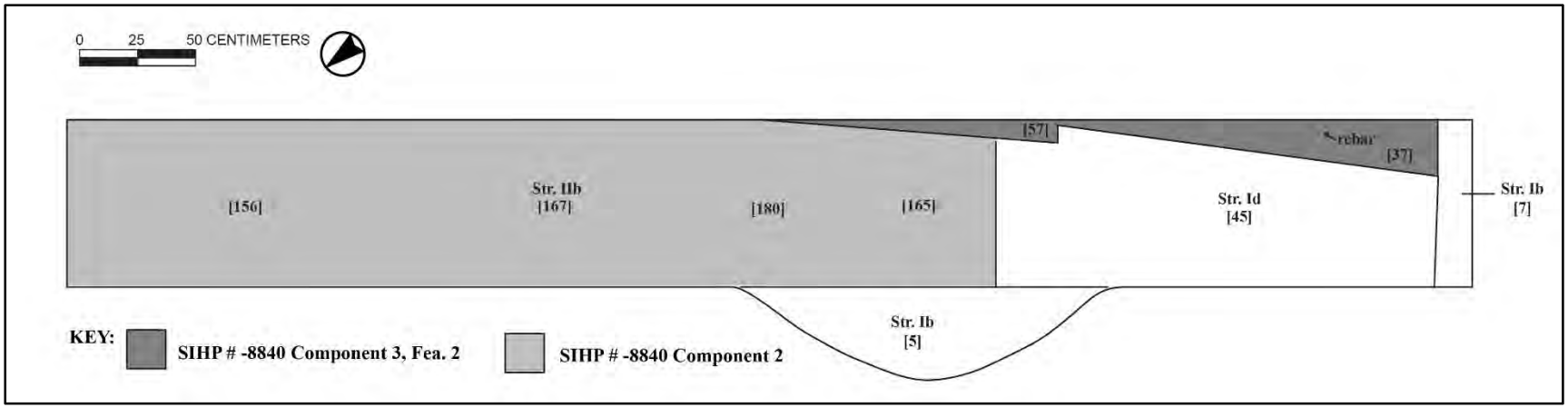

Figure 50. Plan map of T-2

Table 5. T-2 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	7–20	Base course; 10YR 3/1, very dark gray; extremely gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	14–27	Base course; 10YR 6/4, light yellowish brown; very gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; abrupt, smooth lower boundary; no roots observed; mixed crushed coral base course
Id	19–70	Fill; 10YR 2/2, very dark brown; very cobbly sandy clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; demolition fill containing basalt cobbles, glass and ceramic fragments, and pig bone
SIHP # -8840 Comp. 3, Fea. 2	37–70	SIHP # -8840 Component 3, Feature 2; hollow tile wall with concrete base; possibly a boundary wall
IIa	55–127	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; habitation layer with charcoal flecking and pit features (Features 5 and 6)
	60–103	SIHP # -8840 Component 2, Feature 5; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; pit feature containing red brick, glass, metal, charcoal, FAR, and coral gravel
	120–127	SIHP # -8840 Component 2, Feature 6; 10YR 3/2, very dark grayish brown; silty clay loam; small pit feature containing human skeletal remains
IIb	115–160	SIHP # -8840 Component 2; 10YR 3/4, dark yellowish brown; sandy loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; clear, smooth lower boundary; no roots observed; habitation layer containing sparse basalt and coral gravel, and small marine shell fragments, and a stacked basalt feature (Feature 7)
	124–160	SIHP # -8840 Component 2, Feature 7; stacked basalt cobbles of an unknown function

Stratum	Depth (cmbs)	Description
IIc	140–164	SIHP # -8840 Component 1; 7.5YR 3/2, dark brown; silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; agricultural layer containing cinder and oxidized (red) mottling
IId	160–182	Natural; 7.5YR 3/4, dark brown; sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited sand
III	175–220 (BOE)	Natural; 7.5YR 2.5/2, very dark brown; very cobbly sandy clay; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; lower boundary not observed; no roots observed; streambed with waterworn basalt cobbles and gravel



Figure 51. Plan view of SIHP # -8840 Component 3, Feature 2, hollow tile wall remnant with concrete base, in T-2

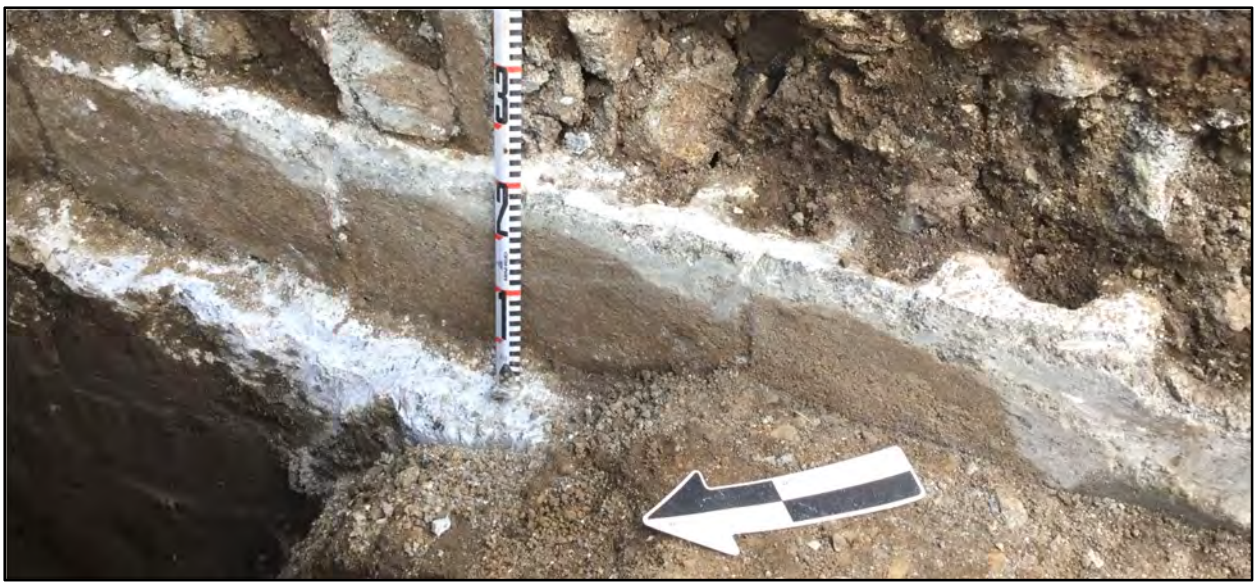

Figure 52. SIHP # -8840 Component 3, Feature 2, hollow tile wall remnant with concrete base, in T-2 southeast wall, view to east



Figure 53. Concentration of metal, basalt, and charcoal within Stratum IIa/SIHP # -8840 Component 2 in T-2 northwest wall

Feature 5 is a basin-shaped pit feature identified at/near the upper boundary of Stratum IIa/SIHP # -8840 Component 2 within both sidewalls of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 60 and 103 cmbs and measures 85 cm across. The exposed portion is 76 cm wide, spanning the width of the trench. The feature contains red brick, glass, metal, charcoal, FAR, and coral gravel (not collected). Its function is indeterminate.

Feature 6 is a small pit feature containing human skeletal remains (see Figure 45, Figure 46, Figure 55, and Figure 56). It was documented between 120 and 127 cmbs within the southwest wall of T-2, near the southeast end of the excavation. It originates at the base of Stratum IIa/SIHP # -8840 Component 2 and terminates in the underlying Stratum IIb/SIHP # -8840 Component 2. The pit measures 26 cm across and contains the remains of a single fetal individual (at or near birth). Observed skeletal elements comprise the lower limbs; the upper body likely remains in situ within the southwest sidewall (see Figure 56). The remains are in good condition, and the individual is approximately 85% complete.

The human remains were identified during cleaning of the sidewall, when the trench was excavated to approximately 150 cmbs; this portion of the trench was benched and was not excavated further (see Figure 46). The archaeologists troweled through the loose sediment within the trench and recovered several displaced fragments; these were wrapped in muslin. Troweling through portions of the backdirt pile did not yield any additional remains.

A sheet of muslin was nailed over the exposed portion of the burial (see Figure 45 and Figure 55). A small pit measuring 10 cm high by 12 cm across was dug into the sidewall approximately 15 cm northeast of Feature 6, and the muslin-wrapped, displaced remains were placed into the pit. A second sheet of muslin was then nailed over the pit (Figure 57). Afterwards, a plywood board measuring 2.5 by 2.5 ft was placed over the wall, covering both Feature 6 and the pit with the displaced remains. Following documentation of the excavation, the trench was backfilled to a depth of 90 cmbs. Four plywood boards, each approximately 1 by 2.5 ft, were placed on the excavation floor above the burial find location. The remainder of the trench was then backfilled.

The underlying Stratum IIb contains sparse basalt and coral gravel and small marine shell fragments, as well as a stacked basalt feature. Hence, Stratum IIb is also designated as part of SIHP # -8840 Component 2. The feature, designated as Feature 7, is described below.

Feature 7 comprises three stacked basalt cobbles identified within Stratum IIb/SIHP # -8840 Component 2 in the northwest wall of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 124 and 160 cmbs and measures 25 cm across. Its function is indeterminate.

Beneath the SIHP # -8840 Component 2 (Strata IIa and IIb) habitation layers is Stratum IIc, interpreted as an agricultural deposit. Stratum IIc contains cinder gravel and oxidized (red) mottling and is designated as part of SIHP # -8840 Component 1. The underlying Stratum III contains abundant waterworn basalt cobbles and gravel and is interpreted as a streambed.



Figure 54. SIHP # -8840 Component 2, Feature 5 (pit feature, above), and Feature 7 (stacked basalt cobbles, below) in T-2 northwest wall, view to north



Figure 55. SIHP # -8840 Component 2 Feature 5, fire-related feature, in T-2 southeast wall (center), view to east; the Feature 6 human burial is covered by muslin

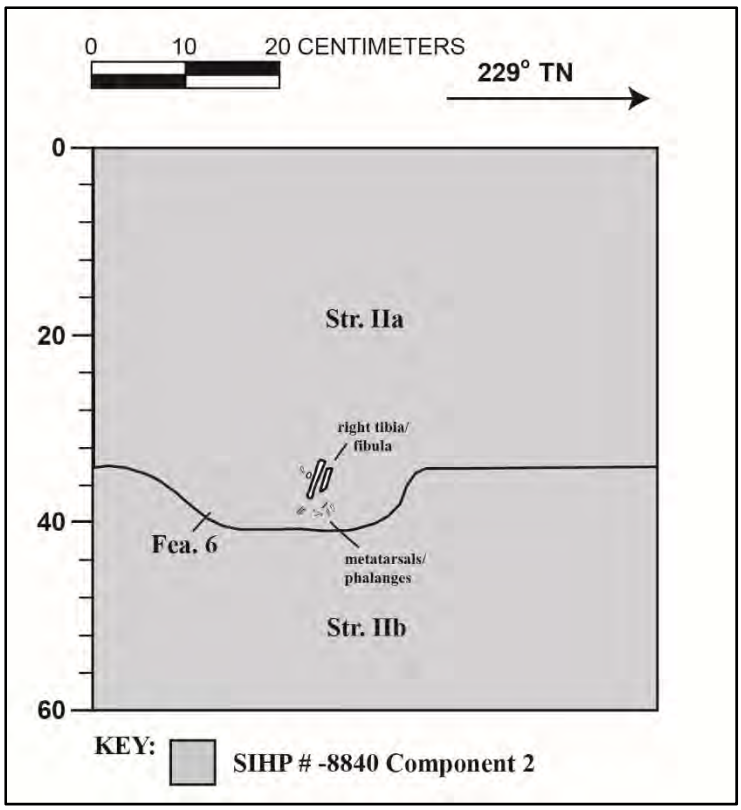

Figure 56. Profile of a portion of T-2 southeast wall, showing SIHP # -8840 Component 2, Feature 6, pit feature with human skeletal remains



Figure 57. Two pieces of cloth covering SIHP # -8840 Component 2, Feature 6 (right) and reinterred displaced remains (left)

4.3.3 Test Excavation 2B (T-2B)

Test Excavation 2B (T-2B) is an exterior excavation, just east of T-2, excavated to investigate the presence of a potential burial cluster and to delineate the burial site boundaries for SIHP # -8840 Component 2, Feature 6 (see Section 4.3.2 above); however, no human remains were identified in T-2B. T-2B is oriented northeast-southwest and measures 6.1 m long by 0.73 m wide, with a maximum depth of 225 cmbs. The water table was encountered at 222 cmbs.

The observed stratigraphy includes three layers of asphalt comprising the parking lot surface (Strata Ia–Ic) and associated very gravelly sand (crushed coral) base course (Stratum Id), gravelly (basalt) silty clay loam fill (Stratum Ie), very gravelly (basalt) sandy clay loam fill (Stratum If; demolition fill), and a hollow tile wall with concrete base (SIHP # -8840 Component 3, Feature 2), overlying two layers of silty clay loam (Strata IIa and IIb; SIHP # -8840 Component 2), gravelly (cinder) loam (Stratum IIc; SIHP # -8840 Component 1), and extremely gravelly (basalt) sand (Stratum III) (Figure 58 through Figure 60 and Table 6). A saw-cut cow (*Bos taurus*) bone recovered from the spoils pile was collected; its exact provenience is unknown.

The Stratum Ib and Ic asphalt layers were highly degraded/crumbly. The Stratum Ie fill contains historical trash, including a small lens of burnt trash; a grab sample of metal, glass, and ceramics as well as a bone artifact were collected. The bone artifact (Acc. # 26), likely part of a folding personal hygiene tool, dates to post-1926, indicating deposition of Stratum Ie after that time. Stratum If is a demolition fill containing basalt gravel and metal and glass debris.

At the lateral interface of Strata Ie and If, resting atop Stratum IIa, is a hollow tile wall with a concrete base (see Figure 58 through Figure 61 and Figure 62). This structural remnant, designated as SIHP # -8840 Component 3, Feature 2, was documented between 22 and 73 cmbs, extending roughly east-west from near the east corner of the trench into the northwest sidewall. The exposed portion is approximately 2.5 m long with a maximum width of 35 cm. No associated builder's pit was observed; rather, it appeared the wall was founded on Stratum IIa prior to the deposition of the Strata Ie and If fills. As the wall overlies and therefore post-dates SIHP # -8840 Component 2, Feature 8 (historical trash pit, discussed below), it was constructed no earlier than 1910. Other portions of this structural remnant were documented in nearby T-2 (see Section 4.3.2) and possibly also in T-4 (see Section 4.3.6).

The underlying Stratum II (a–c) is natural alluvium. Because Strata IIa and IIb contain pit features, they are designated as part of SIHP # -8840 Component 2, habitation layers. The features, designated as Features 8–10, are described below.

Feature 8 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 70 and 145 cmbs at the upper boundary of Stratum IIa/SIHP # -8840 Component 2. Glass, metal, ceramic, and bone artifacts were collected from this feature, which is interpreted as a historical trash pit; a grab sample was collected. Diagnostic artifacts are Euro-American and Asian in origin. A machine-made glass marble (Acc. # 37), a bottle glass fragment (Acc. # 41), and a Dutch gin bottle date to post-1910, 1910-1919, and ca. 1910, respectively, indicating use of the feature after that date. Feature 8 overlies and therefore post-dates Feature 9, discussed below. Feature 8 underlies and therefore pre-dates SIHP # -8841 Component 3, Feature 2 (hollow tile wall), discussed above.

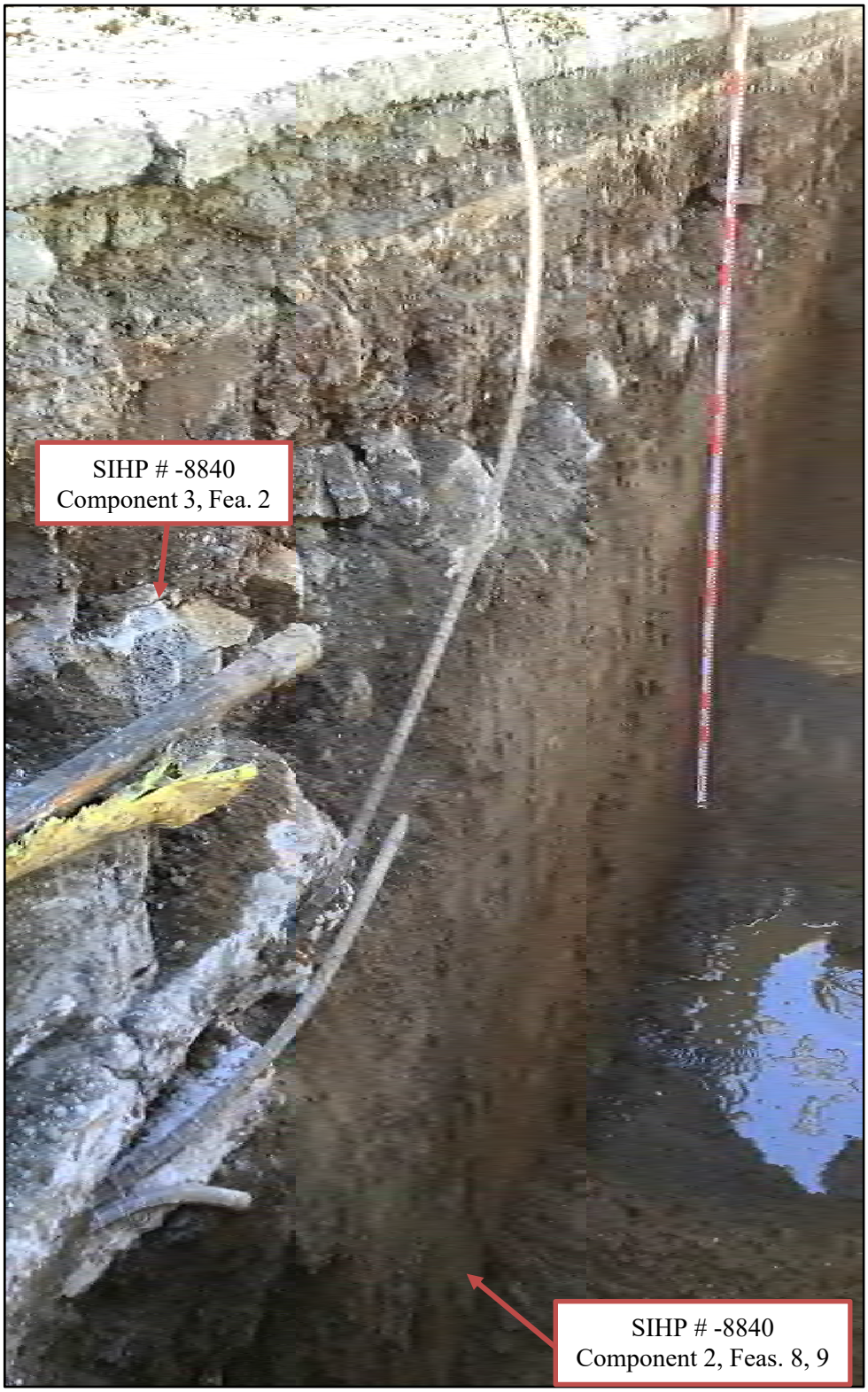

Figure 58. T-2B southeast wall, view to south

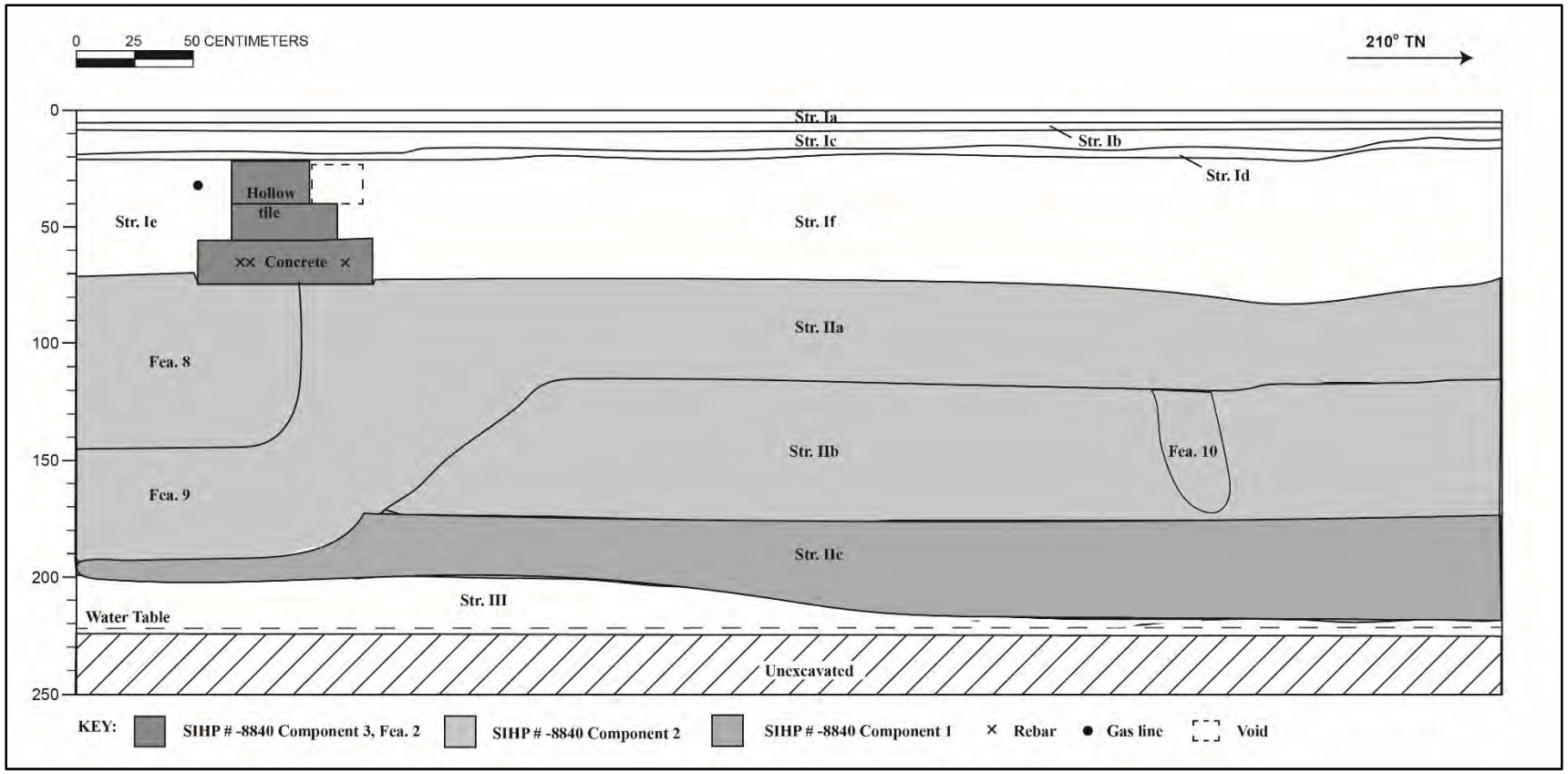

Figure 59. Profile of T-2B southeast wall

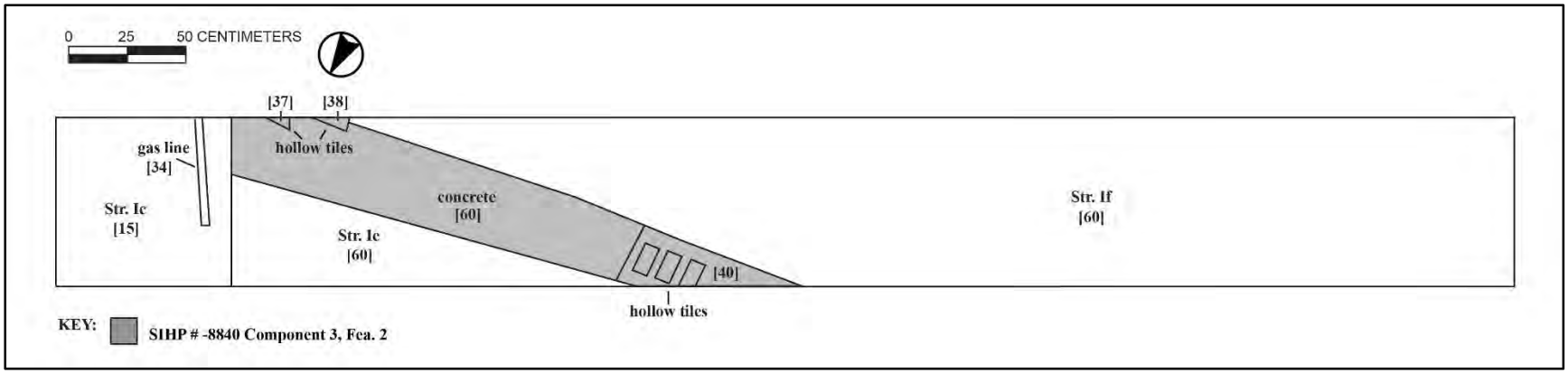

Figure 60. Plan map of T-2B

Table 6. T-2B stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–5	Asphalt; parking lot surface
Ib	5–10	Second layer of asphalt
Ic	10–19	Third layer of asphalt
Id	12–22	Base course; 10YR 8/2, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ie	21–70	Fill; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; fill derived from alluvium, containing basalt gravel
SIHP # -8840 Comp. 3, Fea. 2	22–73	SIHP # -8840 Component 3, Feature 2; hollow tile wall with concrete base; possibly a boundary wall
If	16–79	Fill; 10YR 5/6, yellowish brown; very gravelly sandy clay loam; moderate, medium, blocky structure; moist, friable consistence; no cementation; slightly plastic; mixed origin; clear, discontinuous lower boundary; no roots observed; demolition fill containing basalt gravel and metal and glass debris
IIa	70–191	SIHP # -8840 Component 2; 10YR 3/1, very dark gray; silty clay loam; moderate, fine, blocky structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing pit features (Features 8 and 9)
	70–145	SIHP # -8840 Component 2, Feature 8; 10YR 3/1, very dark gray; silty clay loam; historical trash pit containing glass, metal, ceramic, and bone artifacts
	115–191	SIHP # -8840 Component 2, Feature 9; 10YR 3/1, very dark gray; silty clay loam; pit feature of indeterminate function
IIb	112–176	SIHP # -8840 Component 2; 10YR 3/6, dark yellowish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; habitation layer containing a pit feature (Feature 10)
	117–171	SIHP # -8840 Component 2, Feature 10; 10YR 3/6, dark yellowish brown; silty clay loam; pit feature of indeterminate function

Stratum	Depth (cmbs)	Description
IIc	175–216	SIHP # -8840 Component 1; 10YR 2/2, very dark brown; gravelly loam; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; clear, wavy lower boundary; no roots observed; agricultural deposit containing cinder gravel, oxidized (red) mottling, reddish-orange concretions and nodules, and several tubular root casts
III	197–225 (BOE)	Natural; GLEY 10Y 2.5/1, greenish black; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 61. Plan view of SIHP # -8840 Component 3, Feature 2, hollow tile wall with concrete base, in T-2B



Figure 62. Northeast end of T-2B southeast wall, showing SIHP # -8840 Component 3, Feature 2 (hollow tile wall remnant) overlying SIHP # -8840 Component 2 Features 8 and 9, pit features, view to east

Feature 9 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 115 and 191 cmbs, extending from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrusive through Stratum IIb, and terminating in Stratum IIc. It underlies Feature 8 (described above), which it therefore pre-dates. The exposed portion of the feature is approximately 2 m long. No cultural materials were identified wihtin the feature; its function is indeterminate.

Feature 10 is an oblong pit feature identified in the southeast wall of T-2B (see Figure 58, Figure 59, and Figure 63). It was documented at the upper boundary of Stratum IIb/SIHP # -8840 Component 2, between 117 and 171 cmbs and measures 25 cm across. No cultural materials were identified within the feature; its function is indeterminate.

Stratum IIc contains basalt gravel and oxidized (red) mottling and is interpreted as an agricultural deposit; hence, it is designated as part of SIHP # -8840 Component 1. A bulk sample of Stratum IIc was collected from the excavator bucket. Wet screening of the sample yielded reddish-orange concretions and nodules and several tubular root casts; based on previous archaeological studies (see Section 5.1.1), these are interpreted as evidence of agricultural use. The underlying Stratum III contains abundant waterworn basalt gravel and cobbles and is interpreted as a streambed.



Figure 63. SIHP # -8840 Component 2 Feature 10, pit feature, in T-2B southeast wall, view to south

4.3.4 Test Excavation 2C (T-2C)

Test Excavation 2C (T-2C) is an exterior excavation, just north of T-2, excavated to investigate the presence of a potential burial cluster and to delineate the burial site boundaries of SIHP # -8840 Component 2, Feature 6 (see Section 4.3.2 above); however, no human remains were identified in T-2C. T-2C is oriented northeast-southwest and measures 6.1 m long by 0.76 m wide, with a maximum depth of 225 cmbs. The water table was not encountered.

The observed stratigraphy includes three layers of asphalt (Strata Ia–Ic) and associated very gravelly sand (crushed coral) base course (Stratum Id), very gravelly (basalt) sandy clay loam base course (Stratum Ie), and gravelly silty clay loam fill (Stratum If; demolition fill), overlying two layers of silty clay loam (Strata IIa/SIHP # -8840 Component 2 and IIb) and very gravelly (basalt) sandy clay (Stratum III) (Figure 64, Figure 65, and Table 7).

The Strata Ib and Ic asphalt layers were highly degraded/crumbly. Stratum If is a demolition fill containing medium mammal bone (inconsistent with human) and ceramic, metal, and glass artifacts. The mammal bone and a grab sample of artifacts were collected. Diagnostic artifacts are Hawaiian, Euro-American, and Japanese in origin. One machine-made bottle (Acc. # 161) dates to 1935, indicating the fill was deposited after that date.

Stratum II (a and b) is naturally deposited alluvium, while the underlying Stratum III contains abundant waterworn basalt gravel and cobbles and is interpreted as a streambed. Because Stratum IIa contains charcoal flecking and a pit feature, it is designated as part of SIHP # -8840 Component 2, habitation layers. The feature, designated as Feature 11, is described below.

Feature 11 is a small pit feature identified in the southeast sidewall of T-2C (see Figure 65 and Figure 66). It was documented between 137 and 152 cmbs, extending from the lower boundary of Stratum IIa/SIHP # -8840 Component 2 and terminating in Stratum IIb. It measures 30 cm across. No cultural materials were observed within the feature; its function is indeterminate.



Figure 64. T-2C southeast wall, view to south

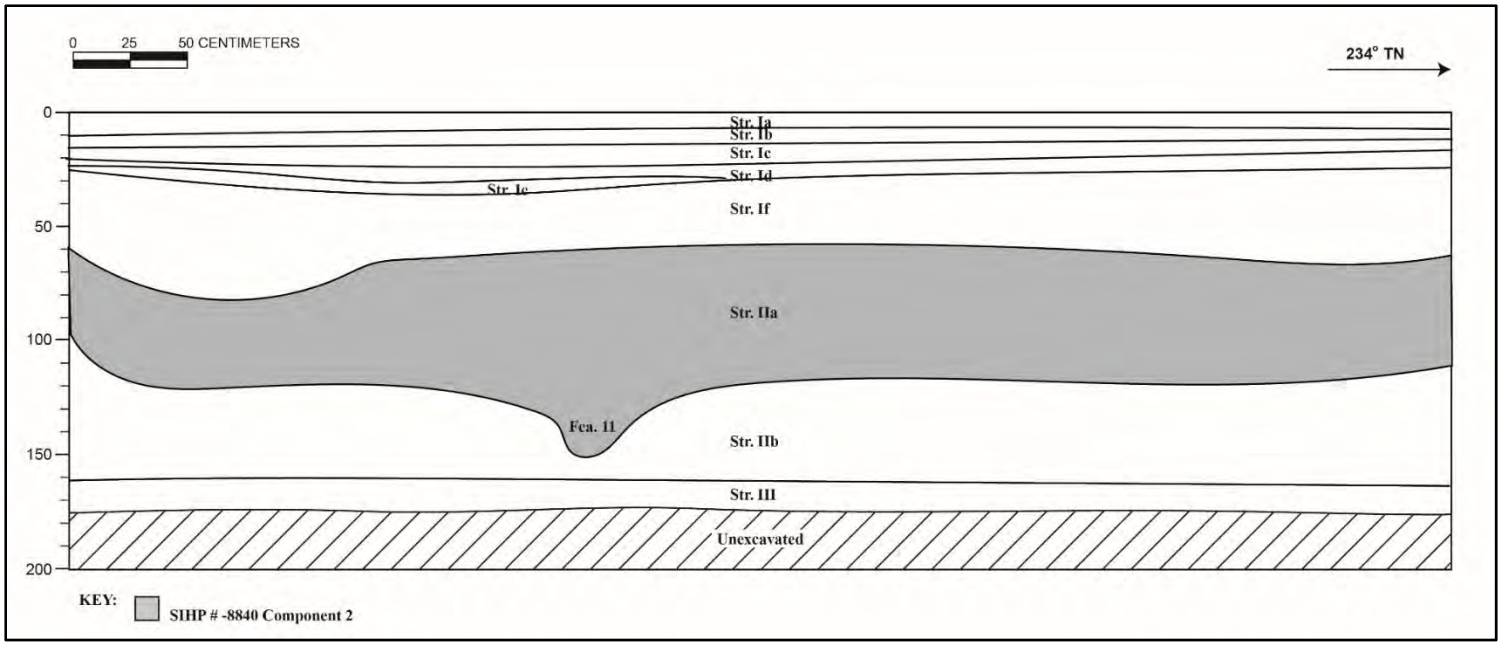

Figure 65. Profile of T-2C southeast wall



Figure 66. SIHP # -8840 Component 2, Feature 11, pit feature of indeterminate function, in T-2C southeast sidewall, view to southeast

Table 7. T-2C stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–8	Asphalt; parking lot surface
Ib	6–16	Second layer of asphalt
Ic	12–26	Third layer of asphalt
Id	25–29	Base course; 10YR 7/3, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ie	29–37	Base course; 10YR 3/1, very dark gray; very gravelly sandy clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course
If	27–64	Fill; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, wavy lower boundary; no roots observed; demolition fill, containing basalt gravel and cobbles, medium mammal bone, and glass, metal, and ceramic artifacts
IIa	55–152	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing charcoal flecking and a pit feature (Feature 11)
	137–152	SIHP # -8840 Component 2, Feature 11; 10YR 2/2, very dark brown; silty clay loam; pit feature of indeterminate function
IIb	100–161	Natural; 10YR 3/3, dark brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
III	161–174 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy clay; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; lower boundary not observed; no roots observed; streambed containing abundant waterworn basalt gravel and cobbles

4.3.5 Test Excavation 3 (T-3)

Test Excavation 3 (T-3) is an exterior excavation near the south corner of the AIS study area. It is oriented northwest-southeast and is 6.15 m long by 0.8 m wide, with a maximum depth of 160 cmbs. The water table was not encountered.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly (basalt) sandy clay loam base course (Stratum Ib), very gravelly sand (crushed coral) base course (Stratum Ic), very gravelly (basalt) sandy clay loam fill (Stratum Id), and gravelly (basalt) sandy clay loam fill (Stratum Ie; demolition fill), overlying gravelly (basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2) and two layers of silty clay loam (Strata IIb and IIc/SIHP # -8840 Component 1) (Figure 67 through Figure 69, and Table 8).

Stratum Ie is a demolition fill containing concrete and metal debris. Large pieces of concrete at either end of the excavation within Stratum Ie threatened to destabilize the sidewalls if removed; hence, only the central portion of the trench was excavated fully (see Figure 69).

The underlying Stratum II (a–c) is naturally deposited alluvium. The upper portion of Stratum IIa has been disturbed or reworked and contains charcoal flecking and red brick fragments (not collected); hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. Stratum IIc contains oxidized (red) mottling and is interpreted as an agricultural deposit; it is designated as part of SIHP # -8840 Component 1.



Figure 67. Southeast end of T-3 southwest wall, showing concrete debris within Stratum Ie, demolition fill, which prevented full excavation, view to south



Figure 68. T-3 southwest wall, central portion, view to southwest

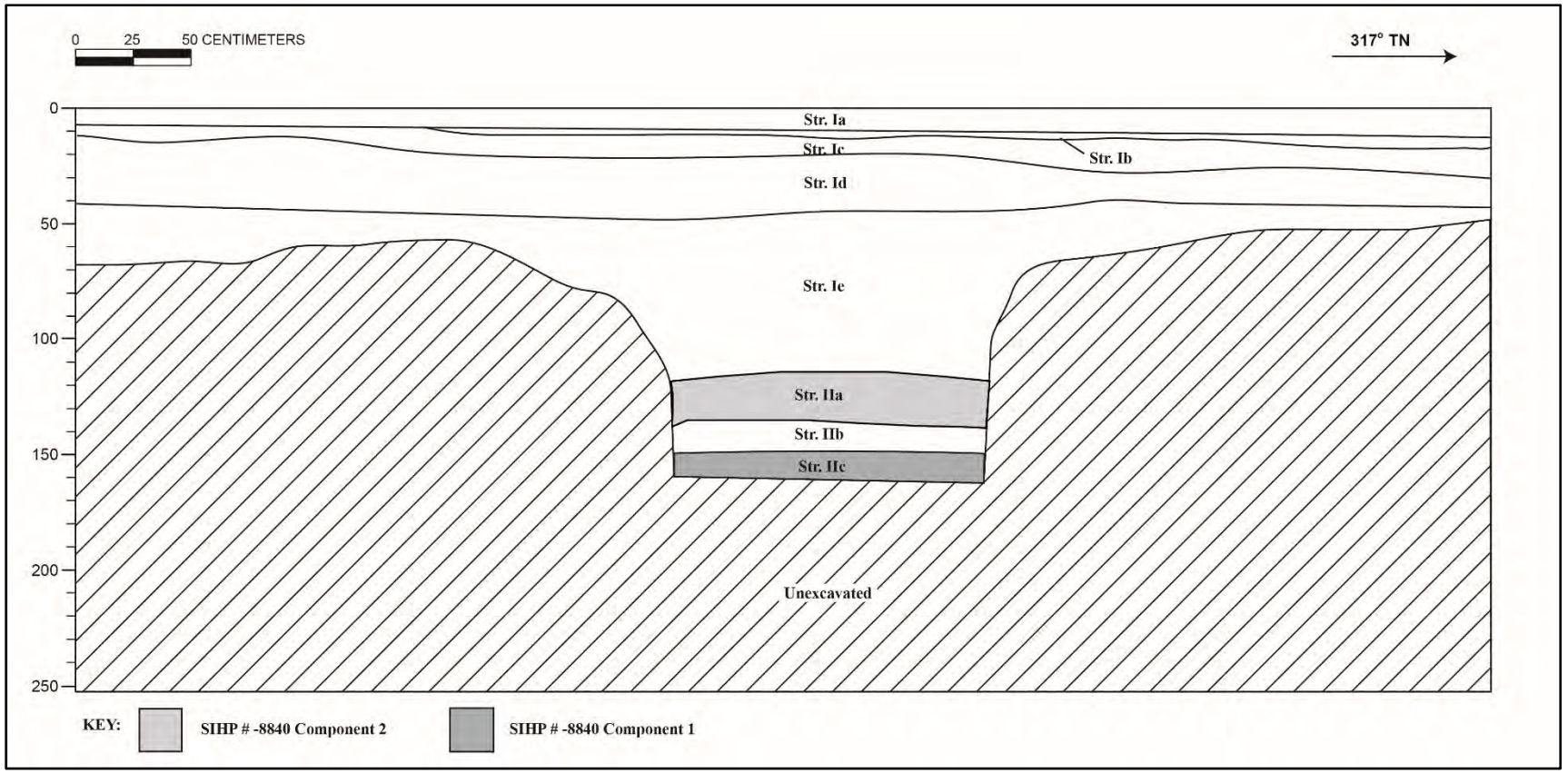

Figure 69. Profile of T-3 southwest wall

Table 8. T-3 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	7–12	Base course; 10YR 4/2, dark grayish brown; extremely gravelly sandy clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course
Ic	7–35	Base course; 10YR 7/3, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Id	12–45	Fill; 2.5YR 3/2, dusky red; very gravelly sandy clay loam; terrigenous origin; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; contains basalt gravel
Ie	35–110	Fill; 10YR 3/3, dark brown; gravelly sandy clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; demolition fill containing basalt gravel and metal and concrete debris
IIa	110–133	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; habitation layer with basalt gravel, charcoal, and red brick in its upper portion
IIb	136–148	Natural; 10YR 3/3, dark brown; silty clay loam; weak, very fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIc	146–160 (BOE)	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; agricultural deposit with oxidized (red) mottling

4.3.6 Test Excavation 4 (T-4)

Test Excavation 4 (T-4) is an exterior excavation in the southeastern portion of the AIS study area. It is oriented northwest-southeast and is 6.1 m long by 0.8 m wide, with a maximum depth of 229 cmbs. The water table was encountered at 223 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly sand (crushed coral) base course (Stratum Ib), very gravelly (basalt) sandy clay loam fill (Stratum Ic; demolition fill), and a concrete footing (SIHP # -8840 Component 3, Feature 3), overlying gravelly (basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2), three layers of silty clay loam (Strata IIb, IIc/SIHP # -8840 Component 1, and IId), and a second layer of gravelly (basalt) silty clay loam (Stratum IIe; SIHP # -8840 Component 1) (Figure 70 through Figure 75 and Table 9). A saw-cut cow (*Bos taurus*) bone and a small mammal bone fragment were collected from the spoils pile; their exact provenience is unknown.

Stratum Ic is a demolition fill containing concrete, brick, hollow tile, and metal debris, as well as a concrete footing (see Figure 72 through Figure 75). A strong odor of petroleum indicated Stratum Ic was contaminated in the ‘Ewa (northwest) portion of the trench; hence, that portion was not fully excavated (see Figure 73). The concrete footing is designated as SIHP # -8840 Component 3, Feature 3. The exposed portion is 85 cm long by 45 cm wide and 15 cm thick, documented between 43 and 58 cmbs within the trench floor and both sidewalls. It may represent the concrete base of the hollow tile wall (SIHP # -8840 Component 3, Feature 2) identified in T-2 and T-2B (see Sections 4.3.2 and 4.3.3 above), as it is of approximately the same thickness, width, and orientation (roughly east-west). Furthermore, the presence of hollow tile debris in the surrounding Stratum Ic fill material supports this hypothesis, suggesting the upper hollow tile portion was once present but has been demolished. Like Feature 2, Feature 3 appeared to be founded upon Stratum IIa and to pre-date the deposition of the surrounding fill layer.

Stratum II (a–e) is natural alluvium. The upper portion of Stratum IIa has been disturbed or reworked and contains charcoal flecking and red brick fragments; hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. Strata IIc and IIe contain oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1 (Figure 76). A bulk sample of Stratum IIe was collected from the spoils pile.



Figure 70. T-4 southwest wall, southeast end, view to south



Figure 71. Lower portion of T-4 southwest wall, showing Stratum II (a–e), view to south



Figure 72. T-4 southwest wall, northwest end, view to west

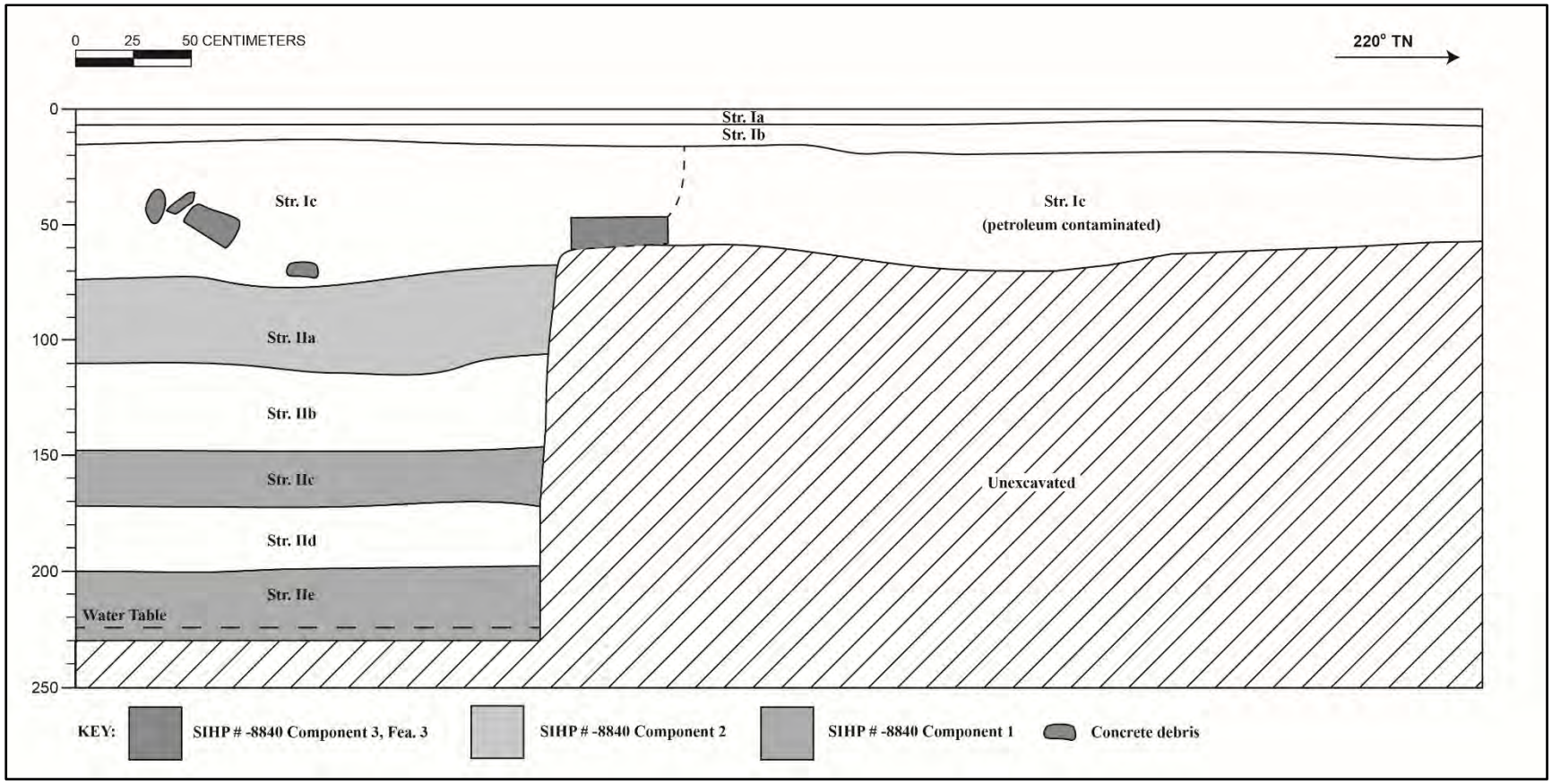

Figure 73. Profile of T-4 southwest wall



Figure 74. Plan view of T-4

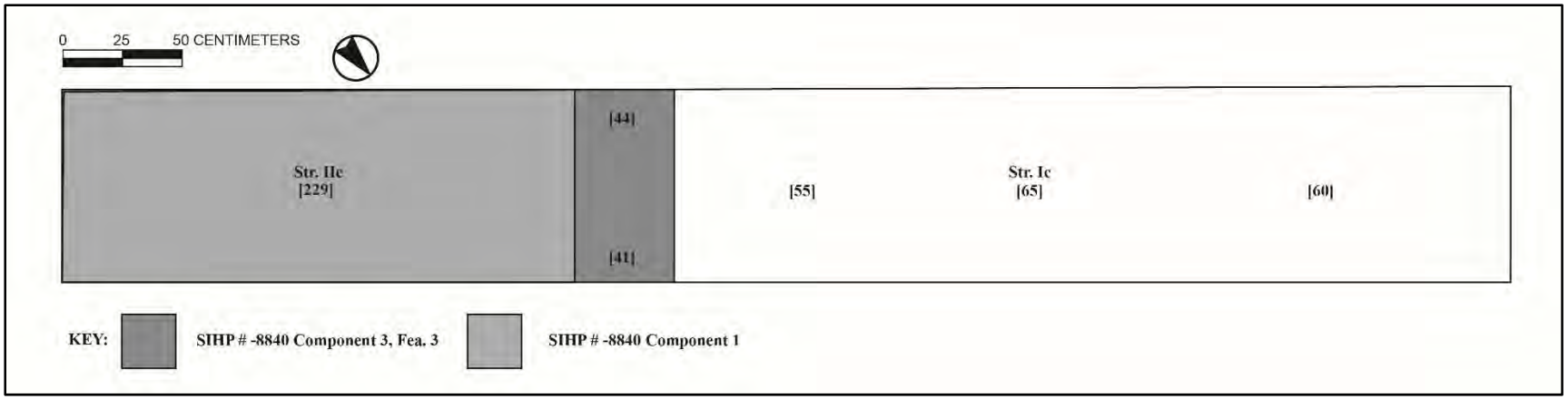

Figure 75. Plan map of T-4

Table 9. T-4 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–6	Asphalt; parking lot surface
Ib	6–20	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	14–74	Fill; 2.5YR 3/2, dusky red; very gravelly sandy clay loam; terrigenous origin; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; demolition fill containing basalt gravel and concrete, hollow tile, brick, and metal debris
SIHP # -8840 Comp. 3, Feature 3	43–58	SIHP # -8840 Component 3, Feature 3; concrete footing; possibly the base of a former hollow tile wall
IIa	71–115	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with basalt gravel, charcoal flecking, and red brick fragments in its upper portion
IIb	105–148	Natural; 10YR 4/3, brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIc	145–165	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural deposit with oxidized (red) mottling
IId	158–200	Natural; 10YR 4/3, brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIe	196–229 (BOE)	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; agricultural deposit with abundant oxidized (red) mottling



Figure 76. Stratum IIe/SIHP # -8840 Component 1 sediment, showing abundant oxidized (red) mottling

4.3.7 Test Excavation 5 (T-5)

Test Excavation 5 (T-5) is an exterior excavation in the southeastern portion of the AIS study area. It is oriented northwest-southeast and is 6.1 m long by 0.75 m wide, with a maximum depth of 224 cmbs. The water table was encountered at 220 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly sand (crushed coral) base course (Stratum Ib), very gravelly (basalt) sandy clay loam fill (Stratum Ic), and very gravelly (basalt) silty clay loam fill (Stratum Id), overlying gravelly (basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2) and five layers of silty clay loam (Strata IIb, IIc/SIHP # -8840 Component 1, IId, IIe, and IIf/SIHP # -8840 Component 1) (Figure 77 through Figure 79 and Table 10). Due to petroleum contamination within Stratum Id, minimal cleaning of the sidewalls was conducted, and a 1-m profile drawing was documented at the center of the trench to minimize the archaeologists' exposure to the contaminated sediment.

A corroded metal spike or nail and a small, non-diagnostic ceramic fragment were identified in Stratum Id; these were photographed but not collected (Figure 80). The underlying Stratum II (a–f) is natural alluvium. The upper portion of Stratum IIa has been disturbed or reworked and contains an abandoned utility pipe as well as glass, metal, and ceramic fragments; hence, Stratum IIa is designated as part of SIHP # -8840 Component 2, habitation layers. Artifacts associated with Stratum IIa were photographed but not collected (Figure 81). Strata IIc and IIf contain oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1. A bulk sample of Stratum IIf was collected from the spoils pile.



Figure 77. T-5 northeast wall, view to north (no photo available at full depth)



Figure 78. Close-up of the profiled (central) portion of T-5 northeast wall, view to north, at 160 cmbs (no photo available at full depth)

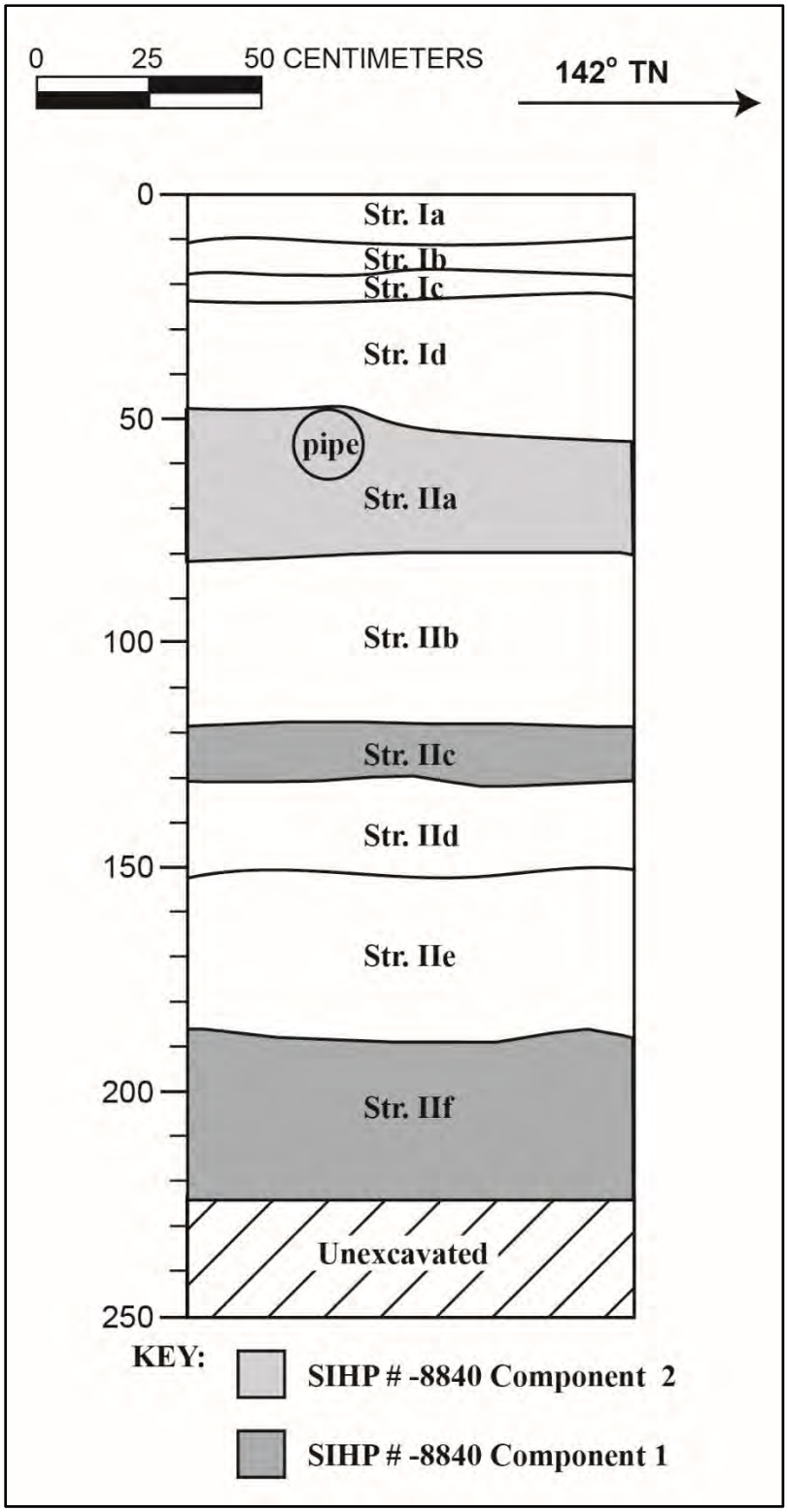

Figure 79. Profile of the central portion of T-5 northeast wall

Table 10. T-5 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	10–18	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	17–24	Fill; 2.5YR 3/2, dusky red; very gravelly sandy clay loam; terrigenous origin; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed contains basalt gravel
Id	23–55	Fill; 10YR 3/2, very dark grayish brown; very gravelly silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; contaminated with petroleum, mottled with 10YR 2/1, black, containing a corroded metal spike or nail and a small, non-diagnostic ceramic fragment
IIa	48–80	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with basalt gravel, an abandoned utility pipe, and glass, metal, and ceramic fragments in its upper portion
IIb	80–118	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIc	118–130	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural deposit with oxidized (red) mottling
IId	130–150	Natural; 10YR 4/3, brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIe	150–187	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium

Stratum	Depth (cmbs)	Description
IIf	187–224 (BOE)	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; agricultural deposit with oxidized (red) mottling



Figure 80. A metal spike or nail (too corroded to analyze) and a non-diagnostic ceramic fragment from T-5 Stratum Id, fill (not collected)



Figure 81. Post-Contact artifacts and utility pipe fragments identified in the upper portion of T-5 Stratum IIa/SIHP # -8840 Component 2 (not collected; no diagnostic elements could be discerned from the photograph)

4.3.8 Test Excavation 6 (T-6)

Test Excavation 6 (T-6) is an exterior excavation in the east corner of the AIS study area. It is oriented northeast-southwest and is 6 m long by 0.7 m wide, with a maximum depth of 213 cmbs. The water table was encountered at 210 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly sand (crushed coral) base course (Stratum Ib), gravelly (basalt) sandy clay loam fill (Stratum Ic; demolition fill), and two layers of silty clay loam fill (Strata Id and Ie), overlying three layers of silty clay loam (Strata IIa, IIb, and IIc/SIHP # -8840 Component 1) and clay loam (Stratum IId) (Figure 82 through Figure 84 and Table 11).

Stratum Ic is a demolition fill layer containing basalt gravel, fish (Osteichthyes) bone, brick, hollow tiles, and concrete (Figure 85); two brick fragments were collected. Both are Euro-American in origin, and one (Acc. # 158) post-dates 1916, indicating the layer was deposited after that date. A large piece of concrete within Stratum Ic near the *mauka* (northeast) end of the trench prevented full excavation in that area (see Figure 84 and Figure 86).

Strata Id and Ie are fills derived from alluvium. Stratum Ie contains red brick, a coral construction block, glass, ceramic, metal, *Sphyraenidae* sp. (barracuda) dentary, slate, and concrete, as well as a carbon graphite rod for a dry-cell battery; a grab sample was collected. Diagnostic artifacts are mainly Japanese and Euro-American in origin. The carbon graphite rod (Acc. # 77) post-dates 1912, indicating the layer was deposited after that date.

The underlying Stratum II (a–d) is naturally deposited alluvium. Stratum IIa contains sparse charcoal flecking but no other potentially cultural materials; hence, it is not designated as part of SIHP # -8840 Component 2, habitation layers. Stratum IIc contains oxidized (red) mottling and is interpreted as an agricultural deposit; it is designated as part of SIHP # -8840 Component 1. Bulk samples were collected from Strata IIa–IId from the northwest wall (see Figure 84).



Figure 82. T-6 northwest wall, *mauka* (northeast) end, excavated to ca. 150 cmbs, view to north



Figure 83. Close-up of the lower portion of the *makai* (southwest) end of T-6 northwest wall, showing Stratum II (a–d), view to west

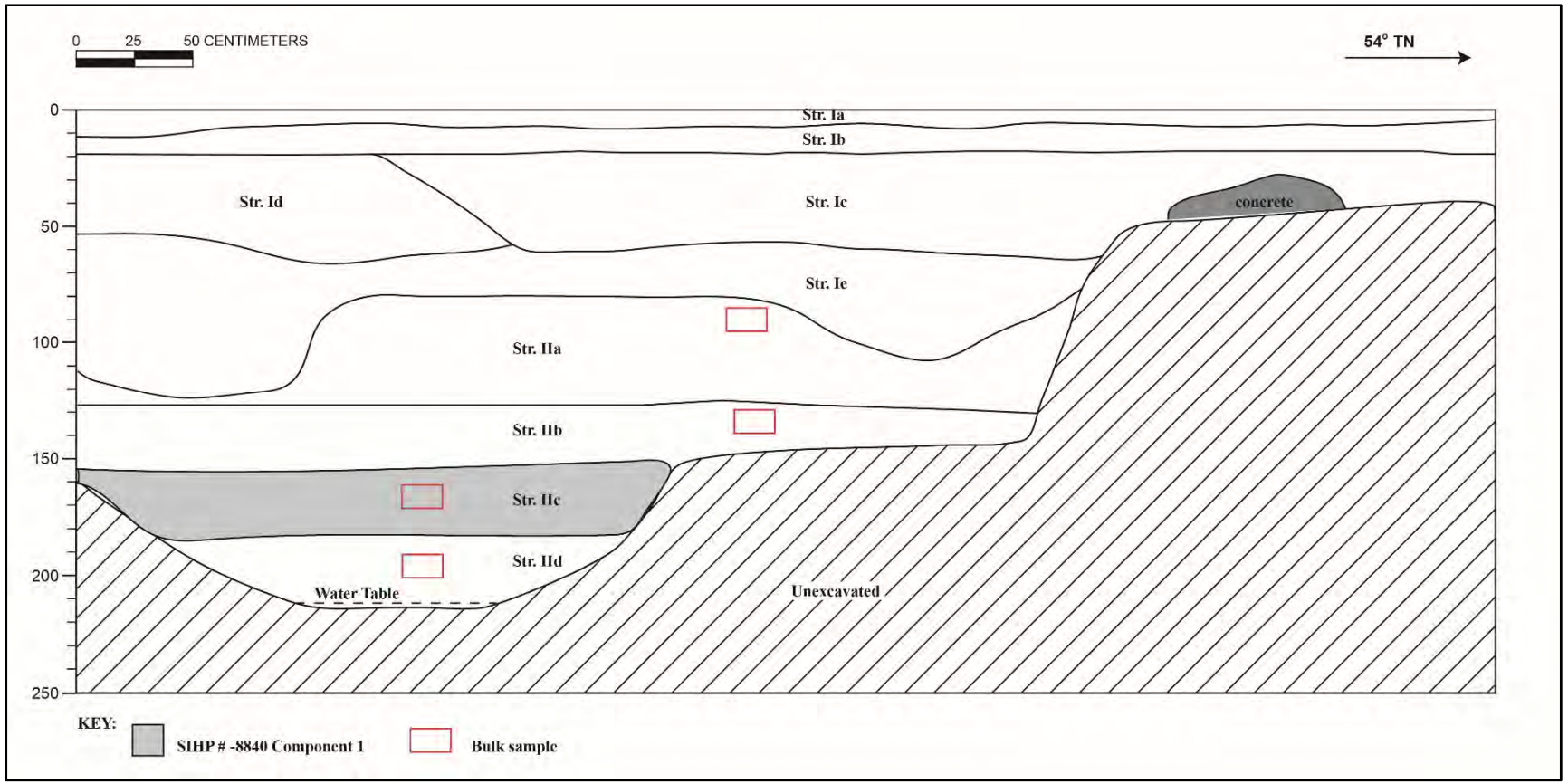

Figure 84. Profile of T-6 northwest wall

Table 11. T-6 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	7–19	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	17–60	Fill; 10YR 4/2, dark grayish brown; gravelly sandy clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; demolition fill containing basalt gravel, fish bone, brick, hollow tiles, and concrete
Id	17–65	Fill; 10YR 4/3, brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; fill derived from alluvium
Ie	51–125	Fill; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; abrupt, irregular lower boundary; no roots observed; contains yellow and red brick, glass, ceramic, metal, marine shell, *Sphyraenidae* sp. (barracuda) dentary, and concrete
IIa	79–130	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with charcoal flecking
IIb	125–155	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIc	150–182	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; agricultural deposit with oxidized (red) mottling
IId	180–213 (BOE)	Natural; 10YR 4/2, dark grayish brown; clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; very plastic; terrigenous origin; lower boundary not observed; few, fine roots; naturally deposited alluvium



Figure 85. Concrete debris from T-6 Stratum Ic, demolition fill (not collected)



Figure 86. North corner of T-6, showing large piece of concrete within Stratum Ic, demolition fill, which prevented further excavation in that area

4.3.9 Test Excavation 7 (T-7)

Test Excavation 7 (T-7) is an exterior excavation in the northeastern portion of the AIS study area. It is oriented northeast-southwest and is 6 m long by 0.7 m wide, with a maximum depth of 218 cmbs. The water table was encountered at 204 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly sand (crushed coral) base course (Stratum Ib), and very gravelly (basalt) silty clay loam fill (Stratum Ic), overlying gravelly (coral and basalt) silty clay loam (Stratum IIa), silty clay loam (Stratum IIb), gravelly (cinder) silty clay loam (Stratum IIc; SIHP # -8840 Component 1), and three additional layers of silty clay loam (Strata IId/SIHP # -8840 Component 1, IIe, and IIf) (Figure 87, Figure 88, and Table 12).

Stratum Ic is fill derived from alluvium, containing coral and basalt gravel and a utility pipe. Stratum II (a–f) is natural alluvium. Strata IIc and IId contain charcoal flecking and oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1. A column sample collected from Stratum II (a–f) was submitted to BGP Consulting (Phillips 2019) for pollen analysis (see Figure 88 and Section 5.4.1).

The Strata IIa, IIb, and IIf samples contain no pollen and therefore could not be assessed. Asteraceae and Cheno-Ams dominate the Stratum IIe sample, suggesting a shrubland environment. Grass pollen gradually increases over time (i.e., increases up the sample column), becoming dominant in Stratum IIc. A single large grass grain identified in Stratum IIc may represent rice (*laiki*; *Oryza sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*Heteropogon contortus*) grass. In addition, a high proportion of fern spores in Stratum IIc might reflect increased input from upslope and/or overbank flooding.

Taken at face value, the pollen data from T-7 suggests a change over time from shrubland to grassland; sedge family pollen, representing wetlands (including *loʻi*), is present but found in relatively low percentages. However, as the percentages of degraded grains within the samples are very high, and the total pollen concentrations are very low, Phillips (2019) cautions that the data is likely not an accurate reflection of the original pollen assemblage. Hence, the lack of evidence for past agriculture is very likely a product of taphonomy (i.e., the very poor pollen preservation).



Figure 87. T-7 southeast wall, view to south

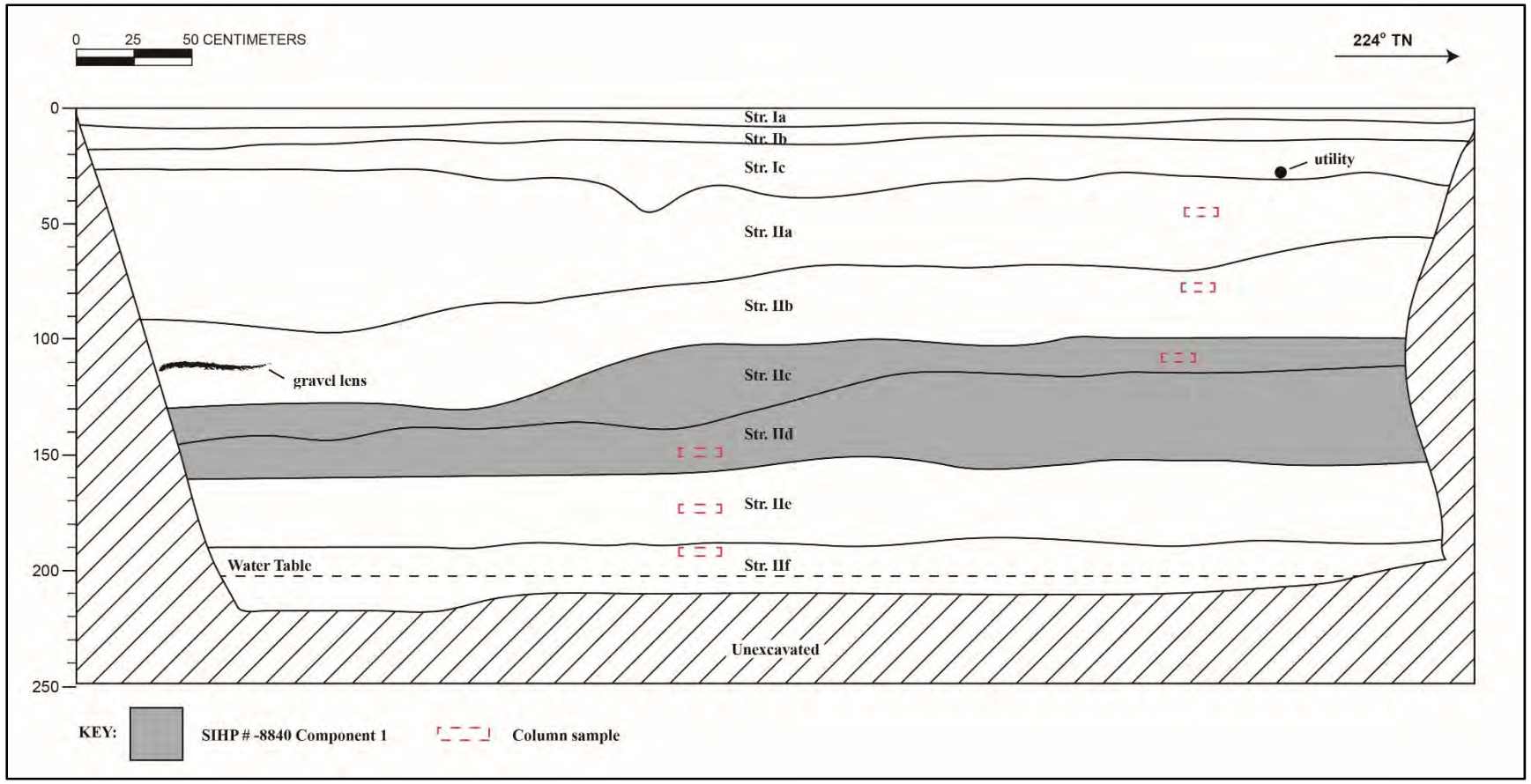

Figure 88. Profile of T-7 southeast wall

Table 12. T-7 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	5–17	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	15–45	Fill; 10YR 4/3, brown; very gravelly silty clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; few, fine to medium roots; derived from alluvium and contains coral and basalt gravel and a utility pipe
IIa	28–100	Natural; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; common, fine roots; naturally deposited alluvium with sparse charcoal flecking
IIb	56–130	Natural; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; common, fine roots; naturally deposited alluvium
IIc	99–148	SIHP # -8840 Component 1; 5YR 3/2, dark reddish brown; gravelly silty clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; agricultural layer with cinder gravel, charcoal flecking, and oxidized (red) mottling
IId	112–160	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; agricultural layer with charcoal flecking and oxidized (red) mottling
IIe	151–188	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIf	188–218 (BOE)	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; naturally deposited alluvium

4.3.10 Test Excavation 8 (T-8)

Test Excavation 8 (T-8) is an exterior excavation in the northeastern portion of the AIS study area. It is oriented northwest-southeast and is 6.1 m long by 0.72 m wide, with a maximum depth of 225 cmbs. The water table was encountered at 198 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) loamy sand base course (Stratum Ib), and extremely gravelly sand (crushed coral) base course (Stratum Ic), overlying gravelly (cinder, basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2), four layers of silty clay loam (Strata IIb, IIc/SIHP # -8840 Component 1, IId/SIHP # -8840 Component 1, and IIe), sandy clay loam (Stratum IIf) and sandy clay (Stratum IIg; SIHP # -8840 Component 1) (Figure 89, Figure 90, and Table 13).

Stratum II (a–g) is natural alluvium (Figure 91). The upper portion of Stratum IIa is disturbed or reworked and contains charcoal, red brick fragments, and fish bone; hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. Strata IIc, IId, and IIg contain charcoal flecking and oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1. Stratum IIg was documented below the water table via excavation of a pot hole (see Figure 90).



Figure 89. T-8 southwest wall, view to west

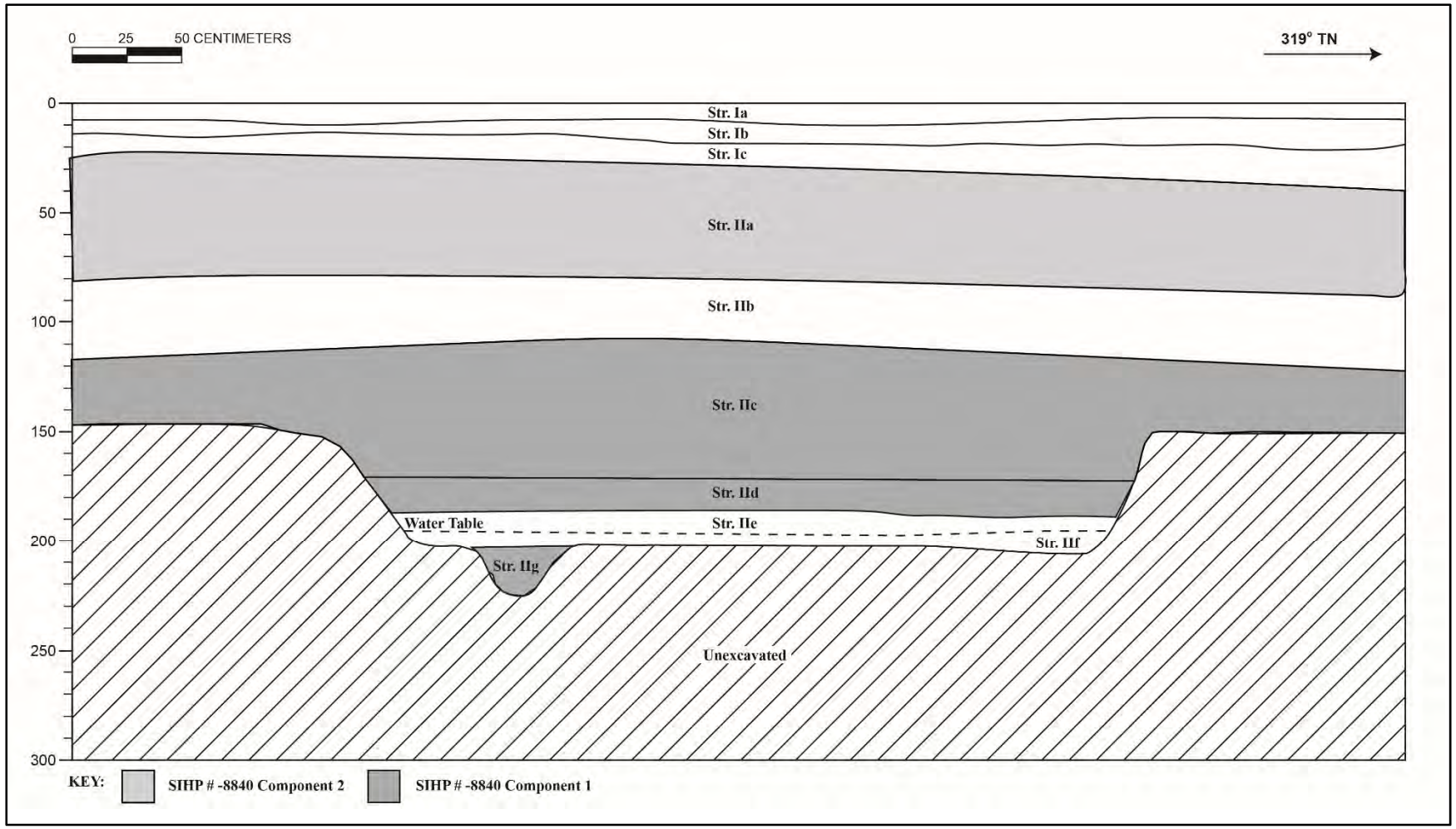

Figure 90. Profile of T-8 southwest wall

Table 13. T-8 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–6	Asphalt; parking lot surface
Ib	6–20	Base course; 10YR 5/1, gray; extremely gravelly loamy sand; moderate, fine, granular structure; moist, firm consistence; no cementation; non-plastic; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	12–40	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
IIa	22–85	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; habitation layer containing cinder and basalt gravel in its lower portion and red brick, charcoal, and fish bone in its upper portion
IIb	76–120	Natural; 10YR 3/3, dark brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIc	107–170	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural deposit with charcoal flecking and oxidized (red) mottling
IId	168–185	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; agricultural deposit with charcoal flecking and oxidized (red) mottling
IIe	185–193	Natural; 10YR 4/2, dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIf	193–205	Natural; 10YR 4/4, dark yellowish brown; sandy clay loam; weak, fine, granular structure; wet, slightly sticky consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium

Stratum	Depth (cmbs)	Description
IIg	205–225 (BOE)	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; sandy clay; weak, fine, granular structure; wet, slightly sticky consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; few, fine roots; agricultural deposit with charcoal flecking and oxidized (red) mottling



Figure 91. Close-up of Strata IIa (SIHP # -8840 Component 2), IIb, and IIc (SIHP # -8840 Component 1), within T-8 southwest wall, view to south

4.3.11 Test Excavation 9 (T-9)

Test Excavation 9 (T-9) is an exterior excavation in the central portion of the AIS study area. It is oriented northeast-southwest and is 6 m long by 0.8 m wide, with a maximum depth of 196 cmbs. The water table was encountered at 193 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) silt loam base course (Stratum Ib), and very gravelly loamy sand (crushed coral) base course (Stratum Ic), overlying five deposits of silty clay loam (Strata IIa/SIHP # -8840 Component 2, IIb, and IIc–IIe/SIHP # -8840 Component 1), gravelly (basalt) silty clay (Stratum IIf; SIHP # -8840 Component 1), and very gravelly (basalt) sandy loam (Stratum III) (Figure 92 through Figure 95 and Table 14).

Stratum II (a–e) is natural alluvium. Stratum IIa contains three pit features, interpreted as historical trash pits, and is designated as part of SIHP # -8840 Component 2, habitation layers. Although the upper boundary of Feature 14 is truncated, and the upper boundaries of Features 12 and 13 may also be truncated, based on their matrices, they appear to originate in Stratum IIa. Features 12–14 and are described below.

Feature 12 is a historical trash pit identified in both sidewalls of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIb–III, and continuing beyond the base of excavation (see Figure 92 through Figure 96). It was documented between 45 and 196 cmbs and ranges between 65 and 100 cm across (*mauka-makai*). The exposed portion of the feature is 80 cm wide, spanning the width of the trench. Feature 12 contains abundant bottle glass and ceramics, as well as marine shell midden (*Periglypta reticulata*), bird (Aves) and saw-cut mammal (inconsistent with human) bone, charcoal, and fire-affected basalt cobbles. The faunal bone and a grab sample of glass, ceramics, and shell midden were collected. Diagnostic artifacts are mainly of European and Euro-American origin and date from the late nineteenth to possibly early twentieth century. One item, a Dutch glass gin bottle (Acc. # 55), dates between 1890 and 1910, indicating use of the feature post-1890. Similarly, the completeness, lack of damage, and consistent size of the collected shells indicate the midden is likely historical (i.e., post-Contact).

Feature 13 is a historical trash pit identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northwest sidewall of T-9 (see Figure 93, Figure 95, and Figure 97). It was documented between 45 and 67 cmbs and measures 1.7 m across. It truncates and therefore post-dates the underlying Feature 14 (see description below). Feature 13 contains metal, glass, ceramic, bird (Aves) and cow (*Bos taurus*) bone, and charcoal. The faunal bone was collected.

Feature 14 is a historical trash pit identified in the northwest sidewall of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIb–IId, and terminating in Stratum IIe (see Figure 93, Figure 95, and Figure 97). It was documented between 44 and 137 cmbs and measures 1.8 m across. It is truncated by the overlying Feature 13 (see description above), which it therefore pre-dates. Feature 14 contains metal, ceramic, glass, goat (*Capra hircus*) bone, charcoal, and fire-affected basalt cobbles. The faunal bone and a grab sample of metal, glass, and ceramics were collected. Diagnostic artifacts are Euro-American in origin, dating from the late nineteenth to possibly the early twentieth century. One glass bottle fragment (Acc. # 159) dates between 1880 and 1920, indicating use of the feature post-1880.



Figure 92. T-9 southeast wall, view to east



Figure 93. T-9 northwest wall, view to west

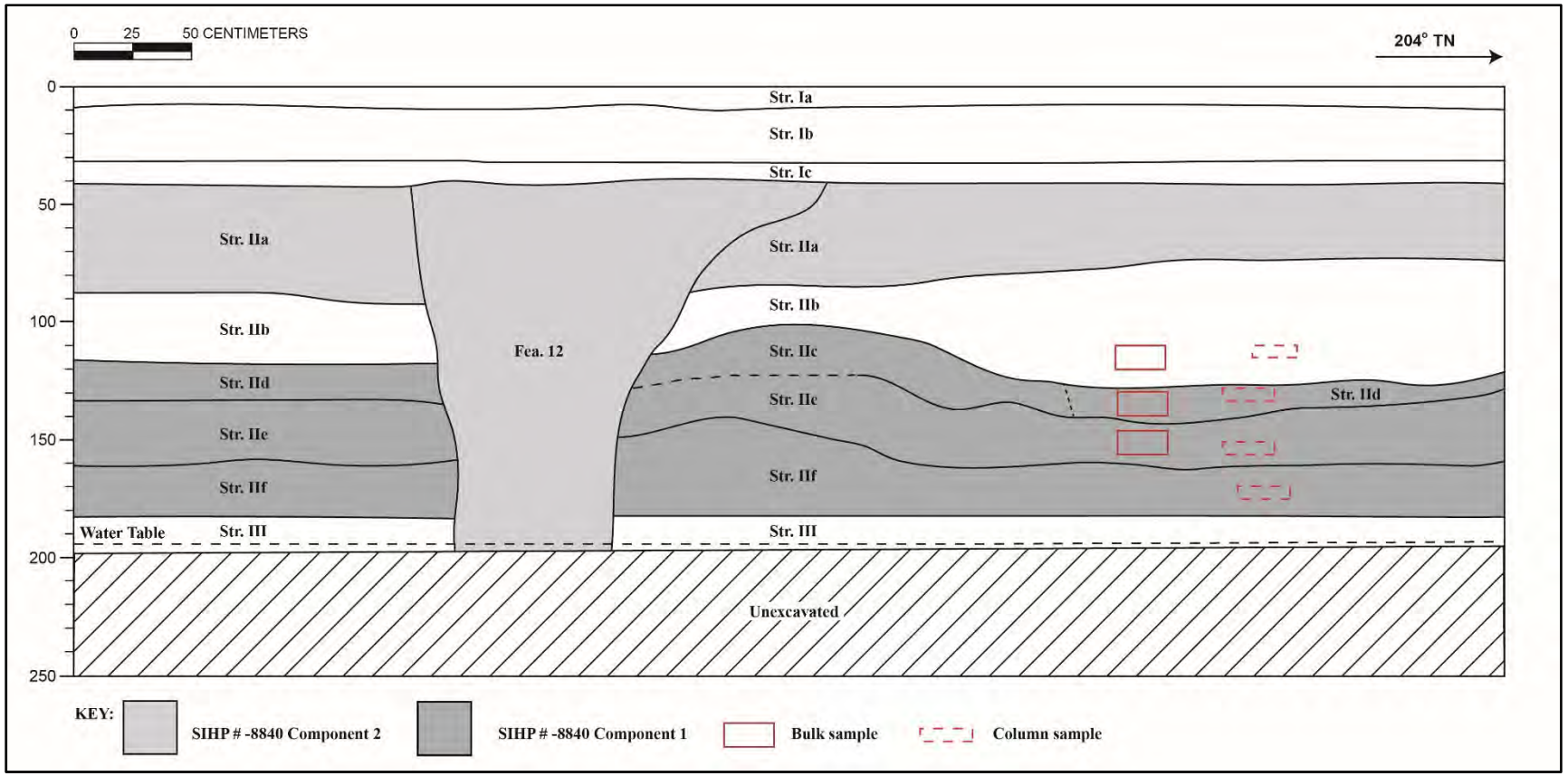

Figure 94. Profile of T-9 southeast wall; note the Stratum IIf bulk sample is not indicated, as it was collected from the trench floor

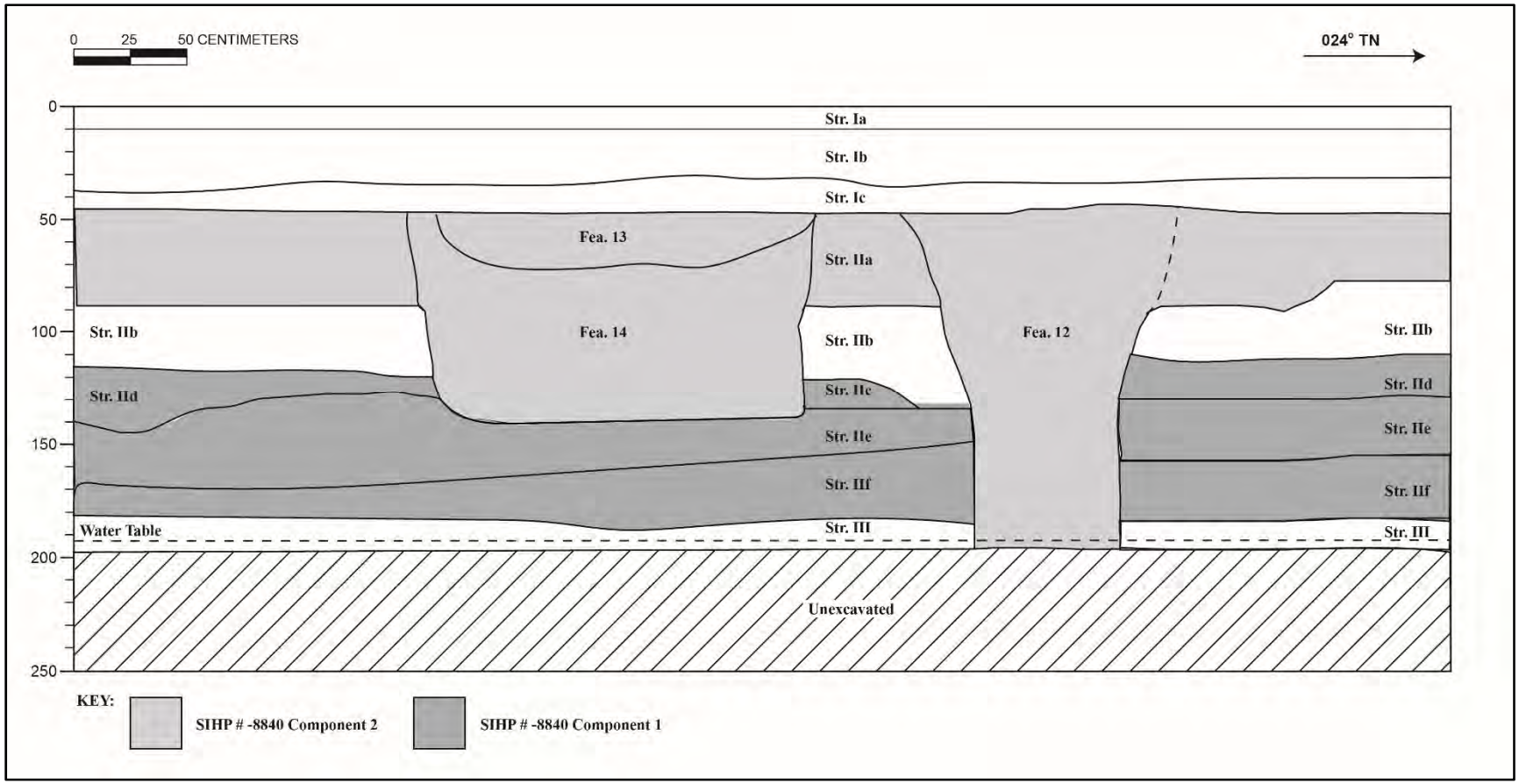

Figure 95. Profile of T-9 northwest wall

Table 14. T-9 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	10–30	Base course; 10YR 2/1, black; extremely gravelly silt loam; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	30–40	Base course; 10YR 7/3, very pale brown; very gravelly loamy sand; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
IIa	45–90	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; habitation layer with pit features (Features 12–14)
	45–196 (BOE)	SIHP # -8840 Component 2, Feature 12; 10YR 3/2, very dark grayish brown; silty clay loam; historical trash pit containing bottle glass, ceramic, shell midden, bird and saw-cut mammal bone, charcoal, and FAR
	45–67	SIHP # -8840 Component 2, Feature 13; 2.5Y 3/3, dark olive brown; silty clay loam; historical trash pit containing metal, ceramic, bird and cow bone, and charcoal
	44–137	SIHP # -8840 Component 2, Feature 14; 10YR 3/3, dark brown; silty clay loam; historical trash pit containing metal, ceramic, goat bone, charcoal, and FAR
IIb	72–122	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
IIc	100–138	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; possible agricultural berm
IId	115–145	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with abundant oxidized (red) mottling

Stratum	Depth (cmbs)	Description
IIe	115–160	SIHP # -8840 Component 1; 10YR 4/3, brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; very plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with abundant oxidized (red) mottling
IIf	125–185	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; gravelly silty clay; strong, fine, blocky structure; moist, extremely firm consistence; no cementation; very plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with abundant oxidized (red) mottling and basalt gravel
III	181–196 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy loam; weak, fine, granular structure; west, slightly sticky consistence; no cementation; non-plastic; terrigenous origin; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 96. SIHP # -8840 Component 2, Feature 12, historical trash pit, in T-9 southeast wall, view to south



Figure 97 SIHP # -8840 Component 2, Features 13 (above) and 14 (below), historical trash pits, in T-9 northwest wall, view to northwest

Strata IIc–IIf are interpreted as agricultural deposits and are designated as part of SIHP # -8840 Component 1. Strata IId–IIf contain abundant oxidized (red) mottling. Stratum IIc does not contain mottling but, based on morphology, is interpreted as a possible berm. Stratum IIc measures approximately 2 m across and 25 cm tall in the southeast sidewall. In the northwest sidewall, it measures only 50 cm across, as it appears to be truncated by SIHP # -8840 Component 2, Feature 14. (Note: it is very difficult to distinguish the T-9 berm in photographs; see Figure 102 for a photograph of a berm in nearby T-9B). The underlying Stratum III contains waterworn basalt gravel and cobbles and is interpreted as a streambed (Figure 98).

Column and bulk samples were collected from Strata IIb and IId–IIf from the southeast wall (see Figure 94; note the Stratum IIf bulk sample was collected from the trench floor and is therefore not depicted on the profile drawing). The column sample was submitted to BGP Consulting (Phillips 2019) for pollen analysis (see Section 5.4.1 for full results). The Stratum IIe sample contained no pollen and therefore could not be assessed.

The T-9 assemblage is more diverse than the T-7 assemblage, with a greater number of types identified in all productive samples. No distinct temporal trends are apparent; rather, the assemblage is characterized by less common types, particularly the spurge and madder families. Normally, this data would be interpreted as reflecting local stands of shrubs and herbs. However, as the percentages of degraded grains within the samples are very high, and the total pollen concentrations are very low, Phillips (2019) cautions that the data is likely not an accurate reflection of the original pollen assemblage. The fact that sedge pollen, indicative of a wetland environment such as a *lo‘i*, is unexpectedly scarce is likely also a product of the very poor pollen preservation within the samples.

Wet screening of the bulk samples yielded reddish nodules within Strata IId and IIe, as well as reddish-orange concretions and nodules and several tubular root casts within Stratum IIf; based on previous archaeological studies (see Section 5.1.1), these are interpreted as evidence of agricultural use.

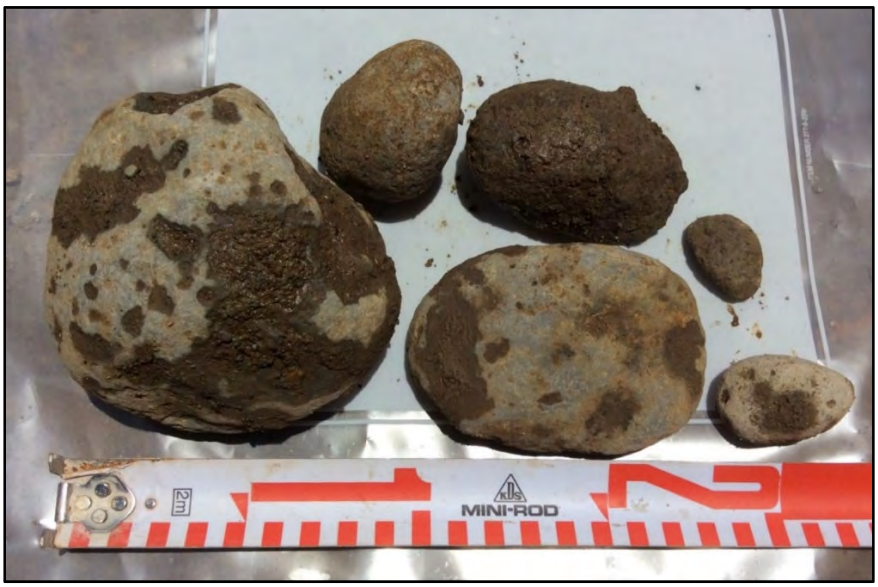

Figure 98. Waterworn basalt cobbles from Stratum III, streambed

4.3.12 Test Excavation 9B (T-9B)

Test Excavation 9B (T-9B) is an exterior excavation, just east of T-9, excavated to investigate a potential agricultural berm feature identified in T-9 (see Section 4.3.11 above). It is oriented northeast-southwest and is 6.1 m long by 0.73 m wide, with a maximum depth of 212 cmbs. The water table was not encountered.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) silt loam base course (Stratum Ib), and very gravelly loamy sand (crushed coral) base course (Stratum Ic), overlying gravelly (basalt) loam (Stratum IIa; SIHP # -8840 Component 2), loam (Stratum IIb), three layers of silty clay loam (Strata IIc–IIe; SIHP # -8840 Component 1), and very gravelly (basalt) sandy loam (Stratum III) (Figure 99, Figure 100, and Table 15). A large pocket of modern disturbance truncates Stratum II (a–e) at the *makai* (southwest) end of the excavation (see Figure 100).

Stratum II (a–e) is natural alluvium. Because Stratum IIa contains a pit feature, it is designated as part of SIHP # -8840 Component 2, habitation layers. The pit feature, designated as Feature 15, is described below.

Feature 15 is an oblong pit feature identified in the southeast wall of T-9B. It originates in Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum IIe (see Figure 100 and Figure 101). It was documented between 65 and 150 cmbs and measures 35–45 cm across. No cultural materials were identified within the feature; its function is indeterminate.

Strata IIc through IIe are interpreted as agricultural deposits and are designated as part of SIHP # -8840 Component 1. Strata IId and IIe contain abundant oxidized (red) mottling. Stratum IIc, which does not contain mottling, represents possible agricultural berms identified at both ends of the excavation. The berm at the *mauka* (northeast) end measures approximately 1.7 m across by 35 cm tall (Figure 102). The berm at the *makai* (southwest) end measures approximately 1.5 m across by 30 cm tall, although it is bisected by SIHP # -8840 Component 2, Feature 15. As these berms do not align with the potential berm identified in T-9, this area may represent the convergence of multiple agricultural plots.

Bulk samples were collected from Strata IIc–IIe, and a column sample was collected from Strata IIc and IIe from the southeast wall (see Figure 100). The underlying Stratum III contains abundant waterworn basalt gravel and cobbles and is interpreted as a streambed.



Figure 99. T-9B southeast wall, view to east

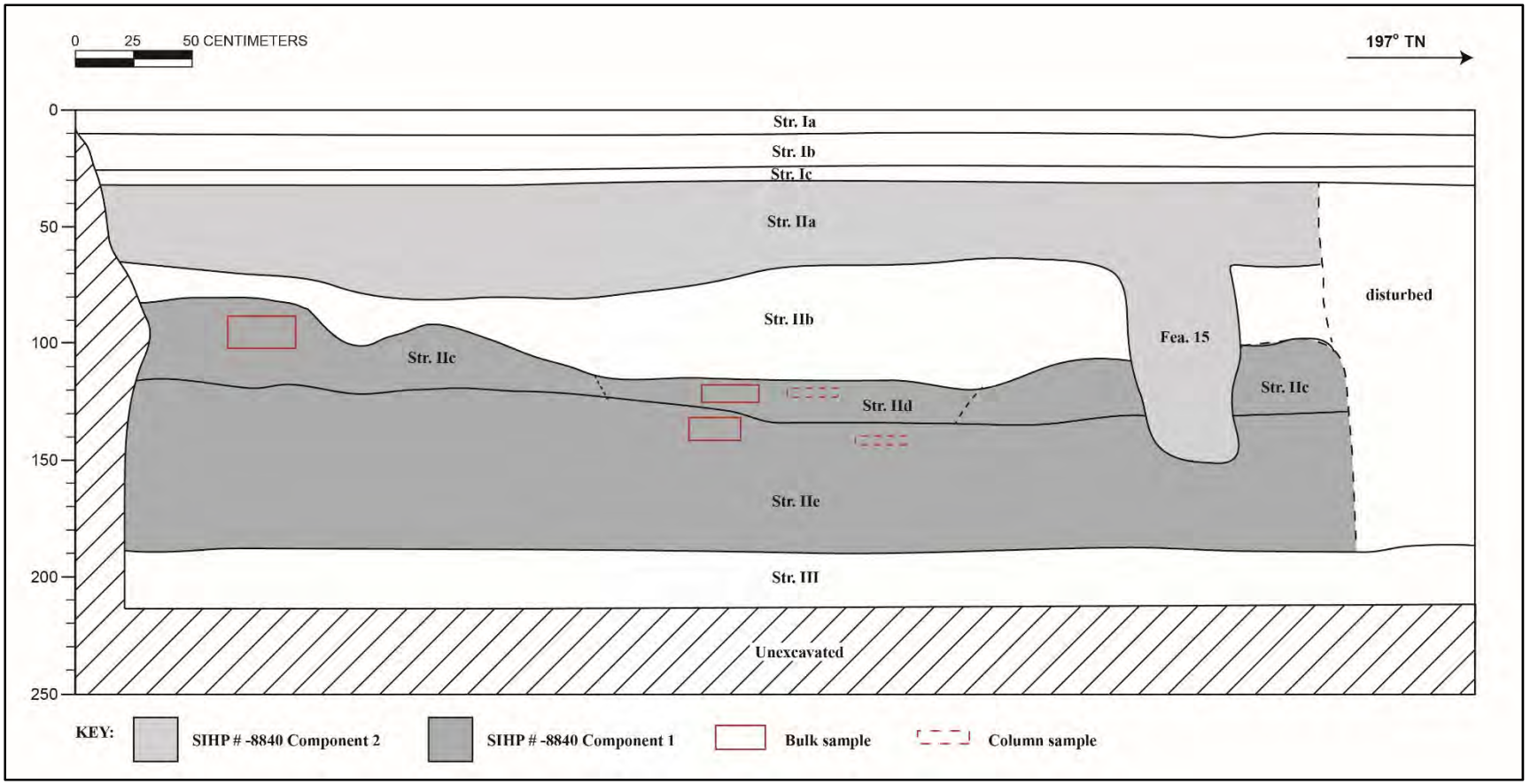

Figure 100. Profile of T-9B southeast wall

Table 15. T-9B stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	9–24	Base course; 10YR 2/1, black; extremely gravelly silt loam; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	23–31	Base course; 10YR 7/3, very pale brown; very gravelly loamy sand; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
IIa	30–149	SIHP # -8840 Component 2; 10YR 3/3, dark brown; gravelly loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing basalt gravel and a pit feature (Feature 15)
	65–150	SIHP # -8840 Component 2, Feature 15; 10YR 3/3, dark brown; cobbly loam; pit feature of indeterminate function containing several waterworn basalt cobbles
IIb	60–118	Natural; 10YR 3/4, dark yellowish brown; loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
IIc	79–123	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; possible agricultural berm
IId	106–134	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with oxidized (red) mottling
IIe	115–188	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural layer with oxidized (red) mottling
III	188–212 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy loam; weak, fine, granular structure; west, slightly sticky consistence; no cementation; non-plastic; terrigenous origin; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 101. SIHP # -8840 Component 2, Feature 15, pit feature of indeterminate function, in T-9B southeast wall, view to south



Figure 102. Close-up of the *mauka* (northeast) end of T-9B southeast wall, view to east; red arrow indicates possible agricultural berm

4.3.13 Test Excavation 10 (T-10)

Test Excavation 10 (T-10) is an interior excavation inside the central portion of the John R. Gilliland Sr. Building. It is oriented northwest-southeast and is 3.05 m long by 0.89 m wide, with a maximum depth of 180 cmbs. The water table was not encountered.

The observed stratigraphy includes the concrete floor (Stratum Ia), gravelly (basalt) sandy clay loam fill (Stratum Ib), an etched concrete surface (Stratum Ic; SIHP # -8840 Component 3, Feature 4), very gravelly sand (crushed coral) fill (Stratum Id), gravelly (basalt) clay loam construction fill (Stratum Ie), and a mortared brick structural remnant with a concrete foundation (SIHP # -8840 Component 3, Feature 5), overlying three layers of gravelly (basalt or cinder) silty clay loam (Strata IIa/SIHP # -8840 Component 2, IIb, and IIc/SIHP # -8840 Component 1) and cobbly (basalt) silty clay loam (Stratum III) (Figure 103 through Figure 105 and Table 16). Small mammal and saw-cut cow (*Bos taurus*) bone was collected from the spoils pile; the exact provenience is unknown.

Stratum Ib contains concrete debris. The underlying etched concrete surface (Stratum Ic) is designated as SIHP # -8840 Component 3, Feature 4 (see Figure 103 through Figure 106). It is 10–15 cm thick, documented between 28 and 43 cmbs, and extended across the entire excavation prior to be being removed. It overlies crushed coral fill (Stratum Id) and construction fill (Stratum Ie), which contain utility pipes that prevented full excavation in the southeast portion of the trench (see Figure 105). A review of historical maps suggests SIHP # -8840 Component 3, Feature 4, is associated with a former unspecified store fronting River Street, indicated on the 1950 Sanborn map as having a “CONC FL” (concrete floor) (see Figure 27 and Figure 166).

A second infrastructure remnant, designated as SIHP # -8840 Component 3, Feature 5, was identified below the Stratum Id crushed coral fill in the southern corner of the excavation, between 60 and 110 cmbs. It is composed of mortared brick atop a concrete foundation (see Figure 104, Figure 105, and Figure 107). Each brick is 13 cm long by 10 cm wide and 6 cm tall; no maker’s mark was observed. The concrete base is approximately 10 cm thick. A maximum of seven courses was observed within the exposed portion of the feature (adjacent to the southwest sidewall, not depicted in the stratigraphic profile), which comprises two walls at right angles, representing the northern corner of a former building/structure. The exposed portion of the feature is 50 cm long (northeast-southwest) by 45 cm wide (northwest-southeast) and 50 cm tall. It was not possible to extend the excavation in order to expose the feature further, due to the presence of an active subsurface electrical line.

SIHP # -8840 Component 3, Feature 5, appeared to be founded on Stratum IIb, natural alluvium, as no builder’s pit was identified within the surrounding Stratum IIa (SIHP # -8840 Component 2, habitation layer), suggesting Feature 5 pre-dates Stratum IIa. However, according to Lebo (1997:106–107), the first brick structure was built in Honolulu in 1847. As radiocarbon dating (see Section 5.4.3) indicates use of Stratum IIa by 1810, Feature 5 therefore post-dates at least the older portions of Stratum IIa (the Stratum IIa sediment likely accumulated over a relatively long period of time, with multiple episodes of deposition). A review of historical maps dating from 1906 to 1950 (see Figure 163 through Figure 166) depict no brick structure or building in this location, suggesting Feature 5 pre-dates 1906. In addition, glass, metal, and ceramic fragments collected from the spoils pile likely originate from the Stratum Ie fill, which overlies and therefore



Figure 103. T-10 northeast wall, view to east



Figure 104. T-10 southeast wall, view to southeast

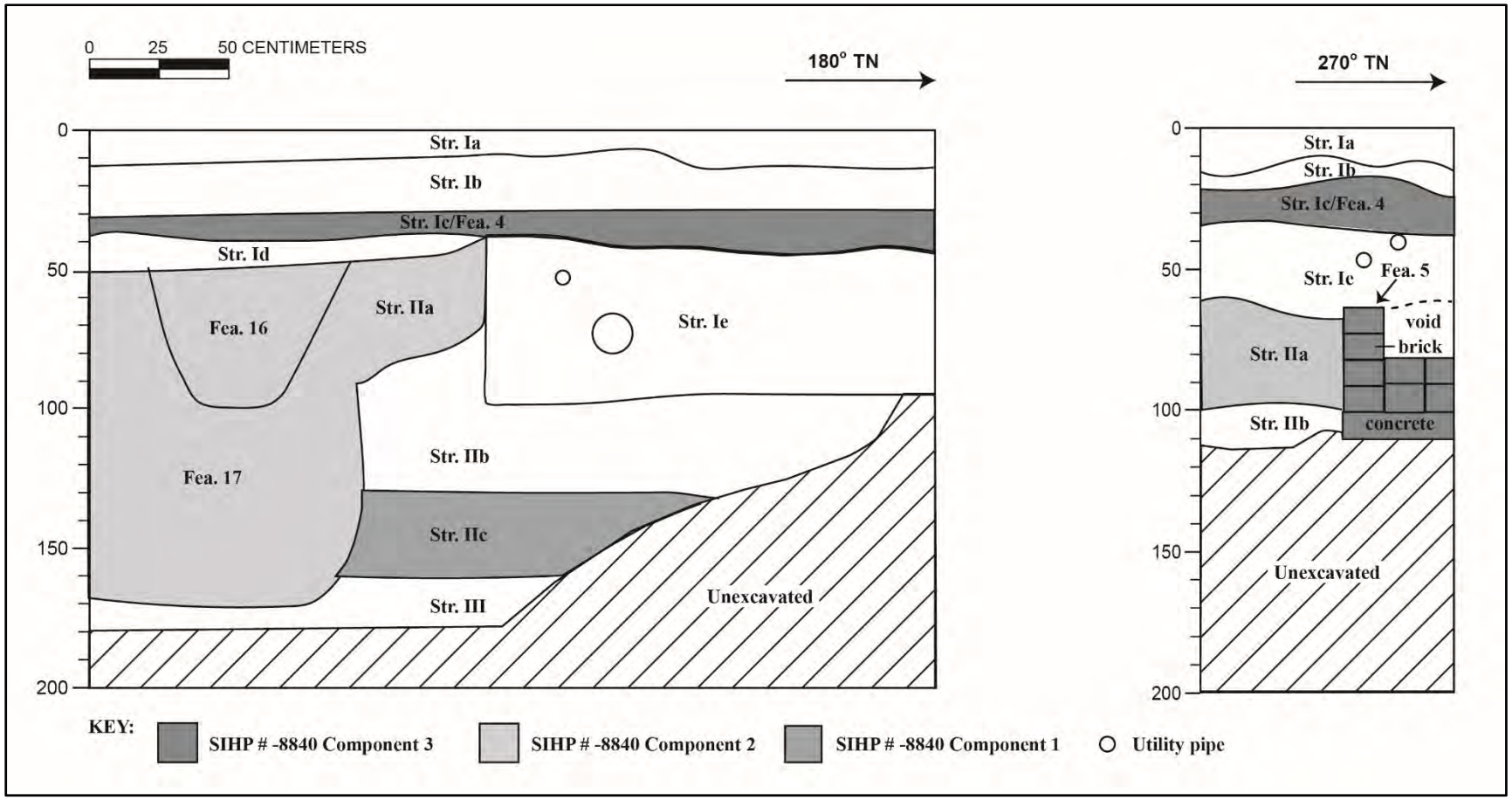

Figure 105. Profile of T-10 northeast (left) and southeast (right) walls

Table 16. T-10 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–14	Concrete; John R. Gilliland Sr. Building floor
Ib	11–29	Fill; 10YR 4/4, dark yellowish brown; gravelly sandy clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; contains basalt gravel and concrete debris
Ic	28–43	SIHP # -8840 Component 3, Feature 4; etched concrete surface, likely associated with a former unspecified store on River Street
Id	37–49	Fill; 10YR 7/4, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; marine origin; abrupt, discontinuous lower boundary; no roots observed; crushed coral fill containing two utility pipes
Ie	37–100	Construction fill; 10YR 3/2, very dark grayish brown; gravelly clay loam; moderate, medium, blocky structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; utility pit composed of fill derived from alluvium and containing two utility pipes
IIa	45–170	SIHP # -8840 Component 2; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; habitation layer containing basalt gravel and pit features
	46–99	SIHP # -8840 Component 2, Feature 16; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; pit feature of indeterminate function
	90–170	SIHP # -8840 Component 2, Feature 17; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; pit feature of indeterminate function containing sparse bottle glass and FAR
SIHP # -8840 Comp. 3, Feature 5	60–110	SIHP # -8840 Component 3, Feature 5; mortared brick structural remnant with concrete foundation
IIb	74–127	Natural; 10YR 2/2, very dark brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium with root voids

Stratum	Depth (cmbs)	Description
IIc	143–160	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit containing cinder gravel and oxidized (red) mottling
III	160–180 (BOE)	Natural; 10YR 3/1, very dark gray; cobbly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; streambed containing waterworn basalt gravel and cobbles



Figure 106. Plan view of SIHP # -8840 Component 3, Feature 4, etched concrete surface



Figure 107. SIHP # -8840 Component 3, Feature 5, mortared brick structural remnant with concrete foundation, in T-10 southern corner, view to south

post-dates Feature 5. These include items of U.S., Euro-American, and Asian (primarily Chinese) origin, dating from the mid-nineteenth to early twentieth century. One glass medicine bottle (Acc. # 110) dates to 1924-1940, indicating Stratum Ie was deposited after 1924. This is consistent with a late nineteenth or early twentieth century date for construction of Feature 5.

Stratum II (a–d) is natural alluvium. Because Stratum IIa contains two pit features, it is designated as part of SIHP # -8840 Component 2, habitation layers. Although the upper boundary of Feature 16 may be truncated, based on its matrix, it appears to originate in Stratum IIa. Its position at the upper boundary of the layer indicates it is more recent than (i.e., post-dates) the underlying Feature 17. Features 16 and 17 are described below.

Feature 16 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northeast wall of T-10 (see Figure 105 and Figure 108). It was documented between 46 and 99 cmbs and measures approximately 65 cm across. It overlies and

therefore post-dates Feature 17 (described below). No cultural materials were observed within the feature; its function is indeterminate.

Feature 17 is a large pit feature identified in the northeast wall of T-10, below Feature 16 (described above), which it therefore pre-dates (see Figure 105 and Figure 108). It extends from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum III. It was documented between 60 and 110 cmbs and measures 95 cm across. Several pieces of bottle glass and FAR were identified at the base of the feature. The bottle glass was collected; two diagnostic fragments (Acc. #s 74 and 76) date to 1800-1910, indicating use of the feature post-1800. The function of this feature is indeterminate.

Stratum IIc contains oxidized (red) mottling and is interpreted as an agricultural layer; it is designated as part of SIHP # -8840 Component 1. The underlying Stratum III contains waterworn basalt gravel and cobbles and is interpreted as a streambed.



Figure 108. Northwest end of T-10 northeast wall, showing remnant of SIHP # -8840 Component 3, Feature 4, etched concrete surface, above SIHP # -8840 Component 2, Features 16 and 17, pit features, view to north

4.3.14 Test Excavation 11 (T-11)

Test Excavation 11 (T-11) is an interior excavation, northeast of T-10 (discussed in Section 4.3.13 above). It is oriented northeast-southwest and is 2.96 m long by 0.71 m wide, with a maximum depth of 195 cmbs. The water table was not encountered.

The observed stratigraphy includes the concrete floor of the John R. Gilliland Sr. Building (Stratum Ia) and associated extremely gravelly (basalt) sand base course (Stratum Ib), an etched concrete surface (Stratum Ic; SIHP # -8840 Component 3, Feature 4), very gravelly (basalt) sandy loam construction fill (Stratum Id), very gravelly sand (crushed coral) fill (Stratum Ie), gravelly silty clay loam burnt trash fill (Stratum If; SIHP # -8840 Component 3, Feature 6), gravelly sandy loam fill (Stratum Ig), and very gravelly clay loam fill (Stratum Ih), overlying two layers of silty clay loam (Strata IIa/SIHP # -8840 Component 2 and IIb) and a layer of cobbly (basalt) silty clay loam (Stratum III) (Figure 109, Figure 110, and Table 17).

Beneath the current concrete floor and associated basalt gravel base course (Strata Ia and Ib) is an etched concrete surface (Stratum Ic), documented between 18 and 41 cmbs (see Figure 109 through Figure 111). Designated as SIHP # -8840 Component 3, Feature 4, it is 15–20 cm thick and extended across the entire excavation prior to being removed. The same concrete surface was documented in nearby T-10. As in T-10, it overlies construction fill (Stratum Id) and crushed coral fill (Stratum Ie). A review of historical maps suggests Feature 4 is associated with a former unspecified store fronting River Street, indicated on the 1950 Sanborn map as having a “CONC FL” (concrete floor) (see Figure 27 and Figure 166).

Below Stratum Ie is a thin burnt trash layer (Stratum If), approximately 5–10 cm thick, documented between 45 and 56 cmbs (see Figure 109, Figure 110, and Figure 112). Designated as SIHP # -8840 Component 3, Feature 6, it contains bottle glass, charcoal, and ceramics; a grab sample of glass and ceramics was collected. A saw-cut small mammal bone recovered from the backdirt pile may also be associated with the layer; however, its provenience is uncertain. Feature 6 underlies and therefore pre-dates the Feature 4 etched concrete surface (discussed above), which was likely in place by 1950. As the underlying Stratum IIa/SIHP # -8840 Component 2 habitation layer likely functioned as a surface until at least 1935 (see Section 5.2.4 discussion), Feature 6 was likely deposited sometime between 1935 and 1950. This timeline is supported by the associated artifacts. Although none of the collected artifacts were sufficiently diagnostic to be dated to a particular year or even decade, the date ranges for the items fall between the 1840s and 1930s (see Section 5.2 Artifact Analysis).

The underlying Strata Ig and Ih contain sparse red brick fragments. No maker’s mark was observed, and the fragments were not collected.

Stratum II (a and b) is naturally deposited alluvium. Stratum IIa contains charcoal flecking and pit features and is therefore designated as part of SIHP # -8840 Component 2. The two pit features, designated as Features 18 and 19, are described below.

Feature 18 is a basin-shaped pit feature identified in the western corner of T-11 (see Figure 109, Figure 110, and Figure 112). It was documented between 61 and 105 cmbs within the northwest sidewall and southwest endwall, originating in Stratum IIa/SIHP # -8840 Component 2, intruding through Stratum IIb, and terminating in Stratum III. The feature is 70 cm long

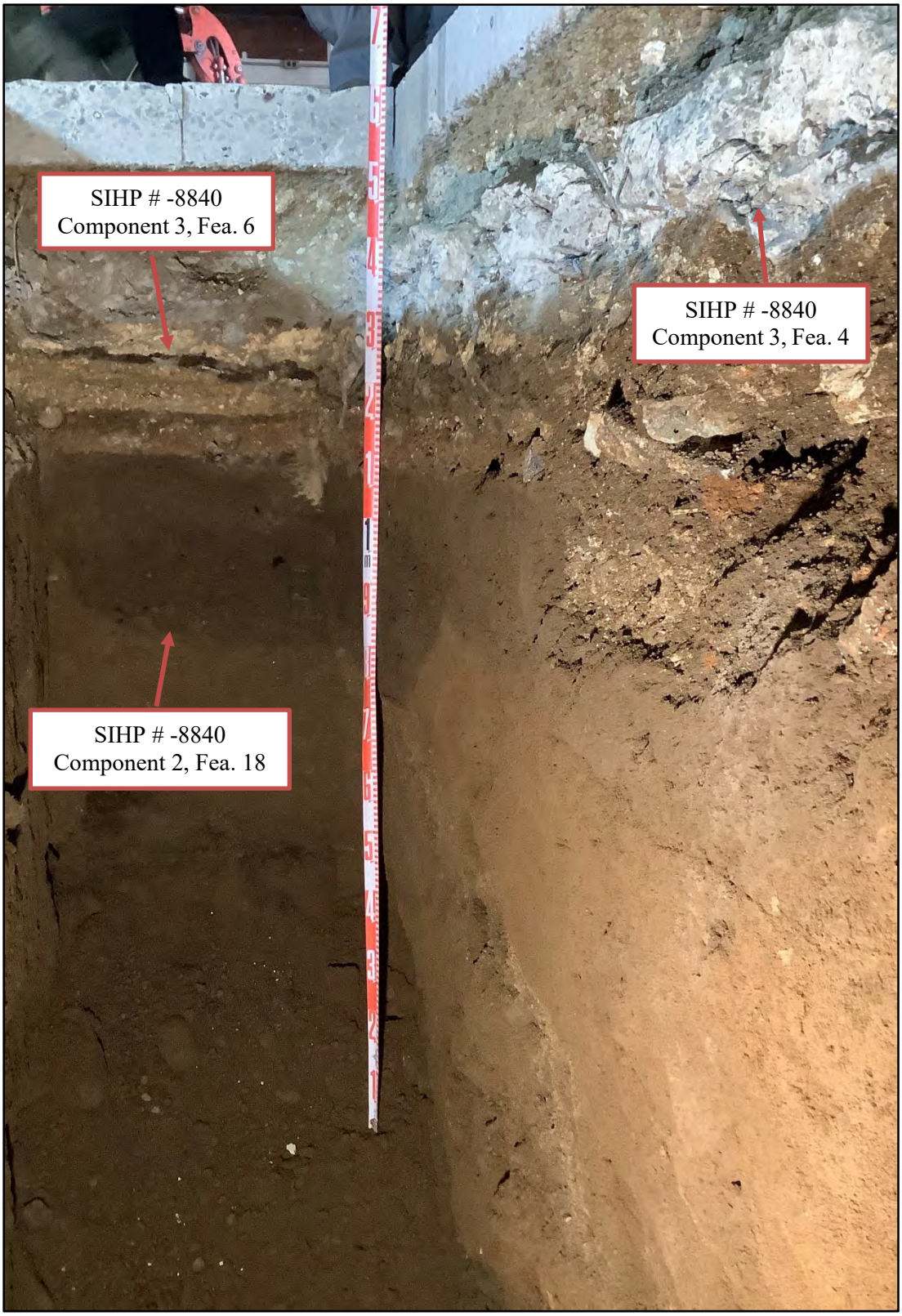

Figure 109. T-11 southwest (left) and northwest (right) walls, view to south

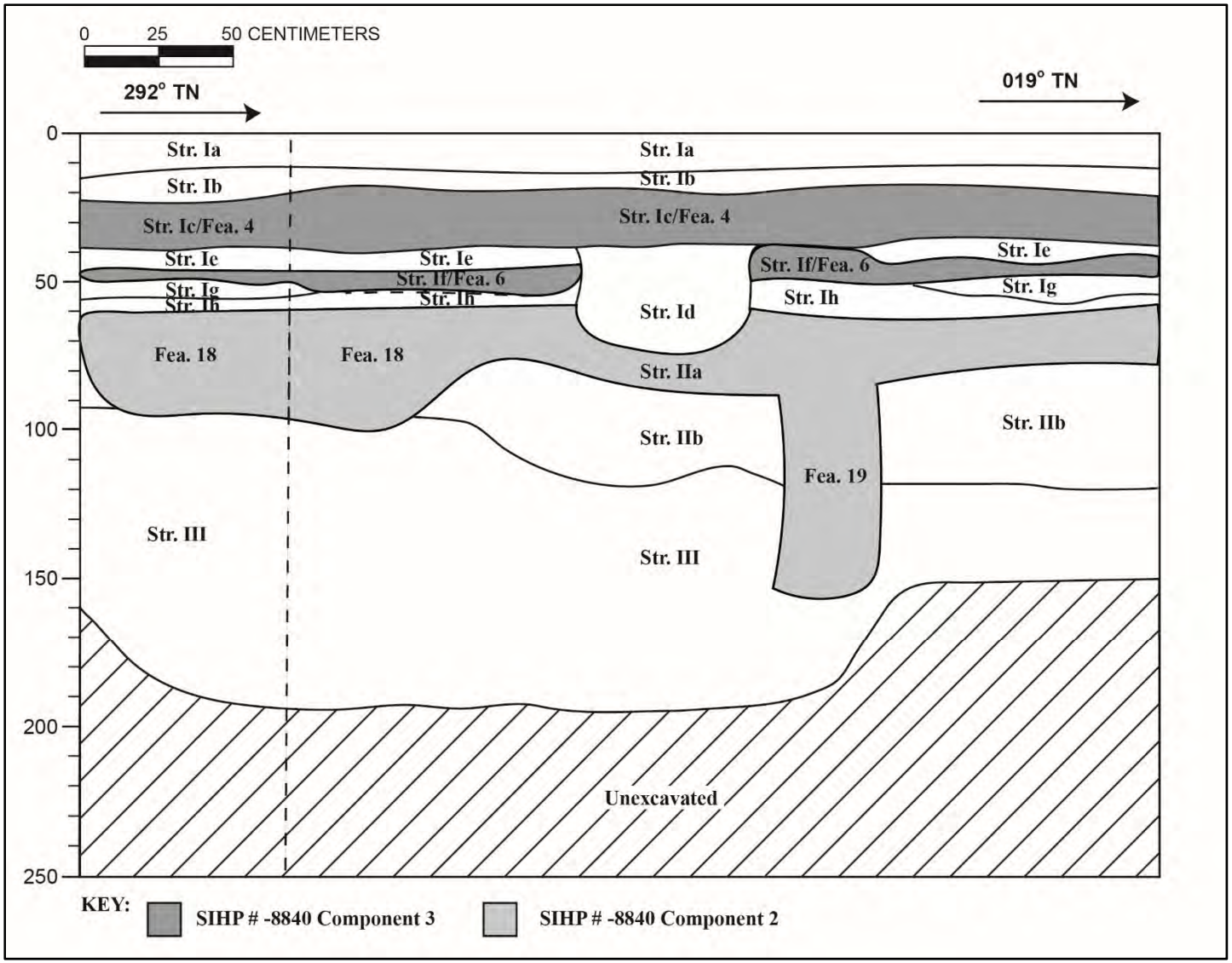

Figure 110. Profile of T-11 southwest (left) and northwest (right) walls

Table 17. T-11 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–13	Concrete; John R. Gilliland Sr. Building floor
Ib	13–19	Base course; 10YR 6/2, light brownish gray; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course
Ic	18–41	SIHP # -8840 Component 3, Feature 4; etched concrete surface, likely associated with a former unspecified store on River Street
Id	38–74	Fill; 10YR 2/2, very dark brown; very gravelly sandy loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; contains basalt gravel
Ie	35–46	Fill; 10YR 7/4, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; marine origin; abrupt, discontinuous lower boundary; no roots observed; crushed coral fill
If	45–56	SIHP # -8840 Component 3, Feature 6; 10YR 2/2, very dark brown; gravelly silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; burnt trash fill containing charcoal, bottle glass, and ceramics
Ig	47–58	Fill; 10YR 6/2, light brownish gray; gravelly sandy loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; contains basalt gravel, a utility pipe, and red brick fragments
Ih	50-62	Fill; 5YR 4/4, reddish brown; very gravelly clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; contains basalt gravel and red brick fragments
IIa	54–156	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay loam; weak, fine, blocky structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing charcoal flecking and pit features (Features 18 and 19)
	61–105	SIHP # -8840 Component 2, Feature 18; 10YR 2/2, very dark brown; sandy clay loam; pit feature of indeterminate function, containing charcoal flecking
	85–156	SIHP # -8840 Component 2, Feature 19; 10YR 2/2, very dark brown; sandy clay loam; pit feature interpreted as a post hole

Stratum	Depth (cmbs)	Description
IIb	74–118	Natural; 10YR 3/4, dark yellowish brown; silty clay loam; weak, fine, blocky structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
III	95–195 (BOE)	Natural; 10YR 4/4, dark yellowish brown; cobbly silty clay loam; very moist, friable consistence; no cementation; non-plastic; weak, medium, granular structure; lower boundary not observed; no roots observed; streambed containing waterworn basalt gravel and cobbles



Figure 111. SIHP # -8840 Component 3, Feature 4, etched concrete surface



Figure 112. Close-up of the western corner of T-11, upper portion, showing SIHP # -8840 Component 3, Feature 4 (etched concrete surface [after removal]) and Feature 6 (burnt trash layer), and Component 2, Feature 18 (pit feature of indeterminate function), view to southwest

(northwest-southeast) by 60 cm wide (northeast-southwest) and contains sparse charcoal; its function is indeterminate.

Feature 19 is a long, rectangular pit feature identified in the northwest wall of T-11 (see Figure 109, Figure 110, and Figure 113). It was documented between 85 and 156 cmbs, extending from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Stratum IIb, and terminating in Stratum III. Based on morphology, this feature is interpreted as a posthole. The darker, organic-stained portion at the center of the feature represents the location of the former post, while the surrounding pit matrix is lighter in color (see Figure 113). A small amount of charcoal was observed near the base of the feature.

The underlying Stratum III contains waterworn basalt gravel and cobbles (see Figure 114) and is interpreted as a streambed.



Figure 113. SIHP # -8840 Component 2, Feature 19, posthole, in T-11 northwest wall, view to north



Figure 114. Waterworn basalt gravel and cobbles from T-11 Stratum III, streambed

Test Excavation 12 (T-12)

Test Excavation 12 (T-12) is an exterior excavation in the northern corner of the AIS study area. It is oriented northwest-southeast and is 6.15 m long by 0.74 m wide, with a maximum depth of 252 cmbs. The water table was encountered at 247 cmbs.

The observed stratigraphy consists of the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly sand (crushed coral) base course, gravelly (basalt) sandy clay fill (Stratum Ic), and cobbly (basalt) silty clay loam fill (Stratum Id), overlying silty clay (Stratum IIa; SIHP # -8840 Component 2), gravelly (basalt) silty clay loam (Stratum IIb), and silty clay loam (Stratum IIc; SIHP # -8840 Component 2), atop very gravelly (basalt) sandy clay (Stratum IIIa) and cobbly (basalt) sandy clay (Stratum IIIb) (Figure 115, Figure 116, and Table 18).

Stratum Id is a demolition fill layer containing cut basalt blocks, concrete, asphalt, bottle glass, ceramics, and brick; two glass bottles and a ceramic spoon fragment were collected. The bottles (Acc. #s 125 and 126) date to post-1921 and 1923-1956, respectively, indicating deposition of the layer post-1923. A pyramidal dressed basalt pillar with a square base was removed from Stratum Id within the southwest sidewall, near the southeast end of the trench. The pillar was photographed (Figure 117) but not collected, and the resulting void in the sidewall was documented in the profile drawing (see Figure 116). In addition, a large piece of concrete was removed from the southwest sidewall at the opposite end of the trench, from the Stratum Id/IIa interface; the resulting void was documented in the profile drawing (see Figure 116). Another large piece of concrete, approximately 5 cm thick, could not be removed from the southeast end of the trench without destabilizing the sidewalls; hence, this portion of the excavation was benched (see Figure 116).

Stratum II (a–c) is natural alluvium, although the upper portion of Stratum IIa has been disturbed or reworked and contains charcoal flecking and faunal material; hence, Stratum IIa is designated as part of SIHP # -8840 Component 2, habitation layers. The faunal material, identified as fish (Osteichthyes) bone, saw-cut cow (*Bos taurus*) bone, and possible baleen whale (*Mysteceti*), was collected.

Stratum IIc exhibited quite a bit of variation within this trench. In some places, the clay content was higher, and the sediment appeared mottled with oxidized (red) mottling; in other places, the silt content was higher, and the sediment appeared less mottled. Based on the presence of oxidized (red) mottling, Stratum IIc is interpreted as an agricultural deposit and is designated as part of SIHP # -8840 Component 1. Bulk samples were collected from Stratum IIc within the trench floor and from the spoils pile (an intact block, removed from a localized deposit indicated on the profile drawing with a dashed line). Wet screening of the sample from the trench floor yielded reddish nodules. Wet screening of the sample from the localized deposit revealed a pronounced tubule structure still intact, with reddish coloration on the interior of the broken open tubules. Based on previous archaeological studies (see Section 5.1.1), these are interpreted as evidence of agricultural use.

The underlying Stratum III (a and b) contains waterworn basalt gravel and cobbles and is interpreted as a streambed. A bulk sample of Stratum IIIa was collected from the excavator bucket.



Figure 115. T-12 southwest wall, view to west

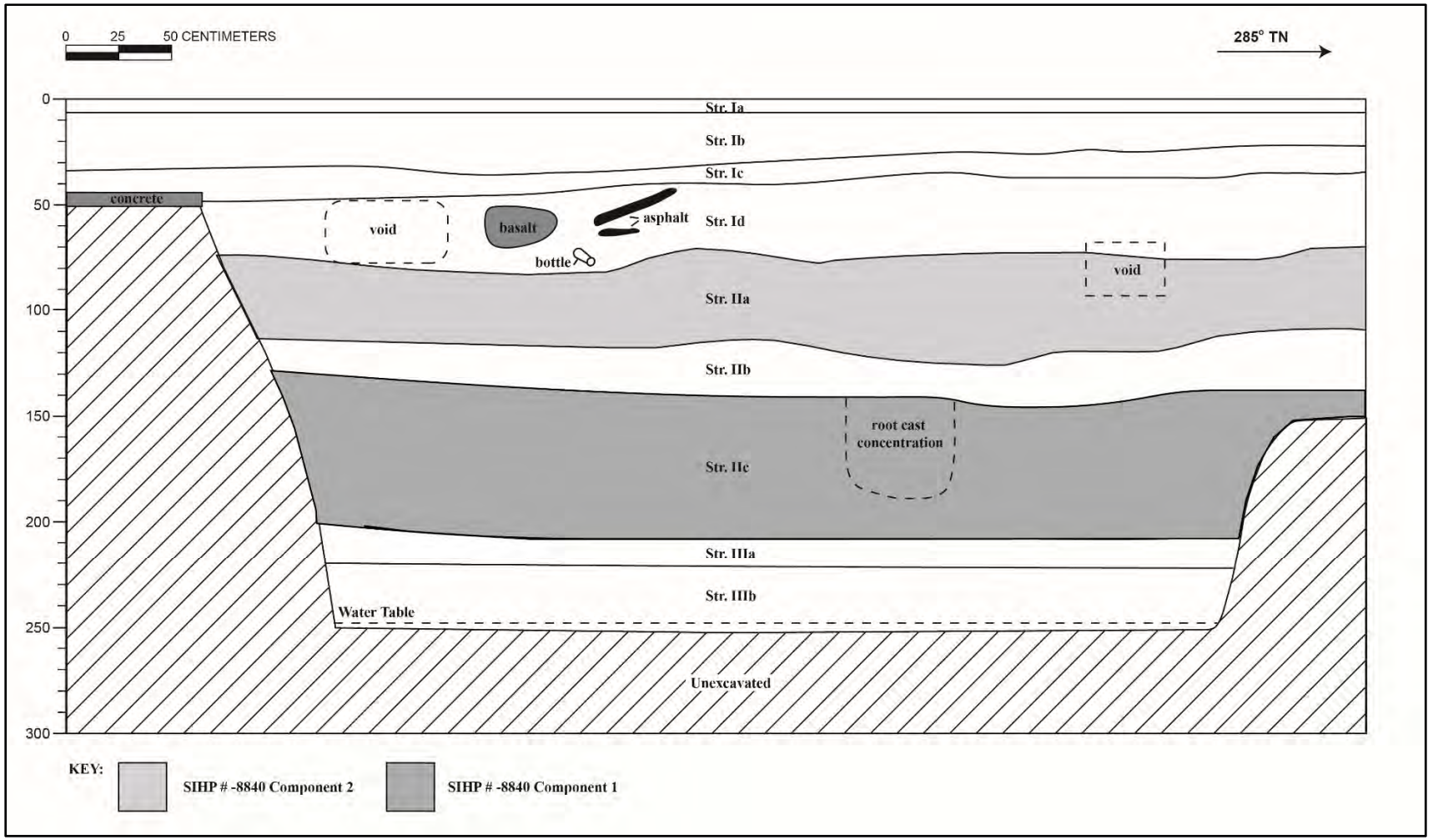

Figure 116. Profile of T-12 southwest wall

Table 18. T-12 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	5–35	Base course; 10YR 7/3, very pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	21–46	Fill; 5YR 3/3, dark reddish brown; gravelly sandy clay; moderate, medium, blocky structure; moist, firm consistence; no cementation; plastic; mixed origin; clear, smooth lower boundary; no roots observed; contains basalt gravel
Id	34–82	10YR 3/3, dark brown; cobbly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; clear, smooth lower boundary; no roots observed; demolition fill containing basalt cobbles, concrete, asphalt, bottle glass, ceramic, and brick
IIa	70–125	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay; weak, medium, blocky structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with charcoal flecking, fish and saw-cut cow bone, and possible baleen whale
IIb	108–140	Natural; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium with basalt gravel
IIc	127–207	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, medium roots; naturally deposited alluvium with oxidized (red) mottling
IIIa	200–222	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy clay; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; streambed with waterworn basalt gravel
IIIb	218–252 (BOE)	Natural; 10YR 3/1, very dark gray; cobbly sandy clay; weak, fine, granular structure; wet, slightly sticky consistence; no cementation; plastic; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 117. Cut, pyramid-shaped basalt stone removed from T-12 Stratum Id, demolition fill (not collected)

Section 5 Results of Laboratory Analysis

5.1 Bulk Sample Analysis

A total of 17 bulk samples were collected from seven test excavations during the current AIS (Table 19). Samples were collected from the Stratum II alluvium series, primarily from strata interpreted as possible agricultural deposits (i.e., SIHP # -8840 Component 1), which are likely associated with *lo‘i kalo*. Seven were wet screened to further characterize the targeted deposits. These include one sample from T-2B (Stratum IIc, interpreted agricultural deposit), near the southern corner of the AIS study area; two samples from T-12 (Stratum IIc [one general sample and one from a localized deposit], interpreted agricultural deposit), near the northern corner of the study area; and a series of four samples from T-9 (Stratum IIb, natural alluvium, and Strata IId–IIf, interpreted agricultural deposits), in the central portion of the study area.

5.1.1 Previous Archaeological Investigations of Taro *Lo‘i* Deposits

Previous archaeological investigations of former taro *lo‘i* have characterized the associated agricultural deposits as gleyed and predominantly clay, with ferruginous mottling, limonite root casts, and abundant dispersed charcoal. Maury Morgenstein's (1978) study of abandoned taro *lo‘i* within Kaiwainui Marsh, Kailua, O‘ahu documented two subsurface agricultural deposits associated with a terrace wall, both of which contained abundant diffused charcoal particles and limonite root casts:

> The presence of charcoal and ferruginous impregnated root tubes associated with the terrace wall strongly supports an agricultural hypothesis for soils layers III and IV. The root tubes are wider than the present grass vegetation root tubes and were formed by a heavier rooted plant such as Taro. [Morgenstein 1978:37]

The presence of ferruginous mottling, limonite casts, and dispersed charcoal within former *lo‘i* was also noted by Jane Allen and colleagues (1987) during extensive investigations of the Luluku field system within Kāne‘ohe, O‘ahu:

> In ponded soils, aeration along roots also oxidizes small areas in the subsoil, resulting in bright mottling within a dark, gleyed soil matrix; precipates of iron and manganese as limonite casts and manganese nodules, respectively, often occur. […] Charcoal in pondfields is typically churned and dispersed throughout the soil through subsequent cultivation and ponding activities. [Allen et al. 1987:36]

A. Rose Schilt (1980) made similar observations of *lo‘i* deposits in Hanalei Valley, Kaua‘i, and provided the following summary of her findings in relation to earlier *lo‘i* studies:

> Previous archaeological projects in Mākaha Valley, O‘ahu, and Hālawa Valley, Molokai have documented the appearance of pondfield soils in which irrigated taro has been cultivated (Morgenstein and Burnett 1972; Riley 1975). These soils are characterized by hydrated iron-oxide (limonite) tubes which appear as prominent reddish mottles. These ferruginous tubes are known to develop around the roots of taro plants, although the mechanism of concentration is not well understood. […] These tubes or mottles were quite prominent in the soil core we took in a recently cultivated lo‘i in Hanalei Valley. [Schilt 1980:29]

Table 19. Bulk samples collected during the AIS

Test Excavation	Stratum (location)	SIHP # -8840 Component 1	Depth (cmbs)	Size (L)	Screened? (Y/N)	Observations
T-2B	Str. IIc (excavator bucket)	Agricultural deposit	~175–216	2.0	Y	Distinctive oxidized nodules and root casts
T-4	Str. IIe (spoils)	Agricultural deposit	~205 cmbs	1.0	N	–
T-5	Str. IIf (spoils)	Agricultural deposit	~186–205	2.0	N	–
T-6	Str. IIa (NW wall)	–	80–90	0.25	N	–
	Str. IIb (NW wall)	–	125–135	0.5	N	–
	Str. IIc (NW wall)	Agricultural deposit	150–185	0.25	N	–
	Str. IId (NW wall)	–	180–212	0.5	N	–
T-9	Str. IIb (SE wall)	–	107–120	0.5	Y	No oxidized nodules or root casts
	Str. IId (SE wall)	Agricultural deposit	127–137	1.0	Y	Limited oxidized nodules
	Str. IIe (SE wall)	Agricultural deposit	145–155	1.0	Y	Limited oxidized nodules
	Str. IIf (trench floor)	Agricultural deposit	~160–180	1.0	Y	Distinctive oxidized nodules and root casts
T-9B	Str. IIc (SE wall)	Agricultural deposit	85–102	2.0	N	–
	Str. IId (SE wall)	Agricultural berm	117–113	2.0	N	–
	Str. IIe (SE wall)	Agricultural deposit	137–150	2.0	N	–
T-12	Str. IIc (trench floor)	Agricultural deposit	182–197	1.0	Y	Limited oxidized nodules
	Str. IIc (localized), (spoils; intact block)	Agricultural deposit	–	1.5	Y	Pronounced tubule structure
	Str. IIIa (streambed) (excavator bucket)	–	~200–220	0.5	N	–

More recently, Sroat et al. (2016) analyzed suspected buried taro *lo‘i* deposits from Waikele, O‘ahu, as part of archaeological data recovery carried out in the footprint of the Waipahu Transit Station for the Honolulu Authority for Rapid Transit’s Honolulu Rail Transit Project. As with the investigations cited above, these analyses documented varying amounts of dispersed charcoal particles, oxidized reddish (ferruginous) mottling, and tubular root casts and concretions consistent with the limonite casts and nodules described above, thought to be associated with buried taro *lo‘i* deposits (Figure 118 through Figure 120).

5.1.2 Results of Wet Screening for the Current AIS

Background research indicated the possibility for remnants of former agricultural activity within the current AIS study area, potentially including buried pre-Contact or post-Contact taro *lo‘i* deposits and/or deposits associated with Don Marín’s Vineyard. However, based on the results of radiocarbon dating of a feature associated with the Stratum IIa habitation layer (see Section 5.4.3), the interpreted agricultural deposits (Strata IIc–IIg) likely pre-date Marín’s Vineyard. During the AIS fieldwork, these interpreted agricultural deposits were observed to have sparse charcoal flecking and readily discernable reddish mottles, similar to those described in the earlier investigations (discussed above). These mottles are indicative of the type of oxidation that appears to result from chemical interactions between taro roots and the surrounding soil. Additionally, potential structural remains, interpreted as remnant pond-field berms consistent with taro *lo‘i*, were documented in T-9 and T-9B.

Photographs of each sample before and after wet screening are presented in Figure 121 through Figure 136. The results of the wet screening generally support a modest correlation between the field observation of reddish oxidized mottling and the presence of limonite nodules and root casts within the samples. For instance, the bulk sample from T-9 Stratum IIb (see Figure 124 and Figure 125) did not contain oxidized nodules or root casts, which is consistent with the lack of mottling observed during fieldwork and the interpretation of the layer as natural alluvium (i.e., not agricultural). Similarly, the T-2B Stratum IIc (see Figure 121 through Figure 123) and T-9 Stratum IIf (see Figure 130 through Figure 132) bulk samples yielded distinctive oxidized nodules and root casts, which is consistent with the strong reddish oxidized mottles observed in the field. In contrast, bulk samples from T-9 Strata IId (see Figure 126 and Figure 127) and IIe (see Figure 128 and Figure 129) and T-12 Stratum IIc (general sample; see Figure 133 and Figure 134), which were observed in the field to have reddish oxidized mottles, yielded only limited evidence of reddish limonite nodules and no evidence of root casts. These results indicate significant variability in the formation of these nodules and root casts, possibly related to minor differences in soil chemistry and/or the duration of use of the deposit for agriculture.

A second bulk sample from T-12 Stratum IIc (intact block) was markedly different from the other samples. In the southwest sidewall of T-12, within Stratum IIc (see Figure 116), a localized (approximately 70-cm by 70-cm area in the profile) and pronounced concentration of dense, clayey sediment with what appeared to be abundant root casts was observed. The bulk sample from this localized deposit was collected as a single, large, intact block (Figure 135). This bulk sample was distinctive during the wet screening process, as it did not break down with water soaking and agitation, nor during spraying with the water hose. The pronounced adherence of the matrix remained even after days of soaking and agitation, approaching cementation that was only eventually broken down into fragments by hand. Figure 136 shows some of the remnant after wet screening, with the pronounced tubule structure still intact and some reddish coloration on the

interior of the broken open tubules. This localized area of T-12 Stratum IIc appears to be distinct from the other bulk samples and likely represents different formation processes, potentially interactions with the soil and/or a different plant species.

No charcoal flecks, artifacts, or plant remains were observed in any of the samples. The lack of observable charcoal flecks in the wet screened samples may be a result of the wet screening method or the relatively modest size of the samples (0.5 to 2 liters).



Figure 118. Portion of a bulk sample collected from suspected taro *lo‘i* deposits from the Waipahu Transit Station, showing ferruginous (red) mottling, dispersed charcoal particles, and remnant root casts (from Sroat et al. 2016:73)

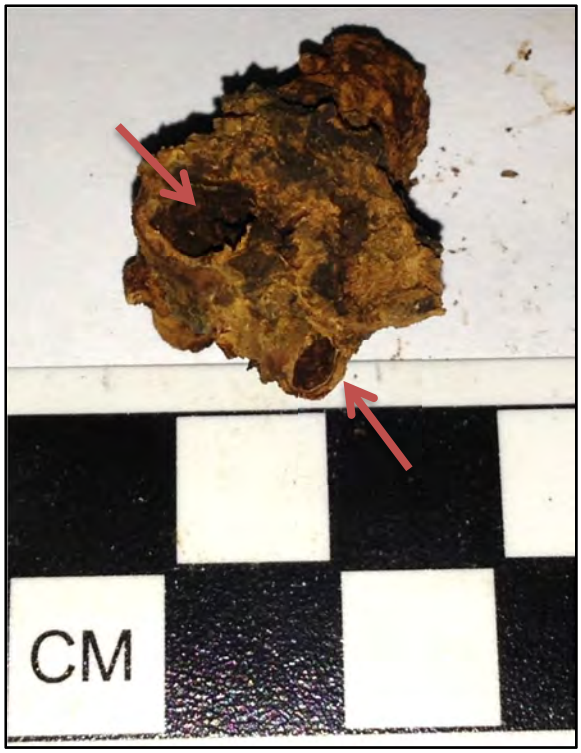

Figure 119. Dried portion of a bulk sample from suspected taro *lo‘i* deposits from the Waipahu Transit Station, showing ferruginous (red) mottling and an intact root cast (orange arrows) (from Sroat et al. 2016:77)



Figure 120. Root nodules (left) and root casts (right), identified through wet screening of bulk samples from suspected taro *lo‘i* deposits from the Waipahu Transit Station (from Sroat et al. 2016:81)



Figure 121. T-2B Stratum IIc bulk sample before wet screening; the red oxidized mottling observed in the field was less apparent in the collected bulk sample, likely as a result of drying and potentially abrasion or polishing of the large sediment masses/peds during transport within the plastic sample bag



Figure 122. T-2B Stratum IIc bulk sample after wet screening; note distinct reddish-orange concretions and nodules and several tubular root casts on right side of photo (see Figure 123 below for close-up)



Figure 123. Close-up of limonite root casts and nodules (and one natural, water-rounded basalt pebble) in the T-2B Stratum IIc bulk sample, believed to be the result of oxidation at the interface between surrounding soil and former taro roots; orange arrows indicate remnant tubules believed to have formed around taro roots and rootlets



Figure 124. T-9 Stratum IIb bulk sample before wet screening; no red oxidized mottling



Figure 125. T-9 Stratum IIb bulk sample after wet screening; no evidence of tubular root casts or nodules were observed



Figure 126. T-9 Stratum IId bulk sample before wet screening; note easily discernable reddish mottling



Figure 127. T-9 Stratum IId bulk sample after wet screening; note the reddish nodules



Figure 128. T-9 Stratum IIe bulk sample before wet screening; some reddish mottling discernable



Figure 129. T-9 Stratum IIe bulk sample after wet screening; note the small, faint, reddish nodules and the smaller volume compared to other samples of similar size



Figure 130. T-9 Stratum IIf bulk sample before wet screening; some reddish mottling discernable



Figure 131. T-9 Stratum IIf bulk sample after wet screening; note the reddish-orange concretions and nodules, several tubular root casts (right side of photo; close-up in Figure 132 below), and one limestone pebble (top right corner)



Figure 132. Close-up of limonite root casts and nodules T-9 Stratum IIf bulk sample, believed to be the result of oxidation at the interface between surrounding soils and former taro roots; orange arrows indicate remnant tubules believed to have formed around taro roots and rootlets; the reddish coloration of the interior of the root tubules can be seen in portions of tubules that have been broken open



Figure 133. T-12 Stratum IIc general bulk sample before wet screening; the red oxidized mottling observed in the field was less apparent in the collected bulk sample, likely as a result of drying and potentially abrasion or polishing of the large sediment masses/peds during transport within the plastic sample bag



Figure 134. T-12 Stratum IIc general bulk sample after wet screening; note the small reddish nodules



Figure 135. T-12 Stratum IIc bulk sample (localized deposit) after wet screening



Figure 136. A portion of the T-12 Stratum IIc bulk sample (localized deposit) after wet screening

5.2 Artifact Analysis

Artifacts collected during the AIS were curated and analyzed by CSH personnel as described in Section 2.2.2 above. One hundred sixty-one historic artifacts were collected during the AIS; no traditional Hawaiian artifacts were identified or collected. The collected artifacts do not represent 100% collection from the study area; rather, grab samples were collected with an emphasis on representative artifact types, complete artifacts, and those with diagnostic traits. The collected artifacts are presented in Table 20 and discussed below.

The current assemblage includes 74 glass bottles or bottle fragments, one glass jar, four pressed glass artifacts, three window glass fragments, one glass marble, one unidentified milk glass object, three unidentified glass fragments, one glass insulator, 36 ceramic hollowwares, four ceramic flatwares, three ceramic tablewares, one ceramic spoon, one ceramic doorknob, two stoneware storage vessels, two stoneware bottles, one unidentified stoneware vessel fragment, four common pottery vessels, one bone grooming tool, one bone toothbrush, four nails, two metal utility pipes, four unidentified metal fragments, one carbon battery rod, one slate fragment, one brick, one coral block, one concrete brick, and one concrete masonry unit.

Artifacts were assessed for type, material, origin, and date. Artifacts were identified to country of origin where possible. Some artifacts lacked the diagnostic characteristics necessary to identify the country of origin and were identified only as Euro-American, indicating origin from a country in either North America or Europe (most likely the United States or England). Origin was only identified more specifically than country when the artifact could be identified as having been made in Hawai‘i or for a Hawaiian company.

Artifacts were assessed to determine date of manufacture first and foremost. Where applicable, manufacture date ranges were modified by available information regarding dates of import of certain materials and immigration of ethnic groups to Hawai‘i. Notable dates frequently used in this capacity are 1850, the date of increased import of goods to support the influx of missionaries; 1852, the date of the first immigration of Chinese workers; and 1868, the date of the first immigration of Japanese workers. Some date ranges are quite wide, due to a lack of diagnostic characteristics needed to narrow the range. Additionally, it is not expected that artifacts were always consumed and discarded immediately; many types of artifacts would have had long periods of use between manufacture and deposition. The below discussion includes *terminus ante quem* (latest possible date) and *terminus post quem* (earliest possible date) limits for dates of deposition of artifacts, features, and stratigraphic layers based on a combination of artifact manufacture/ import dates and available land use information.

5.2.1 Glass Artifacts

The glass artifacts include 74 glass bottles or bottle fragments, one glass jar, three pressed glass tumblers, one unidentified pressed glass fragment, three window glass fragments, one glass insulator, one glass marble, one unidentified milk glass fragment, and three unidentified glass fragments. The country of origin for 18 of the bottles could be determined; these items are from the mainland United States (n=7), Hawai‘i (n=3), the Netherlands (n=2), Scotland (n=2), Japan (n=2), and China (n=2).

Table 20. Artifacts collected during the Halewai‘olu Senior Residences AIS

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-1, Str. Ig SIHP # -8840 Component 3 Base course	Ceramic	Bottle	127	Stoneware cylindrical mineral water/gin bottle, base to body fragment, ferruginous salt glaze, unglazed interior; helical marks in interior and cut-off scars on base indicate a wheel-thrown bottle	Germany	1850-1879
	Glass	Jar	128	Cobalt blue glass jar or bottle, lip fragment, continuous external thread finish without ground rim, unidentified method of manufacture	–	Post-1900
	Ceramic	Hollowware	129	Porcelain “*tz‘u*” rice bowl, body to rim fragment (1) and base to body fragment (1), cobalt underglaze, hand-painted Double Happiness motif on exterior	China	1850-1870
			130	Porcelain hollowware, body to rim fragment, deep green glaze on exterior	Asia	Post-1852
			131	Porcelain hollowware, *kozara* dish (shallow dish for side dishes), base to rim fragment, underglaze blue floral katagami stencil decoration	Japan	1870s-1912
	Glass	Bottle	132	Colorless glass beverage bottle, base to heel fragment, cylindrical shape, slight recessed base, machine-made; embossing: “[REGI] (STERED)” on heel, partial propriety mark on base	–	Post-1908
	Ceramic	Other	133	Porcelain door knob fragment	–	Post-1850
T-2, Str. Id Demolition fill	Glass	Bottle	42	Blue aqua glass bottle, complete, cylindrical shape, slight kick-up base, mold-blown, two-piece cup-bottom mold, tooled oil finish, dimples in finish for “Swingtop” lightning-type closure (not present)	–	1897-1920
			43	Blue aqua glass bottle, complete, cylindrical shape, slight kick-up base, machine-made, club sauce or similar finish; embossing: “8” on base	–	Post-1908

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2, Str. Id Demolition fill	Glass	Bottle	44	Amber glass beer bottle, complete, cylindrical shape, flat base, machine-made, crown finish	Japan	Post-1921
T-2B, Str. Ie, Fill	Metal	Unknown	1	Rusted ferrous metal ring, unknown function	–	–
	Glass	Bottle	2	Colorless glass bottle, heel to body fragment (1), body fragments (3), and shoulder fragments (2), side seam visible on one fragment, cylindrical shape, unidentified method of manufacture	–	Post-1870
			3	Colorless glass bottle, shoulder to finish fragment, cylindrical shape, machine-made, crown finish	–	Post-1908
			4	Colorless glass bottle, base to body fragment, cylindrical body, flat base, one side mold seam and horizontal seam on heel visible, unidentified method of manufacture	–	Post-1870
			5	Colorless glass bottle, body fragment, cylindrical body, side seam evident, unidentified method manufacture	–	Post-1870
			6	Aqua glass bottle, body fragment, cylindrical shape, no seam evident, unidentified method of manufacture	–	–
			7	Blue-aqua glass bottle, base to body fragment, cylindrical shape, machine-made (press-and-blow), valve mark on base	–	Early 1910s
			8	Aqua glass beer bottle, base to body fragment, cylindrical shape, flat base, mold-blown, two-piece post-bottom mold; embossing: “[HONOLULU] B.& M.Co., LTD./ [HONO]LULU, T.H.” vertically on body, “I.P.G.CO/3004” on base (double stamped with same info); mark for Illinois-Pacific Glass Co.; would have had tooled crown finish; bottle for Honolulu Brewing & Malting Co., Ltd.	Hawai‘i	1911-1917

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. Ie, Fill	Glass	Bottle	9	Aqua glass bottle, heel to body fragment, cylindrical shape, horizontal seam on heel, unidentified method of manufacture	–	–
			10	Gray tinted colorless glass bottle, body fragment, square body, no seams evident, unidentified method of manufacture	–	1915-1925
			11	Amber glass bottle, body fragment, cylindrical body, mold-blown, turn mold	–	1870-1920
	Ceramic	Hollowware	12	Porcelain rice bowl, base to body fragment (1), body fragment (1), and body to rim fragment (1), hand-painted blue and pink underglaze striped decoration on exterior, unglazed footring, hand-painted blue ring on base	Japan	Post-1868
			13	Porcelain "*tz'u*" rice bowl, base to body fragment (1) and body to rim fragment (1), cobalt underglaze hand-painted Double Happiness motif on exterior, unglazed footring	China	1850-1870
	Glass	Bottle	14	Amber glass bottle, body fragment, cylindrical shape, unidentified method of manufacture	–	–
			15	Olive-amber glass bottle, body fragment, cylindrical body, unidentified method of manufacture	–	–
			16	Amber glass bottle, body fragment, cylindrical shape, unidentified method of manufacture	–	–
	Ceramic	Hollowware	17	Porcelain straight-sided cup, body fragment (1), underglaze blue landscape transfer-print decoration on exterior	Japan	Post-1888

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. Ie, Fill	Ceramic	Hollowware	18	Porcelain hollowware, base to body fragment, underglaze blue floral transfer-print decoration on interior	Japan	Post-1888
			19	Porcelain hollowware, body to rim fragment, underglaze winter green on exterior	Asia	Post-1852
			20	Porcelain hollowware, body to rim fragment, remnant of overglaze decoration (possible floral pattern) on exterior and interior	China	Post-1852
			21	Porcelain hollowware, body fragment, wintergreen with green, white, and brown floral hand-painted decoration underglaze on exterior, unglazed interior	Japan	Post-1868
		Common pottery	22	Porcelain planter, body fragment (1) and shoulder to rim fragment (1), cobalt underglaze on exterior, on flat rim, and top part of interior, applique white and green floral design on exterior	China	Post-1852
		Hollowware	23	Whiteware hollowware, body to rim fragment, underglaze polychrome green and black hand-painted decoration	–	Post-1850
		Tableware	24	Ironstone tableware, body to rim fragment, wavy rim, undecorated	Euro-America	1850-20th century
		Hollowware	25	Porcelain flatware, body fragment, undecorated	–	Post-1850

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. Ie, Fill	Bone	Toiletries	26	Polished bone object, long thin straight-sided fragment with parallel sides and rounded end, decorative incised lines along edges of object, 11 alternating decorative square holes at rounded end, metal pin and washer through hole at rounded end; incised text: “MADE IN JAPAN” on one side; likely part of a folding personal hygiene tool	Japan	Post-1926
T-2B, Str. IIa SIHP # -8840 Component 2, Fea. 8, Historical trash pit	Glass	Bottle	27	Amber glass bottle, base to heel fragments (2), cylindrical shape, kick-up base, mold-blown, unidentified mold type	–	1800-1920
			28	Amber glass bottle, body fragment, unidentified method of manufacture	–	–
		Bottle	29	Amber glass bottle, body fragment, cylindrical shape, unidentified method of manufacture	–	–
		Window	30	Aqua flat glass fragment, one straight intact edge indicates likely part of square or rectangular pane, smooth surface	–	1838–1889
		Unknown	31	Aqua flat glass fragment, unknown function; possibly window glass but outside the thickness range of most dating methods for historic window glass	–	–
			32	Colorless glass fragment, slightly curved	–	Post-1870
		Bottle	33	Aqua glass bottle, neck to lip fragment, machine-made, small mouth external thread finish	–	Post-1908
	Ceramic	Tableware	34	Whiteware tableware fragment, undecorated	Euro-America	Post-1850
		Hollowware	35	Ironstone hollowware fragment, handle fragment, remnant of copper or gold luster	Euro-America	1850s-ca. 1900

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. IIa SIHP # -8840 Component 2, Fea. 8, Historical trash pit	Metal	Nail	36	Wire nail, rusted, complete, round shank, pointed tip, round head	–	Post-1894
	Glass	Marble	37	Glass machine-made marble, “opaque” type, light brown	–	Post-1910
	Metal	Nail	38	Wire nail, complete, white corrosion and ferrous rust, likely nickel-plated, round head, round shaft, pointed nail end	–	Post-1894
	Metal	Nail	39	Wire nail, complete, white corrosion, round head, round shaft, pointed nail end, bent profile from being pulled	–	Post-1894
	Glass	Pressed	40	Colorless pressed glass fragment, embossed ridges on edges of fragment and convex circle on center, function unknown	–	–
		Bottle	41	Colorless glass fragment, base to body fragment, cylindrical shape, flat base, machine-made, Owens machine mark on base; embossing: “986” horizontally on heel, “B/10” on base; marks for Charles Boldt Glass Co.	U.S.	1910-1919
			45	Olive glass beverage bottle, cylindrical shape, flat base, mold-blown, turn-mold, tooled mineral finish	–	1880–1920
			46	Aqua glass bottle, base to heel fragment, cylindrical shape, slight recessed base, machine-made, suction scar on base; embossing: “15 IG” on heel, possibly mark for Imperial Glass Co.	–	Post-1908

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. IIa SIHP # -8840 Component 2, Fea. 8, Historical trash pit	Glass	Bottle	47	Colorless glass Dutch case gin bottle, body to lip fragment, square paneled body, tooled oil finish, applied blob seal' embossing: palm tree image surrounded by text "PALMBOOM C MEYER & Co / SCHIEDAM PALMBOOM" in seal	Netherlands	ca. 1910
	Bone	Toiletries	48	Bone toothbrush, handle fragment	–	Pre-1884
	Ceramic	Hollowware	49	Porcelain hollowware sauce dish, complete except for chips in rim, flower relief mold on interior	Japan	Post-1852
T-2C, Str. If Demolition fill	Glass	Bottle	121	Blue-green beverage bottle, neck to lip fragment, machine-made, variation of crown finish	–	Post-1908
	Ceramic	Hollowware	134	Porcelain hollowware, *kozara* dish (shallow dish for side dishes), base to rim fragment, underglaze blue transfer-print on interior	Japan	Post-1888
	Glass	Bottle	135	Aqua glass bottle, complete, cylindrical shape, flat base, mold-blown, two-piece post bottom mold, tooled crown finish; embossing: "0/81/3" on base	–	1870-1890
		Pressed	136	Colorless pressed glass tumbler, base to body fragment (1) and body fragment (1), cylindrical fluted body	–	Post-1870
	Ceramic	Unknown	139	Stoneware knob fragment, possibly lid knob, for unknown vessel, dark brown metallic glaze, possibly salt or alkaline glaze	Euro-America	–
	Glass	Bottle	161	Colorless glass bottle, complete except for thin chip from base to shoulder, cylindrical shape, flat base, vertical embossed ribs on heel and shoulder, machine-made, crown finish; embossing: "Pacific//Pacific (script)" at upward angled diagonal on shoulder, "NET CONTENTS 6 1/2 FLU[ID OZ]" on body just below shoulder, "P/ 21 (Owens-Illinois mark) 5"	Hawai‘i	1935

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-6, Str. Ic Demolition fill	Other	Brick	157	Concrete dark gray block, faced on all sides but not ground to a smooth finish	Euro-America	Post-1871
			158	Concrete hollow block, half fragment, faced on all sides, light gray; length unknown, width unknown	Euro-America	Post-1916
T-6, Str. Ie, Fill	Carbon	Other	77	Carbon graphite rod for a dry-cell battery	–	Post-1912
	Stone	Slate	78	Slate fragment, one straight edge indicating it was part of a square or rectangular panel, uniform thickness, smooth sides, painted black on both sides; possibly an early chalkboard, but slate pencils do not mark it, hence, it is not a slate board	–	–
	Glass	Bottle	79	Amber glass bottle, base to body fragment, cylindrical shape, unidentified method of manufacture	–	–
	Metal	Other	80	Ferrous metal handle, semi-circular shape	–	–
		Nail	81	Rusted wire nail	–	Post-1894
	Ceramic	Hollowware	82	Porcelain hollowware, body fragment, transparent glaze, underglaze blue *fukizumi* decoration on interior	Japan	1870s–ca. 1920
			83	Porcelain hollowware, base to body fragment, relief molded scallop decoration on exterior, scalloped base/footring	Euro-America	Post-1850
			84	Japanese ceramic rice bowl lid (futa), complete with base to rim fragment (1) and body to rim fragment (1), underglaze criss-crossing line design on exterior of hand-painted blue and light green lines and transfer-printed dark green lines	Japan	Post-1888

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-6, Str. Ie, Fill	Ceramic	Hollowware	85	Porcelain bowl, base to rim fragment high unglazed footring with one blue circle around interior and two around exterior; underglaze hand-painted blue design on exterior, slightly everted rim has blue hand-painted motif of plum blossoms on exterior side of rim	Japan	Post-1868
	Glass	Bottle	86	Amber glass liquor bottle, base to lip, cylindrical shape, slight kick-up base, mold-blown, two-piece cup-bottom mold, tooled brandy finish; embossing: “W.C. PEACOCK & CO/ (company monogram logo)/ HONOLULU, H.I./ WINE & LIQUOR MERCHANTS” vertically on body	Hawai‘i	Early 1900s
	Coral	Other	137	Coral construction block, light yellow red (orange); complete, rectangular; eroded on one side but originally faced on all sides; no trace of mortar on any side	–	–
	Other	Brick	138	Dark red brick fragment, portion of one face remaining only, no measurements possible; some mortar on one side	–	–
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Glass	Bottle	50	Dark amber olive (black) glass bottle, base to shoulder fragment, cylindrical shape, kick-up base, mold-blown, turn mold	–	1870-1920
			51	Dark olive (black) glass bottle, base to lip fragment, cylindrical shape, kick-up base, mold-blown, two-piece cup-bottom mold, applied mineral or brandy finish	–	1850-1885
			52	Dark olive (black) glass whiskey bottle, base to body fragment, cylindrical shape, kick-up base, Ricketts’ style plate on base, three-piece dip-mold; embossing: “R. COOPER (arch) & CO/PORTOBELLO (inverted arch)” on base	Scotland	1866-1885

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840	Glass	Pressed	53	Colorless glass tumbler, base to body fragment, cylindrical body, flat base	–	Post-1870
Component 2, Fea. 12,			54	Colorless glass tumbler, base to body fragment, fluted cylindrical shape, flat base	–	Post-1870
Historical trash pit		Bottle	55	Olive glass Dutch case gin bottle, body fragments (3), square shape, corrugated marking on body fragment typical of European case gin bottles, mold-blown, unidentified mold type, applied mineral finish; embossing: “[COSMOPO]LIET” on body above remnant of embossed male figure known as the “Standing Man”; would have been embossed with further proprietary information for J.J. Melchers Wz distillery	Netherlands	1890-1910
			56	Olive glass bottle, shoulder fragment, horizontal seam on shoulder, mold-blown, mold type unidentified	–	1870-1920
			57	Aqua glass household bottle, body to lip fragment, round body, flat base, blowpipe pontil mark on base, mold-blown, two-piece mold, “tooled” folded finish; embossing: “SPALDING'S//GLUE” vertically on body	U.S.	1850-1870
			58	Aqua glass bottle, base to body fragment, round shape, slight kick-up base, manufacturing technique unidentified, embossed ring of dots around shoulder; embossing: “393//M”; maker’s mark unidentified	–	–
			59	Olive glass champagne bottle, complete, round body, kick-up base, turn mold, applied champagne finish with beveled top, remnant of paper label on neck	–	1880s-1920
			60	Dark olive (black) glass bottle, base to body fragment, cylindrical shape, kick-up base, mold-blown, dip mold	–	1800-1910

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Glass	Bottle	61	Aqua glass bottle, shoulder to lip fragment, mold-blown, mold type unknown, applied double ring finish	–	1800-1885
			62	Dark olive (black) glass bottle, base to body fragment, cylindrical shape, kick-up base, mold-blown, turn mold	–	1870-1920
			63	Dark olive (black) glass export beer bottle, body to lip fragment, mold-blown, dip mold, applied mineral finish	–	1878-1885
		Insulator	64	Blue-aqua glass threaded pin-type insulator, upper wire groove ridge to crown fragment	–	Post-1865
		Bottle	65	Dark olive (black) case gin bottle, base to body fragment, square shape, kick-up base, mold-blown, dip mold, faint embossed radial lines from center on base	–	1800-1870
			66	Green-aqua glass bottle, body to shoulder fragment, cylindrical shape, mold-blown, unidentified mold type	–	1800-1920
			67	Green-aqua glass bottle, body fragment, unidentified method of manufacture	–	–
			68	Aqua glass bottle, base to heel fragment, round body, slight kick-up base, blowpipe pontil scar on base, no mold seams, free-blown or dip mold	–	1850-1870
		Window glass	69	Aqua flat glass, two intact straight edges indicating it was part of a square or rectangular pane	–	1845-1889
		Bottle	70	Green-aqua glass bottle, neck to lip fragment, applied double ring finish	–	1840-1885
			71	Olive glass bottle, neck to lip fragment, mold-blown, unidentified mold type, applied grooved ring finish	–	1860-1885
			72	Olive glass bottle, neck to lip fragment, mold-blown, unidentified mold type, applied grooved ring finish	–	1860-1885

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Glass	Bottle	73	Dark olive (black) glass whiskey bottle, base to body fragment, cylindrical shape, kick-up base, Ricketts' style plate on base, three-piece dip-mold; embossing: "R. COOPER (arch) & CO/PORTOBELLO (inverted arch)" on base	Scotland	1866-1885
		Unknown	140	Thin curved colorless glass fragment, unknown function	–	–
	Ceramic	Hollowware	144	Round yellowware nappy, base to body fragment (1) and body to rim fragments (3)	Euro-America	1850-1900
		Hollowware	145	Ironstone cup, base to body fragment (1) and body to rim fragment (1), round paneled shape	Euro-America	1850-1860
			146	Ironstone ewer/pitcher, base fragment (1), body fragment (1), and body to rim fragment (1), bulbous ribbed body; black printed mark on base "Royal Coat of Arms (picture)/ STONE CHINA/ J. W. PANKHURST/ HANLEY."	England	1850-1883
		Flatware	147	Ironstone saucer, base to rim fragment, undecorated, black printed base mark, Royal Coat of Arms and "IMPERIAL/IRONSTONE CHIN[A]/ HENRY ALCOC[K & CO.]"	England	1861-1910
		Bottle	148	Stoneware cylindrical mineral water/gin bottle, base to body fragment (1), body fragments (3), and body with handle fragment (1), ferruginous salt glaze, hand-thrown (helical marks in interior), straight-sided, transparent even glaze, glossy and well made, rolled handle and lip	Germany	1850-1879

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Ceramic	Hollowware	149	Whiteware hollowware body fragment, hand-painted on exterior with “thick line large floral” design, dark red flowers with green leaves	Euro-America	–
		Hollowware	150	Whiteware London-shaped bowl, body to rim fragments (2), transparent glaze, blue annular bands on exterior	Euro-American	1850-early 20th century
		Flatware	151	Ironstone plate, base to rim fragment, octagonal paneled shape, no decoration	Euro-America	1850-1860
			152	Ironstone serving bowl lid for oval vessel, body to rim fragment, undecorated, likely lid for Acc. # 153 (see below)	–	1850-20th century
		Hollowware	153	Ironstone oval bowl, possible “baker,” undecorated; likely matches lid Acc. # 151 (see above)	Euro-America	1850-20th century
			154	Ironstone hollowware, base to body fragment, square paneled body with beveled edges, small square unglazed footring, undecorated; possible pitcher, creamer, or sugar bowl	Euro-America	1850-1860
			155	Ironstone hollowware, two fragments, base to rim fragment (1) and base to body fragment (1); carinated cylindrical (Grecian) shape, small glazed footring, large vessel such as a vase or a pitcher	Euro-America	1850-20th century
		Common pottery	156	Stoneware hollowware, fluted body, scalloped rim, cobalt blue glaze on rim and exterior only; large round vessel, possibly a vase	Euro-America	Post-1850

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840	Metal	Unknown	122	Thin curved colorless glass fragment, unknown function	–	–
Component 2, Fea. 14 Historic trash pit	Ceramic	Common pottery	141	Whiteware Victorian majolica planter, base to body fragments (3), body fragments (2), and body to rim fragment (1), drainage hole in base, large round body; turquoise underglaze on exterior, unglazed footring, lavender underglaze on interior, embossed repeating Celtic design along exterior rim and on heel, embossed lily design on exterior body painted in white, red, and yellow, with green leaves	Euro-America	1876-1914
			142	Earthenware flowerpot, base to body fragment, light red, hole in base, unglazed; molded, not hand-thrown	Euro-America	Post-1861
		Hollowware	143	Ironstone hollowware, body to rim fragments (2), narrow neck	Euro-America	1850-20th century
T-10, Str. IIa SIHP # -8840	Glass	Bottle	74	Dark olive (black) glass beverage bottle, base to body fragment, push-up base, mold-blown, dip mold	–	1800-1910
Component 2, Fea. 17,			75	Olive glass bottle, body fragment, unknown method of manufacture	–	–
Pit feature			76	Olive glass bottle, body fragment (1) and shoulder fragments (2), cylindrical shape, mold-blown, unidentified mold type	–	1800-1910
T-10, Spoils, likely assoc. with	Metal	Other	87	Ferrous metal utility pipe rim fragment, 15 cm diameter	–	Post-1850
Str. Ie, Fill			88	Ferrous metal pipe fragment, 2.2 cm diameter	–	Post-1850
	Glass	Bottle	89	Aqua glass bottle, body fragment	–	–
			90	Aqua glass bottle, body fragment	–	–

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-10, Spoils, likely assoc. with Str. Ie, Fill	Glass	Window glass	91	Aqua flat glass fragment, one straight edge indicating it is part of a square or rectangular panel, uniform thickness, slightly rippled surface texture	–	1840-1881
		Bottle	92	Colorless glass bottle, body fragment, round shape	–	
			93	Amber glass bottle, body fragments (4) and base fragment (1), round shape, flat base, mold-blown, two-piece post-bottom mold	–	1850-1920
			94	Colorless glass bottle, slight sun-colored amethyst tint, shoulder to neck fragment, mold-blown, mold type unidentified	–	1890-1920
			95	Colorless glass bottle, neck to finish fragment, mold-blown, unidentified mold type, tooled patent finish	–	1870-1920
		Unknown	96	Milk glass fragment, hollow circular object with molded concentric stacked circles, unknown function	–	Post-1870
	Ceramic	Hollowware	97	Porcelain hollowware, base to body fragment, unglazed footring, undecorated	Asia	Post-1852
	Glass	Bottle	98	Olive glass bottle, body fragment (1) and shoulder to finish fragment (1), cylindrical body, mold-blown, mold type unidentified, tooled blob top finish	–	1870-1920
			99	Olive glass bottle, body fragments (2) and neck to finish fragment (1), cylindrical shape, mold-blown, unidentified mold type, applied champagne finish	–	1800-1885
	Ceramic	Flatware	100	Whiteware plate, marly to rim fragment, underglaze blue scenic vignette transfer-print	Euro-America	1850-1889
		Vessel	101	Chinese brown-glazed stoneware jar, base to heel fragment, brown exterior glaze, brown interior glaze, unglazed base	China	Post-1852

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-10, Spoils, likely assoc. with Str. Ie, Fill	Ceramic	Vessel	102	Chinese brown-glazed stoneware “tiger whiskey” wine jar, body fragment with internal body seam, underglaze brown on exterior, light brown glaze on interior	China	Post-1852
		Hollowware	103	Yellowware hollowware, body fragment, undecorated	Euro-America	1850-1930s
			104	Porcelain rice bowl, body fragment, underglaze winter green on exterior and interior	China	1852-1911
			105	Whiteware bowl, body to rim fragment, underglaze polychrome (red and green) geometric cut sponge decoration on exterior, red painted bands on exterior and interior	Euro-America	1840s-1870s, U.S. revival 1915-1940
	Glass	Bottle	106	Colorless glass bottle, base to body fragment, round body, flat base, valve mark on base, machine-made (press-and-blow)	–	Late 1890s to mid-20th century
			107	Aqua glass ink bottle, base fragment, round shape, flat base, mold-blown, two-piece cup bottom mold; embossing: “[C]ARTER’S (arch)/1897/ MADE/[U].S.A. (inverted arch)” on base	U.S.	1897
			108	Colorless glass milk bottle, neck to finish fragment, round shape, machine-made (press and blow), cap-seat finish	U.S.	Late 1890s to mid-20th century
			109	Colorless glass pickle bottle, complete, octagonal shaped body, flat base, machine-made; embossing: “H.J. HEINZ CO (arch)/132/PAT D. (D underlined superscript) (inverted arch)” on base	U.S.	1918-1933

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-10, Spoils, likely assoc. with Str. Ie, Fill	Glass	Bottle	110	Colorless glass medicine bottle, base to lip, rectangular shape, flat base, machine made, double ring finish; embossing: “DAVIS” horizontal on front body panel, “PAIN KILLER//VEGETABLE” vertically on side body panels, remnant maker’s mark and code “[…] (Diamond Glass Co. logo) 3” on base	U.S.	1924-1940
T-11, Str. If SIHP # -8840 Component 3, Fea. 6, Burnt trash fill	Glass	Bottle	111	Dark olive (black) glass bottle, neck to finish fragment, mold-blown, turn or dip mold, applied grooved ring finish, stretch marks on neck	–	1860-1885
	Ceramic	Hollowware	112	Whiteware dish, body fragments (4) and shoulder to rim (1) fragment, underglaze blue cut-sponge leaf decoration on exterior and blue hand-painted bands on rim and exterior	Euro-America	1840s-1870s; U.S. revival 1915-1940
			113	Whiteware bowl or dish, body fragment (1) and base fragment (1), unidentified hand-painted underglaze yellow decoration on exterior	Euro-America	Post-1850
			114	Whiteware hollowware, body fragment, no decoration	Euro-America	Post-1850
			115	Whiteware plate or dish, base fragment, hand-painted underglaze green leaf decoration on interior	Euro-America	Post-1850
	Glass	Bottle	116	Aqua glass Chinese medicine vial, base to neck fragment	China	1850s-1930s
			117	Amber glass bottle, shoulder fragment, cylindrical shape, seam present, unidentified manufacture method	–	–
			118	Colorless flat glass fragment, well outside the typical range of historic window glass thickness	–	–

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-11, Str. If SIHP # -8840	Glass	Bottle	119	Olive glass bottle fragment, body fragment, cylindrical shape, mold-blown, turn mold	–	1870-1920
Component 3, Fea. 6, Burnt trash fill			120	Colorless glass bottle, base to heel fragment, cylindrical shape, slight kick-up base, mold seam between base and heel, unidentified method of manufacture	–	–
T-12, Str. Id Demolition fill	Ceramic	Other	124	Porcelain soup spoon fragment, body to handle fragment, flat bottom, undecorated	China	Post-1852
	Glass	Bottle	125	Amber glass beer bottle, complete, round body, flat base, machine-made, crown finish; embossing: “2 (underlined) / JAPAN” on base	Japan	Post-1921
			126	Colorless glass condiment (probably mustard) bottle, complete, cylindrical shape with ten flutes, flat base, machine-made, continuous external thread finish; embossing: “R in a triangle / 0” on base; marks for F.E. Reed Glass Co.	U.S.	1923-1956

5.2.1.1 Bottles

The terminology used to describe bottle traits and dating information is based on information from the U.S. Department of the Interior, Bureau of Land Management (BLM) Society of Historic Archaeology (SHA) “Historic Glass Bottle Identification and Information Website” (BLM/SHA 2018), unless otherwise noted. Bottle research focused on function and date of manufacture, using reference texts and online resources to identify maker’s marks and company histories.

5.2.1.2 Bottle Manufacturing Methods

The evolution of bottle manufacturing breaks down into three stages. Since antiquity, bottles have been free-blown with a blow pipe. Free-blown bottles are usually asymmetrical, crudely made, and have a pontil mark where a rod was used to hold the bottle during the last steps of manufacture. The lip of the bottle was finished by hand. In the United States, these types of bottles usually pre-date ca. 1865 (BLM/SHA 2018). The current assemblage contains no free-blown bottles.

Around ca. 1800, glass workers began to blow bottles in molds. The current assemblage includes 37 mold-blown bottles (Acc. #s 8, 11, 27, 42, 45, 47, 50–52, 55–57, 59–63, 65, 66, 70–74, 76, 86, 93–95, 98, 99, 107, 111, 116, 119, 135, and 159). One of the first types of molds was the one-piece dip mold, which dates from 1800 to 1870. Bottles made with this type of mold do not have seams or embossing. Beginning in 1830, the one-piece dip mold was gradually replaced by the three-piece dip mold, which dates from 1830 to 1870. A bottom mold was used to form the body of the bottle, and a hinged top mold was used to form the shoulder, neck, and finish of the bottle. This resulted in a seam wrapping horizontally around the shoulder, and two vertical side seams extending from the shoulder seam up the neck. There are no vertical side seams on the lower body. The current assemblage contains six dip-molded bottles (Acc. #s 52, 60, 65, 73, 74, and 116).

The most common type of mold is the two-piece mold, which dates from 1850 to 1920. There are four variations of the two-piece mold: hinge, key, post-bottom, and cup-bottom. The two-piece post-bottom mold was used between 1850 and 1890. This type of mold leaves two vertical side seams extending up the heel, body, and neck of the bottle from a circle seam on the center of the base. The two-piece cup-bottom mold dates to post-1850, with peak use from 1880 through the 1910s. This mold leaves a horizontal seam around the heel of the bottle, and two side seams extending from the heel seam up the bottle body and neck. In the current assemblage, three bottles were made with a two-piece post-bottom mold (Acc. #s 8, 93, and 135), and four bottles were made with a two-piece cup-bottom mold (Acc. #s 42, 51, 86, and 107). The variation of one two-piece mold bottle (Acc. # 57) could not be determined.

Turn-mold bottles date from 1870 to 1920. They were made by turning the bottles inside the mold, which left the body of the bottles seamless and shiny. Unlike free-blown bottles, turn-mold bottles are symmetrical and evenly proportioned. They can be identified by faint concentric rings around the heel and body of the bottle. Most do not have marking or embossing. Turn-molded bottles are often used for wine or liquor. There are seven turn-mold bottles in the current assemblage (Acc. #s 11, 45, 50, 59, 62, and 119). In addition, 19 bottles in the current assemblage were identified as mold-blown, but the type of mold could not be determined (Acc. #s 27, 47, 55, 56, 61, 63, 66, 70–72, 76, 89, 90, 94, 95, 98, 99, 111, and 117).

Semi-automatic machines were introduced in the 1890s and were mostly used to make wide-mouth bottles/jars. The glass had to be manually fed into the machines by glass workers. In 1903, Michael Owens invented a machine that took the place of the skilled glass workers. The machine could blow wide-mouth bottles as early as 1905 and narrow-necked bottles (e.g., beverage bottles) as early as 1908. The Automatic Bottle Machine (ABM) blew a bottle from base to lip, usually with a two-piece cup-bottom mold. The two side seams extend to and over the lip of the bottle or to a horizontal seam at the bottom of the bottle finish. The base of a bottle made in the early Owens ABM machines often had a round scar with feathered edges. There are few ways aside from the presence of the Owens suction scar on the base to distinguish a bottle made by a semi- versus fully-automatic machine; hence, both types of bottles are described in this report as "machine-made" (BLM/SHA 2019). There are 16 machine-made bottles in the current assemblage (Acc. #s 3, 7, 33, 41, 43, 44, 46, 106, 108–110, 121, 125, 126, 132, and 161).

Additionally, the manufacturing techniques for 22 bottles in the current assemblage are unknown (Acc. #s 2, 4–6, 9, 10, 14–16, 28, 29, 58, 67, 68, 72, 75, 79, 89, 90, 92, 117, and 120). These bottle fragments do not have the diagnostic physical features (e.g., pontil marks, mold seams, suctions scars, valve marks) necessary to determine the method of manufacture.

5.2.1.3 Bottle Finishing Methods

Methods for adding the bottle finish are also useful in artifact dating. In conjunction with the method of bottle manufacturing (discussed above), bottle finishing methods were used to narrow the date range of the collected artifacts. During the mold-blown era, from 1800 to ca. 1920, the lip of the bottle continued to be done by hand. Early mouth-blown bottles were removed from the blowpipe by cracking off, bursting off, or shearing the neck. The post-manipulation of the bottle to create the lip was known as "finishing." One method, known as an "applied finish," was used from 1840 to 1885. In this method, glass was applied to the bottle neck, and the finish was shaped with a specialized lipping tool. Diagnostic features of an applied finish include side mold seams that end abruptly on the neck at the bottom of the finish; excess glass slopping over the upper neck below the finish; and a horizontal ridge inside the neck of the bottle that can be felt by inserting a finger into the bottle bore (BLM/SHA 2019). Eight bottles in the current assemblage have an applied finish (Acc. #s 51, 55, 59, 63, 70, 71, 99, and 111).

The standard tooled finish was used as early as the 1860s on smaller bottles, but it did not become the dominant finishing method until 1890. The date range for a tooled finish is generally 1870 to 1920. The upper part of the bottle was refired, and some of the glass from the neck was formed into the finish with a lipping tool. Diagnostic features of a tooled finish include side mold seams that fade out on the neck of the bottle below the finish; concentric horizontal tooling marks present on the finish and upper neck; an absence of glass flopping over the upper neck; and an absence of the interior ride in the bore (BLM/SHA 2019). Seven bottles in the current assemblage have a tooled finish (Acc. #s 42, 45, 47, 86, 95, 98, and 135).

5.2.1.4 Bottle Embossing

Several other bottle characteristics can also provide dating information. These include maker's marks, proprietary embossing, bottle type, closure type, and color. A combination of characteristics is often used to assess the most likely date range for manufacture.

Accession # 8 is an aqua glass beer bottle made by the Illinois-Pacific Glass Company for the Honolulu Brewing and Malting Company. The Illinois-Pacific Glass Company was founded in 1902 as a consolidation of the Abramason-Heunisch Company, the U.S. Bottlers' Supply Company, and the Illinois Glass Company's Pacific Coast Division (Lockhart et al. 2016:417; Moody 1926:2111). The three main manufacturer's marks used were IPGCo, IPGCo with the letters formed in a diamond shape, and IPGCo surrounded by a diamond; all three can be dated generally to 1910-1925 (Lockhart et al. 2016:443). Accession # 8 features the first listed maker's mark (IPGCO) and can be more narrowly dated by its proprietary embossing to 1911-1917 (Elliot and Gould:189).

The Owens-Illinois Glass Company was created through the merger of the Owens Glass Company and the Illinois Glass Company in 1929. The company was formally incorporated as the Owens-Illinois Glass Company, Ltd., in 1931 (Lockhart and Hoenig 2018:297; Paquett 1994). It was one of the largest glass bottle manufacturers in the world, with plants across the U.S. Since the company's incorporation, three maker's marks have been used. The first maker's mark combined the logos of both companies. It comprised a diamond around an "O" containing an "I," called the Diamond-OI logo. It was used from 1929 to 1954. Number codes were also introduced in 1929. The number on the left of the logo represents the production plant, while the number on the right represents the year of manufacture. The plant and date codes on Acc. # 161 indicate this bottle was manufactured in San Francisco, California, in 1935 (Lockhart and Hoenig 2018:303).

Accession #s 52 and 73 (Figure 137) are olive glass whiskey bottles with base embossing by Richard Cooper & Company. This company was one of several glass manufacturers that emerged in Portobello, Scotland, in the late nineteenth century. Richard Cooper began manufacturing glass in 1856 alongside William Bailey, until Bailey's death in 1859. At that time, Cooper took on his brother-in-law, Thomas Wood, as a partner (Lockhart et al. 2014:493). The two split after a disagreement in 1866, dividing the company and becoming competitors. This continued until 1928, when Cooper's plant was purchased by Distillers Company, Ltd, which had previously purchased Wood's plant (Lockhart et al. 2014:494). A few different variations of Cooper's proprietary information were used as a mark throughout the years the plant operated. The variation that appears on Acc. #s 52 and 73 was used from ca. 1866-1885 (Lockhart et al. 2014:496).

Accession # 57 is an aqua glass Spalding's glue bottle. Little is known about Henry C. Spalding & Company, the company responsible for manufacturing Spalding's Celebrated Prepared Glue, but advertisements can be found in newspapers dating to the 1860s (Henry C. Spalding & Co. 1860). The current bottle is an early two-piece mold bottle, with a blowpipe pontil scar and a "tooled" rolled finish. This type of finish, though technically created using an implement on the existing glass of the bottle lip, was phased out in the 1870s and predates the implements later used to create what is typically referred to as a tooled finish (BLM/SHA_Bottle Finishes & Closures 2019). A manufacture date of pre-1870s is further supported by the discontinuation of the use of a blowpipe as a pontil ca. 1870 (BLM/ SHA_Bottle Bases 2019).

Accession # 86 (Figure 138) is an amber glass liquor bottle manufactured for W.C. Peacock & Company Ltd., of Honolulu. Walter Chamberlain Peacock was born in England in 1858 and relocated to Hawaii in 1881. He started a liquor business with George Freeth. By 1890, Freeth had left the Islands, and W.C. Peacock & Company, Ltd., was established. After Peacock's death in

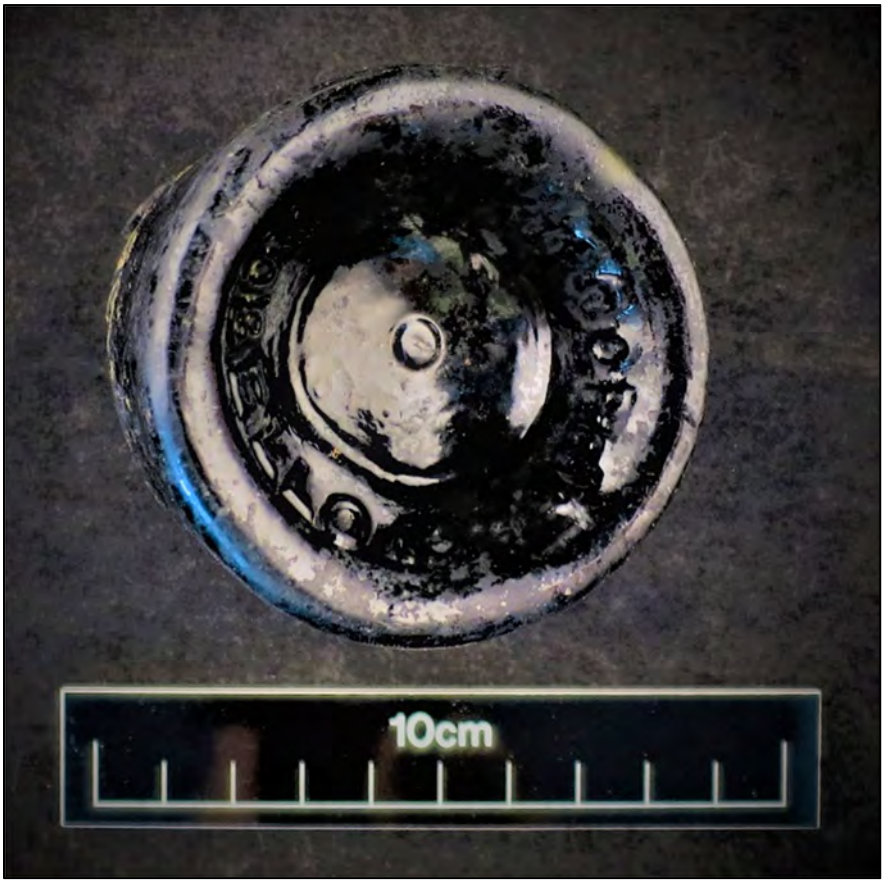

Figure 137. Acc. # 73, olive (black) glass whiskey bottle manufactured by Richard Cooper & Company



Figure 138. Acc. # 86, amber glass liquor bottle manufactured for W.C. Peacock & Company, Ltd.

1909, operation of the company passed to his nephew, before Prohibition forced the company's termination in 1915 (Sullivan 2013). The embossing on Acc. # 86 is consistent with bottles manufactured in the early 1900s (Elliot and Gould 1998:177).

Accession # 110 (Figure 139) is a colorless glass medicine bottle that held Davis brand vegetable painkiller. Created by Perry Davis to treat his own ailments and later marketed to the public, Davis' vegetable painkiller was a popular medicine sold from 1843 through the early 1940s (Davis and Son 2014; Tamburello 2008). The machine-made bottle was manufactured by the Diamond Glass Company of Pennsylvania, which was founded in 1886 when ten partners purchased and renamed the Penn Glass Works facilities. The company successfully operated and expanded to serve eastern Pennsylvania and the surrounding states through several decades, eventually merging with another firm to become Diamond-Bathurst in 1983. In 1987, it became a subsidiary of Anchor Hocking, which closed the plant for good in 1990 (Lockhart et al. 2015:88). A horizontally elongated diamond mark is embossed on the base of Acc. # 110; this logo was used by the Diamond Glass Company from 1924 to 1940 (Lockhart et al. 2015:88).

Three bottles in the current assemblage (Acc. #s 7, 106, and 108) were manufactured with a press-and-blow machine. Accession # 108 is a colorless glass milk bottle with a cap-seat finish. Based on the horizontal seam tapering out below the finish, it was made by a press-and-blow machine, which could be semi-automatic (late 1890s to mid-1910s) or fully automatic (post-1910s). Accession # 106 is a colorless glass bottle also made with a press-and-blow machine, as evidenced by the valve mark on the base. The mark is made as a machine's push-rod valve ejects the partially expanded parison from the blank mold and shifts it to the blow mold. Valve marks are round, about half an inch in diameter, and incised into the surface of the glass. As the same diagnostic features are shared by bottles made from semi-automatic and fully automatic machines, Acc. # 108 dates from the late 1890s to the mid-twentieth century (BLM/SHA 2019). Accession # 7 is a blue-aqua glass bottle with a valve mark on the base. Narrow-mouthed bottles with valve marks are uncommon, but some soda and beer bottles were manufactured on press-and-blow machines in the early 1900s (BLM/SHA 2019).

Accession # 109 (Figure 140) is a colorless glass Heinz pickle bottle. H.J. Heinz founded the company in 1869 and sold it to his brother, John, and cousin, Frederick, in 1875. They named the company F&J Heinz, which became H.J. Heinz when they sold the company back to H.J in 1888 (BLM/SHA 2019). The number embossed on the bases of Heinz bottles can help to identify bottle use and manufacture date. The "132" on the base of Acc. # 109 indicates the bottle was manufactured to hold pickles between 1918 and 1933 (BLM/SHA 2019).

Accession # 107 is an aqua glass Carter's ink bottle. Carter's Ink Company was founded in Boston in 1858 and eventually became the world's largest ink manufacturer (Faulkner and Faulkner 2003:41; Old Main Artifacts 2015). It produced ink and related products until 1976, when it was purchased by the Dennison Company (Old Main Artifacts 2015). The base embossing on Acc. # 107 indicates it was manufactured in the United States in 1897.

Accession # 55 is an olive glass Cosmopoliet Gin bottle. The gin was made by Dutch distillery Melchers, founded by Petrus Melchers in Scheidam, Netherlands, in 1837. The company made a number of branded gins, which it exported first to the United States and later to South America, Africa, and Australia. The company was operated by several generations of the Melcher family

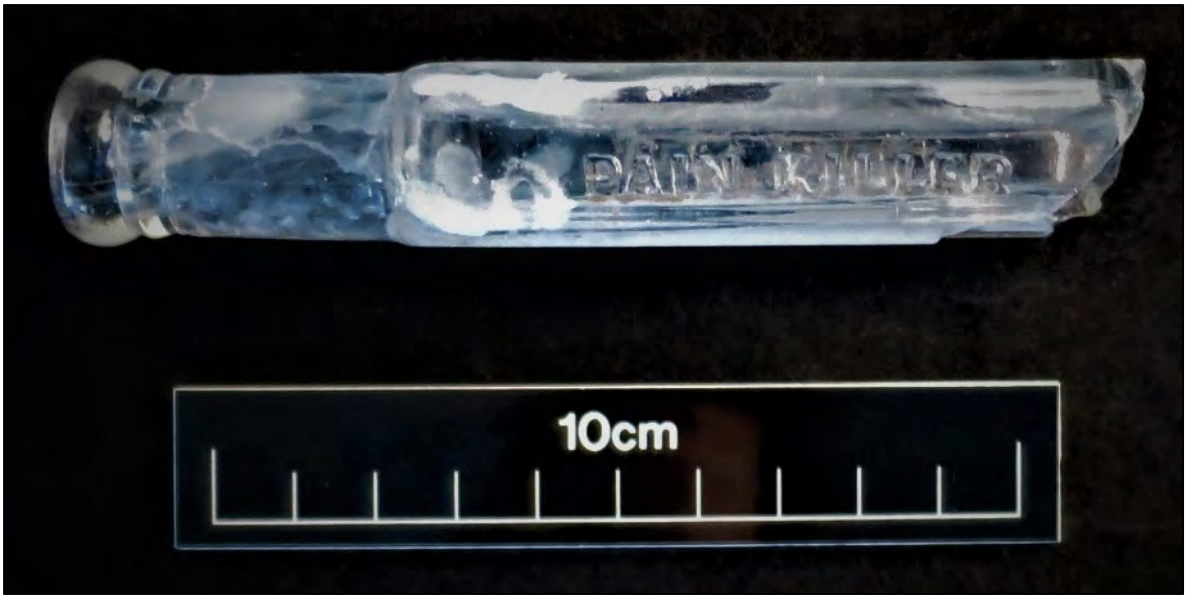

Figure 139. Acc. # 110, machine-made colorless glass medicine bottle manufactured for Davis brand vegetable painkiller

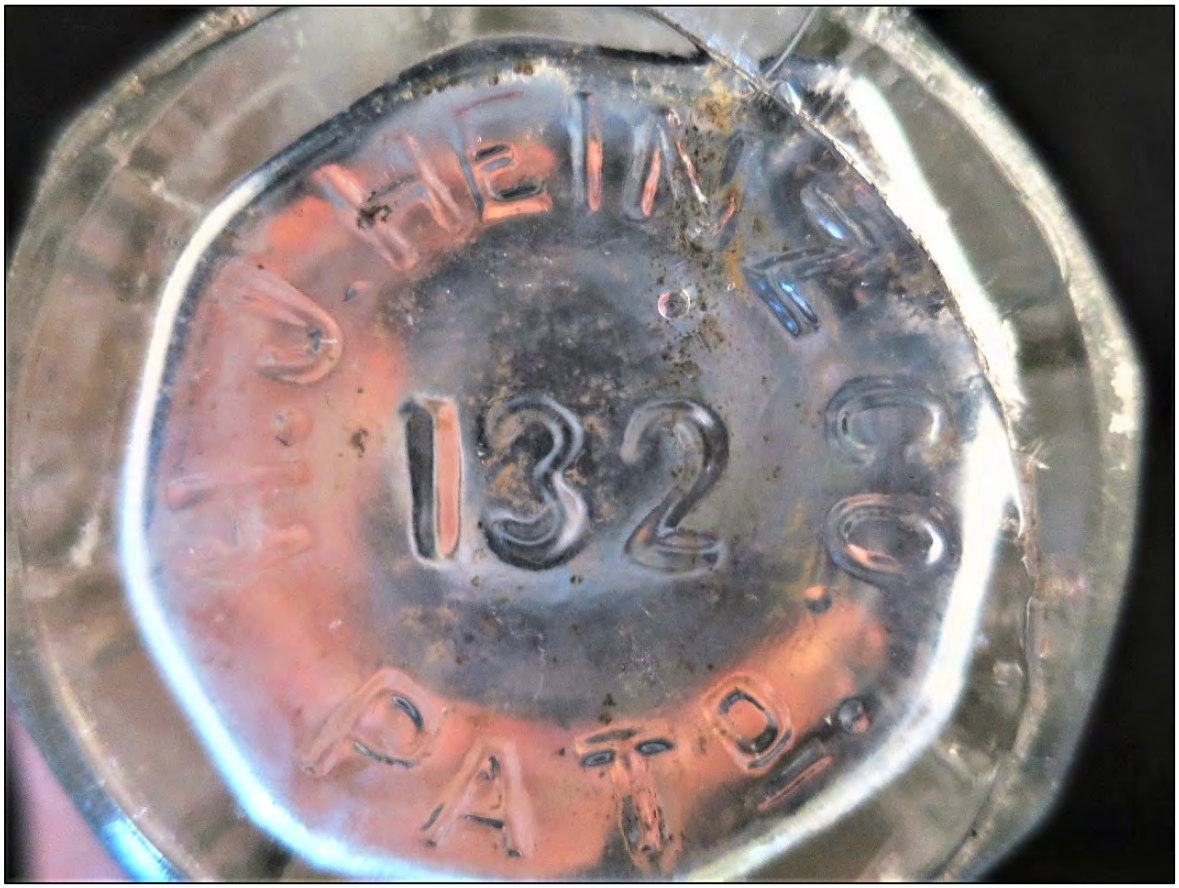

Figure 140. Acc. # 109, colorless glass Heinz pickle bottle base embossing

through both world wars, eventually being sold to the Vonk family in 1970. The company continues to produce a variety of products under the Melcher name to this day (Melchers Group 2019). Accession # 55 is a Cosmopoliet brand case gin bottle embossed with the brand's distinctive "Standing Man" figure. The bottle is incomplete, but available examples of the complete bottle show it would have had an applied mineral finish (Munsey 2009:31). Dutch case gin bottles were made with this type of finish from 1890 to 1910 (BLM/SHA 2019). Accession # 47 (Figure 141) is also a Dutch case gin bottle, colorless, with a mineral finish and a blob seal on the shoulder. This bottle was made by C. Meyer & Company, a gin distiller in Schiedam, Netherlands, about which little information could be found. This bottle, which held Palmboom gin, is common in Hawai‘i and dates to ca. 1910 (Johnston 2015:145).

Accession # 126 is a machine-made colorless glass condiment bottle manufactured by the F.E. Reed Glass Company. The company was founded in the late 1800s, when the Reed family bought into, and eventually took over, Rochester Glass Works in New York. The company produced glass for sale in the eastern United States until closing due to bankruptcy in 1956 (Lockhart et al. 2015:1). The company used the mark featured on Acc. # 126, an R in a triangle, from 1923 to 1956 (BLM/SHA 2019).

Accession # 41 is a colorless glass bottle made by the Charles Boldt Glass Company, which was founded in 1900 when the Muncie Glass Company reorganized. Boldt procured a license to manufacture liquor bottles and flasks using an Owens ABM in 1910 but sold the majority of his company stock to the Owens Bottle Company in 1919 as a result of increasing Prohibition. Owens took control of and diversified production. He acquired the rest of the company stock in 1926, closing the operation's Cincinnati plant (Schulz et al. 2014). The company used the mark that appears on Acc. # 41 from 1910 to 1919 (BLM/SHA 2019).

Accession # 42 (Figure 142) is a blue aqua glass bottle manufactured to be compatible with a "Swingtop" closure. The "Swingtop" closure is a variation of a common closure type, the lightning style closure, which features a rubber stopper held in place by a wire around the neck of the bottle. The "Swingtop" differs from a standard lightning closure in that it utilizes two dimples in the finish to hold the wire and stopper in place rather than wire around the neck of the bottle. The earliest known use of this variation is by Grolsch®, a Dutch alcohol manufacturer, in 1897 (BLM/SHA 2019).

Accession #s 44 and 125 are machine-made amber glass beer bottles with "JAPAN" embossed on the base. The McKinley Tariff Act ratified by the United States in 1891 required imports to be marked with their country of origin. Japan used "Nippon" until the term was declared inadequate by the United States in 1921, and all future imports were required to be labeled with "Japan" (Ross 2012:24).

Accession # 116 is a Chinese medicinal vial, which was made using a special process. First, a hollow glass tube was blown. Then, the tube was dipped in molten glass, and the outer body was shaped into a rectangle with four sides and a base on a hard surface. The free end of the tube was then broken from the blowpipe, creating a "burst off" finish, which was left rough on purpose, so that the rough edges would "grab" the cork seal and keep it in place. These vials contained liquid or oil-based medicine and are often associated with Chinese overseas sites in the American west dating from 1850 to 1930 (BLM/SHA 2019; Montana Historical Society 2010:7).



Figure 141. Acc. # 47, colorless glass Dutch Palmboom case gin bottle with applied blob seal

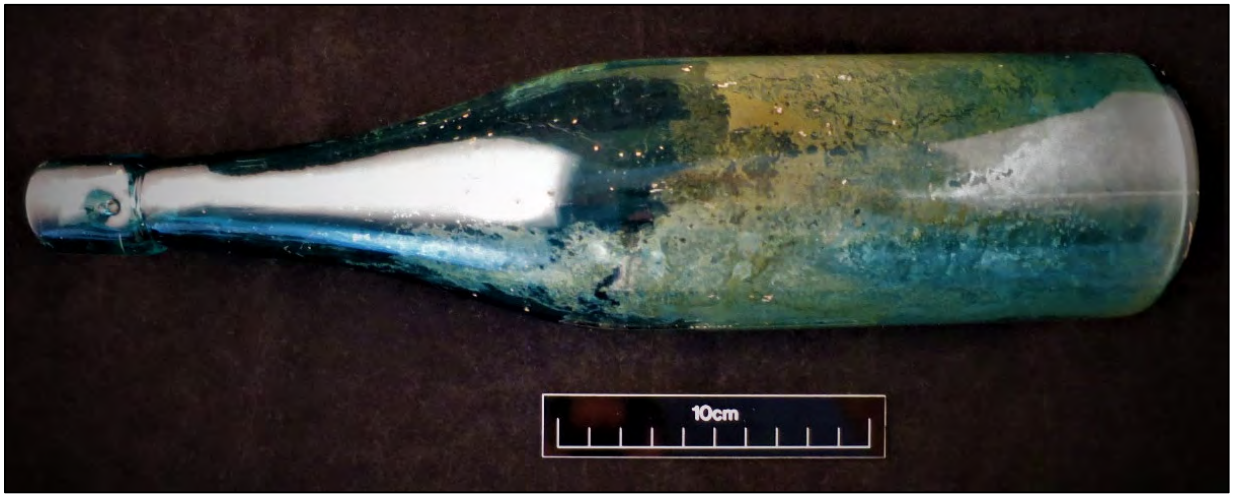

Figure 142. Acc. # 42, aqua glass beverage bottle with “Swingtop” closure

Accession # 94 is a colorless glass bottle fragment with a slight sun-colored amethyst tint. Colorless glass is usually created through the use of a decolorizing agent such as manganese dioxide. Upon exposure to ultraviolet (UV) light, manganese dioxide causes the glass to take on a tint ranging in color from light pink to moderately dark amethyst, commonly referred to as "sun-colored amethyst." Manganese dioxide was commonly used to decolor glass bottles, primarily mold-blown bottles, between 1890 and 1920 (BLM/SHA 2019). Accession # 10 is a colorless glass bottle fragment with a slight gray tint. Gray-tinted colorless glass bottles usually date from 1915 to 1925 (BLM/SHA 2019).

5.2.1.5 Miscellaneous Glass Artifacts

Accession #s 53 (Figure 143), 54, and 136 are colorless pressed glass tumblers. To make pressed glass, molten glass is poured into a mold and "pressed" with a plunger. Pressed glass tableware was produced beginning in 1825. Early pressed glass was ornate to hide manufacturing flaws (Welker and Welker 1985). By 1865, pressed glass technology had advanced, and it became more functional and affordable. True colorless pressed glass dates to post-1870 (BLM/SHA 2019).

There are three window glass fragments in the current assemblage (Acc. #s 30, 91, and 118). Flat window glass can be diagnostic depending on—among other traits—surface texture, uniformity, and thickness. Hand-blown window glass dates to pre-1920, and machine-made window glass dates to post-1905. Cylinder window glass was made when a tube of blown glass was flattened to create a large, smooth, even sheet. Its predecessors, broad and crown glass, produced glass with less even surfaces and variable thicknesses (Weiland 2009:29). Cylinder glass was the most popular type of window glass in the early nineteenth century, and an increasing demand for larger (and therefore thicker) windows resulted in a steady increase in glass thickness. Glass thickness increased from 0.75 mm in the early 1800s to 3.3 mm in the early 1900s, when machine-produced glass replaced cylinder glass (Weiland 2009:29). Accession #s 30 and 91 are both aqua window glass fragments, 2.2 mm and 2.0 mm thick, respectively. Taking into account all of the methods tested by Weiland, Acc. # 30 was likely manufactured between 1838 and 1889, while Acc. # 91 was most likely manufactured between 1840 and 1881 (Weiland 2009:31). Accession # 118 is also a flat glass fragment; however, its thickness of 7 mm is well outside the range for pre-machine-made window glass. Accession # 31 is 3.1 mm thick, which is outside the dating range of most of the methods tested by Weiland. Only one method includes glass of this thickness, indicating a date of post-1845 (Weiland 2009:31).

Accession # 64 is a blue-aqua glass insulator. Glass insulators came into use during the mid-1840s to early 1850s, when they were used on telephone and electrical power lines. They were attached to the wooden utility lines using metal pins, and their peak popularity was between 1875 and 1930. Some of the styles manufactured include toll style, telegraph style, rural and long-distance telephone styles, beehive, hoopskirt, and pony. Accession # 64 is a threaded pin-style insulator, which was invented in 1865 (Berge 1980:155–156).

Accession # 37 (Figure 144) is an opaque brown-swirled glass machine-made marble. Marbles are some of the first toys in history, with use during Roman times and the Middle Ages, and can be made of ceramic, stone, or glass. They were mass produced in Europe, particularly Germany, during the eighteenth and nineteenth centuries (Carskadden and Gartley 1990). Germany was the world leader in marble production throughout the nineteenth century into the 1920s. Marbles were

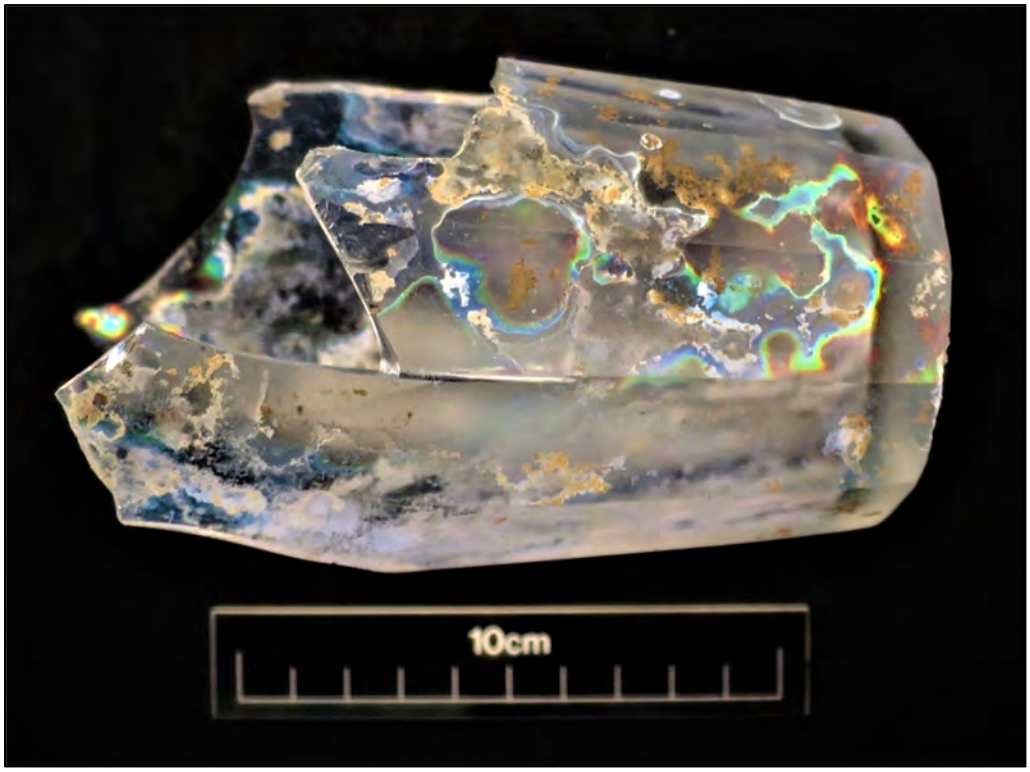

Figure 143. Acc. # 53, colorless pressed glass tumbler



Figure 144. Acc. # 37, machine-made brown glass marble

produced in the United States but not in large quantity until the invention of the automatic marble-making machine in 1901 (Randall 1971). Machine-made marbles most likely date to post-1910, when glass marbles became more common in the United States (Carskadden and Gartley 1990).

Accession # 96 is a fragment of a circular, hollow milk glass object of indeterminate function. Milk glass was first introduced in Venice during the 1500s. Milk glass tableware was popular from ca. 1870s to the mid-twentieth century. It waned in popularity during the Great Depression but experienced a resurgence after World War II. Like pressed glass, milk glass was an economical substitute for more expensive China (BLM/SHA 2019).

5.2.2 Ceramic Artifact Analysis

Ceramic vessels were analyzed for paste, shape, color, decoration, and origin. Paste includes "earthenware," "stoneware," and "porcelain." Shapes are designated as "flatware" (e.g., plates, shallow saucers) or "hollowware" (e.g., bowls, cups). When a fragment was too small to determine general shape, the artifact is listed as "tableware" (Huddleson 2013). The terminology and dates for manufacturing and decoration techniques used in this section are from the Maryland Archaeological Conservation Lab (2002) internet site "Diagnostic Artifacts of Maryland," unless otherwise noted.

Fifty-four ceramic artifacts were collected during the AIS. These include 52 vessel fragments, a spoon, and a doorknob. The 52 vessel fragments include flatware (n=4), hollowware (n=36), tableware (n=3), common pottery vessels (n=4), storage containers (n=2), bottles (n=2), and one unidentified item. Twenty-five of the artifacts originate from Euro-America, two from England, two from Germany, ten from Japan, eight from China, and three from Asia (China or Japan).

5.2.2.1 Euro-American Ceramics

The ceramics discussed in this section were manufactured in the United States or England or were identified only as Euro-American. They fall into three main categories: earthenwares, stonewares, and porcelains.

Whiteware is a type of earthenware made of a semi-porous to porous, compact material fired at 1100–1200º C (Florida Museum of Natural History 2018). Whiteware production began in 1820, with the height of production from 1850-1910 (Lebo 1997). Hand-painted whiteware dates between 1830 and 1870 (Maples 1998:110). One whiteware fragment (Acc. # 149; Figure 145) is decorated with a painted thick-line polychrome floral design, which was most popular on whiteware from 1840 to 1870.

Accession # 100 (see Figure 145) is a whiteware fragment with a transfer-print decoration. This type of decoration was made using tissue paper to transfer designs from inked, engraved plates onto the surfaces of ceramic vessels. Transfer-printing began in Staffordshire in 1783 and was popular in the United States until the mid-nineteenth century, when undecorated or minimally decorated ceramic wares came into style. There was a resurgence in use ca. 1870, and transfer-printed wares remained on the market until they were replaced by decals in the early 1900s. Accession # 100 has a scenic vignette print, which dates from 1850 to 1889 (Maryland Archaeological Conservation Lab 2019).



Figure 145. 1) Acc. # 149, whiteware hollowware fragment with hand-painted floral decoration; 2) Acc. # 100, whiteware plate marly to rim fragment with blue scenic vignette transfer; 3) Acc. # 150, dipped London-shaped whiteware bowl fragments with blue annular banding

Dipped wares are refined earthenwares decorated with clays that had different colors when fired or were dyed with mineral oxides suspended in a liquid solution called slip. Slip could be used as a dip for the entire surface of the vessel or solution to pour, band, drip, or trail decoration. Dipped earthenwares could also be decorated by removing the slip in cut patterns and exposing the ceramic body underneath. Dipped earthenwares were the most affordable hollowware decoration available from ca. 1780s through the nineteenth century. Dating is based on decorative technique and vessel shape. Accession # 150 (see Figure 145) is a London-shaped bowl with blue annular banding. Banded wares date from the 1770s to the early twentieth century, with blue bands being most common after 1840 (Miller 1991:6).

One artifact in the current assemblage, Acc. # 141 (Figure 146), is a Victorian majolica style whiteware planter. Victorian majolica is a ware characterized by intricate relief molding and brightly colored glazes, usually on earthenware (Maryland Archaeological Conservation Lab 2019). It was first produced in Great Britain in 1851 to mimic Italian Renaissance tin-glazed pottery. It then spread through Europe and the Americas, with production beginning in North America by the 1870s (Bergesen 1990:9, 87, 103; Dawes 1990:140). Victorian majolica's popularity in the United States began as a result of its appearance at the 1876 Centennial Exposition in Philadelphia. Its popularity peaked in the 1880s but waned by the turn of the twentieth century, with production discontinued in the United States by World War I (Dawes 1990:151; Maryland Archaeological Conservation Lab 2019). As Victorian majolica is relatively fragile compared to



Figure 146. Acc. # 141, whiteware Victorian majolica planter fragments

other types of wares, special use items such as butter dishes, dessert plates, and cheese plates were more common than everyday tableware (Bergesen 1990:22). Accession # 141 is decorated with a turquoise underglaze on the exterior and a lavender underglaze on the interior. The exterior body has a relief molded repeating a Celtic style pattern along the rim and heel and multicolored embossed lilies on the exterior body. There is no maker's mark on this artifact; however, while colors are not considered diagnostic, it should be noted that this color scheme was favored by popular British potter George Jones.

Accession #s 103 and 144 are yellowware hollowware fragments. Yellowware is a type of earthenware made from yellow clays in England and North America. The paste is coarser than refined earthenwares such as whitewares and porcelains, and yellowwares are fired at higher temperatures. Yellowware production began in the United Kingdom in the late eighteenth century. By 1800, North American potteries were producing yellowware in Ohio, New Jersey, Pennsylvania, and Maryland. Yellowware continued to be produced until the 1930s, but popularity declined around the turn of the century. Five common decorating techniques include slipped decoration, mocha, Rockingham glazes, oxide washes/flint enamels, and relief molding (Maryland Archaeological Conservation Lab 2019). Accession # 144 is a yellowware nappy, a plain deep bowl with flared sides (Liebowitz 1985). Nappies are a common yellowware vessel type, with most produced between 1840 and 1900 (Lebo 1997:83)

Another type of Euro-American ceramic in the current assemblage is ironstone (Acc. #s 24, 35, 143, 145–147, and 151–155; Figure 147). This is a semi-vitreous refined earthenware fired at higher temperatures than whiteware, with an intermediate hardness between whiteware and porcelain (Florida Museum of Natural History 2018). It was produced in England's Staffordshire district and in the United States. White ironstone was most popular from 1840 to 1870 but was sold into the twentieth century. Many patterns and shapes were produced and replicated by



Figure 147. 1) Acc. # 154, paneled ironstone hollowware vessel, base to body fragment; 2) Acc. # 146, ironstone ewer or pitcher fragments with J.W. Pankhurst maker's mark on base; 3) Acc. # 147, ironstone saucer fragment with Henry Alcock & Company maker's mark on base; 4) Acc. # 35, ironstone hollowware handle fragment with remnants of copper or gold luster decoration

different potters, and the rise and fall in popularity of the styles is useful for dating. Before 1860, wares with detailed molding and sharp angles were popular. Examples include foliage, paneled/scalloped, harvest, classical, and ribbed motifs. Post-1860, detailed molding was replaced by wares with simple lines (Maryland Archaeological Conservation Lab 2019; Wetherbee 1985:102). Around the turn of the century, household use declined and white ironstone began to be used commercially in hotels, train depots, and restaurants. Accession #s 145, 151, and 154 are all paneled wares, indicating a manufacture date of pre-1860.

Several ironstone artifacts in the collection have maker's marks. Accession # 146, a pitcher or ewer with relief-molded foliage, was made by J.W. Pankhurst, a British potter who operated in Hanley, Stoke-on-Trent, from 1850 to 1883 (Birks 2016). Accession # 147 is an undecorated saucer made by Henry Alcock & Company, a potter operating in Cobridge, Stoke-on-Trent, between 1861 and 1910 (Birks 2016). Accession # 35 is a hollowware handle fragment with remnants of copper or gold luster, a decoration used on ironwares from the 1850s to ca. 1900 (Wetherbee 1996:150–151). Accession #s 24, 143, 152, 153, 155, and 160 are all incomplete and lack diagnostic characteristics to further narrow the date of manufacture.

Accession # 142 is a common earthenware garden flowerpot. Flowerpots were hand thrown until William Lond made a pottery molding machine in 1861 (Scanland and Redmond 2013:30). Accession # 142 appears to be machine-made, indicating it was made after 1861.

Stoneware is fired at higher temperatures and is more vitrified and durable than earthenwares (Florida Museum of Natural History 2018). Stonewares are often decorated with a salt glaze, which is produced when salt is introduced into the kiln during firing. The salt reacts with the silicates in the clay leaving a shiny, pitted surface; this texture is also called “orange peel.” Color varies between pale beige, dark gray, and red. Accession # 156 is a stoneware vessel fragment, likely from a flowerpot. Accession # 162 is a knob fragment from an unidentified vessel with a shiny brown glaze, possibly a salt-glaze.

Accession #s 127 (Figure 148) and 148 are German “Westerwald” stoneware bottles. These bottles were made in a variety of shapes that evolved over time, but most are tall and cylindrical with a short neck and shoulder handle. They were salt-glazed for decoration. The bottles were typically used to export mineral water from the lower Westerwald region of Germany (Leavitt 2013:324); however, some were sent to Holland, filled with Dutch gin, and exported. The sturdiness of the bottles made them ideal for shipping water and gin overseas. Production range is from the early to mid-nineteenth century until World War I. Until the end of the nineteenth century, the bottles were thrown on a wheel, creating a distinctive pattern of helical ridges on the interior of the jug. In 1879, an extruding press used in the manufacture of sewer pipes was adapted for use in bottle-making, soon replacing wheel manufacture and resulting in fine, near-vertical marks on the interior of the bottles (Leavitt 2013:329). Accession #s 127 and 148 both have helical ridges on the interior, indicating they were produced before 1897.

One Euro-American porcelain fragment was collected (Acc. # 83). Porcelains are very hard, compact, vitreous, and fired at temperatures of 1300–1450º C (Florida Museum of Natural History 2018). The manufacture of Euro-American porcelain began as early as the mid-1700s, but the popularity of porcelain did not take hold until the mid- to late nineteenth century. Most Euro-American porcelain was decorated, with common techniques including overglaze painting and printing, relief molding, gilding, and decal print. Accession # 83 is a relief molded hollowware fragment, while Acc. # 133 is a doorknob. Until the mid-1800s, porcelain doorknobs were imported from France and England. In 1841, porcelain doorknobs with simple cast iron shanks were patented in the United States. They gained popularity and became more widespread by the 1860s (Hall 2009).

5.2.2.2 Asian Ceramics

Twenty-one Asian ceramic artifacts were collected during the AIS. They include 17 hollowware porcelain vessels, one porcelain spoon, one common pottery planter, and two stoneware storage jars. Eight were identified as Chinese, and ten were identified as Japanese. Another three could only be identified as Asian.

5.2.2.2.1 Chinese Ceramics

Of the Chinese ceramics collected during the AIS, three can be categorized as “*tz‘u*” wares or “Kitchen Qing” wares (Acc. #s 13, 104, and 129; Figure 149). These wares were made and exported to America between 1644 and 1911 (Lister and Lister 1989). They are typically found in nineteenth and early twentieth century archaeological contexts for overseas Chinese communities in the western United States and Hawai‘i (Costello and Maniery 1988; Lebo 1997). The immigration of Chinese to work on Hawaiian sugar plantations took place between 1852 and 1892, but several Chinese entrepreneurs had established themselves in the Islands earlier (Nordyke and



Figure 148. Acc. # 127, German stoneware bottle, base to body fragment



Figure 149. Acc. # 129, porcelain *tz‘u* rice bowl with Double Happiness decoration

Lee 1898). In fact, there were three Chinese stores in Honolulu by the 1830s dealing in “dry goods,” with at least one selling “crockery.” In this context, “crockery” probably refers to inexpensive export Chinese porcelain (Char 1974:20). Chinese exports were not only bought by Chinese immigrants but were also purchased by Hawaiians, Caucasians, and other residents. In a study on three early Chinese stores in Hawai‘i, Char (1974:31) stated that “[m]issionary and merchant families of the white population took to China goods, as did the New Englanders at home in America.”

Chinese ceramics were made with a variety of motifs including “Double Happiness,” “Bamboo,” “Four Seasons,” and “Winter Green” (Lebo 1997). The “Double Happiness” motif consists of a blue hand-painted design with two stylized “Happiness” symbols. This can be accompanied by a “Swirl” or “Sweet Pea” motif.

“Winter Green” is a decoration consisting of a light blue to bluish green glaze, usually on the interior and exterior of the vessel. It has been noted in collections containing both Chinese and Japanese ceramics. Some sources say it was a Chinese invention adopted by the Japanese in the seventh century (Lister and Lister 1989; Ross 2012), while others say it was of Japanese origin and adopted by the Chinese (Sando and Felton 2013; Stenger 1986; Wegars 1988). Certain techniques can be linked to Japanese Winter Green; these include polychrome hand-painted overglaze and the Japanese technique of *kasuri-mon* (incising the exterior of the vessel before glazing) (Ross 2012). Accession # 104 is a Chinese porcelain rice bowl with wintergreen glaze.

Lister and Lister (1989) note the Double Happiness motif is usually found in California Chinese community sites dating before 1880, while the Bamboo (Three Circles and Dragonfly) motif is found in the early part of the 1860-1900 period. The Four Seasons and Winter Green dishes are usually found in the later part of the 1860-1900 period. However, Lister and Lister (1989:53) caution that Chinese ceramic styles are “notably long-lived” and that some styles, especially the Four Seasons and Winter Green types, may have been exported to America into the mid-twentieth century. Sando and Felton (1993), using the inventory of a nineteenth century Chinese store in Northern California, researched the various prices of ceramics with different patterns. Both Double Happiness and the Bamboo pattern were considered low-priced wares, in contrast with the more high-priced ceramics, such as Four Seasons and Winter Green. Of the inexpensive patterns, Double Happiness wares are found in contexts that pre-date 1870; they are superseded by the Bamboo pattern after that date. Accession #s 13 and 129 are decorated with the Double Happiness motif (see Figure 149).

Accession # 124 is an undecorated porcelain spoon fragment. Spoons were an important Chinese eating utensil (Frierman 1983:176). The Chinese table setting would have consisted of a teacup, spoon, chopsticks, bowl, and saucer to eat soups, stews, noodles, meats, and broth (Anderson 1988; Knee 2012:69; Lister and Lister 1989). Accession # 124 dates to post-1852 (date of the first immigration of Chinese workers). Accession # 20, a porcelain hollowware fragment with an overglaze decoration, also dates to post-1852, as it lacks the necessary characteristics for further dating.

Accession #s 101 and 102 are Chinese brown-glazed stoneware (CBGS) vessel fragments. CBGS is one of the most common types of ceramics found in archaeological contexts with Chinese artifacts. They were utilitarian in function, primarily used for the shipment and storage of food (Yang and Hellmann 2013). Most vessels were produced in Canton, a province in southern China,

and were made using a combination of slab and coil technology. Because the vessels were made by hundreds of potters, there are variations in form; however, standard shapes include wide-mouth, spouted, barrel, and straight-sided jars, liquor bottles, stew pots, and pans (Yang and Hellmann 2013). CBGS vessels have buff-colored paste, an exterior glaze ranging from brown to black, and a thin, light brown interior glaze, although the glaze rarely covers the entire vessel; usually, the heel, base, and footring are unglazed (Choy 2014). CBGS can be difficult to date because similar vessel forms have been manufactured for hundreds of years (Munsey 1970:136; Yang and Hellman 1996:59).

5.2.2.2.2 Japanese Ceramics

Three decoration methods are used on Japanese ceramics: hand-painting, stencil-printing, and transfer-printing. Stencil-printing is when a paper stencil is placed over the vessel, and color decoration is applied. The two stenciling methods are called *fukizumi* and *katagami*. *Fukizumi*, or negative, stenciling is when the stencil is placed on the vessel to block pigment, and color is sprayed around the edges, creating an outline. *Katagami*, or positive, stenciling is when the color is applied to the vessel through holes in the stencil. Stenciling was used during the seventeenth century, abandoned in the eighteenth century, and reinvented in the early 1870s in Hizen province. From there, it spread to Tobe and Mino provinces between 1878 and 1882 and was later adopted in other porcelain centers across Japan (Ross 2012:7). The first Japanese transfer-printed wares were produced by potters in Tajimi in 1888 and were soon copied by other major ceramic centers. By ca. 1920, transfer-printed wares replaced stenciled wares (Ross 2012:8).

Accession #s 12, 21, and 85 (Figure 150) are hand-painted porcelain bowls dating to post-1868 (date of the first immigration of Japanese workers). Accession # 49 is a small porcelain sauce dish, with a relief-molded flower on the interior, also dating to post-1868. Accession # 82 (see Figure 150) is a porcelain hollowware fragment with an underglaze blue *fukizumi* decoration on the interior dating from the 1870s to 1920. Accession # 131 (see Figure 150) is a flatware *kozara* dish with an underglaze blue *katagami* decoration on the interior. The combination of the dish style and the stencil decoration provides a manufacture date range of 1870s to 1912 (Ross 2012:10). Accession # 84 is a rice bowl lid (*futa*) with a mix of transfer-printed and hand-painted lines dating to post-1888 (date of the first Japanese transfer-printed wares). Accession #s 17, 18 (see Figure 150), and 134 are hollowware fragments with a blue transfer-print decoration, also dating to post-1888.

5.2.3 Miscellaneous Artifacts

Accession # 48 (Figure 151) is a bone toothbrush handle fragment. Bone was the most common material for toothbrush handles up to the end of the nineteenth century. Celluloid brushes began to be made as early as 1869 and, along with other synthetic materials, almost completely replaced bone as the handle/head material by the 1940s. Two attributes that provide definitive date ranges are the number of holes/number of rows and the presence of a hole on the handle end. Before ca. 1890, brushes tended to have four or five rows of holes, with about 21 holes per row. From 1890 to 1910, brushes had three or four rows, with an average of 17 holes per row. After 1910, a brush had three or four rows, with an average of ten holes per row (Mattick 1993:182). Toothbrush makers drilled a hole at the end of the handle, starting in 1884, to encourage people to hang up their brushes to dry thoroughly and prevent the growth of bacteria (Mattick 1993:165). Based on these criteria, Acc. # 48 dates to pre-1884.



Figure 150. 1) Acc. # 85, porcelain rice bowl with hand-painted decoration; 2) Acc. # 82, porcelain hollowware body fragment with *fukizumi* decoration; 3) Acc. # 131, porcelain *kozara* dish base to rim fragment with *katagami* decoration; 4) Acc. # 18, porcelain hollowware base to body fragment with transfer-print decoration



Figure 151. Acc. # 48, polished bone toothbrush handle

Accession #s 36, 38 (Figure 152), 39, and 81 are wire nails. Wire nails are the most recently produced type of nail, manufactured in the United States from ca. 1850 to the present. They have round heads and round shafts, with consistently shaped shanks, and exhibit little change over time. Thus, distinguishing early wire nails from modern wire nails is very difficult (IMACS 1992). Wire nails were first imported to Hawai‘i by E.O. Hall and Son in 1894 (Hurst and Allen 1992 in Lebo 1997:112).

Accession # 26 is a polished bone artifact fragment that was likely part of a folding personal hygiene tool. It is incised with the words “MADE IN JAPAN,” which indicates the object was imported to the United States post-1921 (Ross 2012:24).

Accession # 87 is a 15-cm diameter ferrous metal utility pipe fragment. The first iron pipes for government utility use arrived in Hawai‘i in 1850 (Taylor 1922:374).

Accession # 78 is a slate fragment, with one straight edge indicating it was part of a square or rectangular panel. It is painted black on both sides. As slate pencils do not mark it, this is not a slate board. However, it could be an early chalkboard.

Accession # 77 is a carbon battery electrode. The first modern batteries were invented in 1800 by Alessandro Volta (Spude 2002), who produced “wet cell” batteries containing liquid electrolyte and metal electrodes. Based on principles pioneered by Volta, William Cruichshank was the first to mass produce batteries for purchase starting in 1802. In 1836, the first rechargeable battery was invented by John D. Daniell. It produced a more stable current with a system using lead acid. In 1886, the first “dry cell” battery was invented using ammonium chloride mixed with plaster (Spude 2002). This type of battery, often called a zinc-carbon battery, is the modern standard for batteries. Accession # 77 is a carbon electrode from a zinc-carbon “dry cell” battery, manufactured post-1912 (Goodman 1998:36).

Accession # 138 (Figure 153) is a dark red brick fragment with attached mortar. The first brick building in Hawai‘i was the King’s palace built in Lahaina, Maui in 1802. By 1820, “California” or “Victoria” bricks were being imported to Hawai‘i (Greer 1968:16). Local brick-making began on O‘ahu in 1839, and the first structure was built in Honolulu in 1847 (Lebo 1997:106–107). However, bricks were only manufactured for a brief time in Hawai‘i. In the 1860s, bricks started being imported from Japan (Lebo 1999). Accession # 138 is too small to provide datable information.

Accession # 137 (Figure 154) is a coral block, faced on all sides, with no mortar. It appears too small to be part of the outer wall of a structure but may be a paving brick. It measures 12.3 cm long by 11.4 cm wide and 6.6 cm thick. The block was not able to be dated.

Accession # 157 is a dark gray concrete block, faced on all sides, but not ground to a smooth finish. It is 18.6 cm long by 8.3 cm wide, and 5.6 cm thick. Solid concrete blocks were first used for construction in Hawai‘i in 1871 (Schmitt 1995:77). Accession # 158 is a concrete masonry unit (CMU) fragment. The first machine to manufacture the hollow concrete blocks was invented in 1900 (Madehow.com).

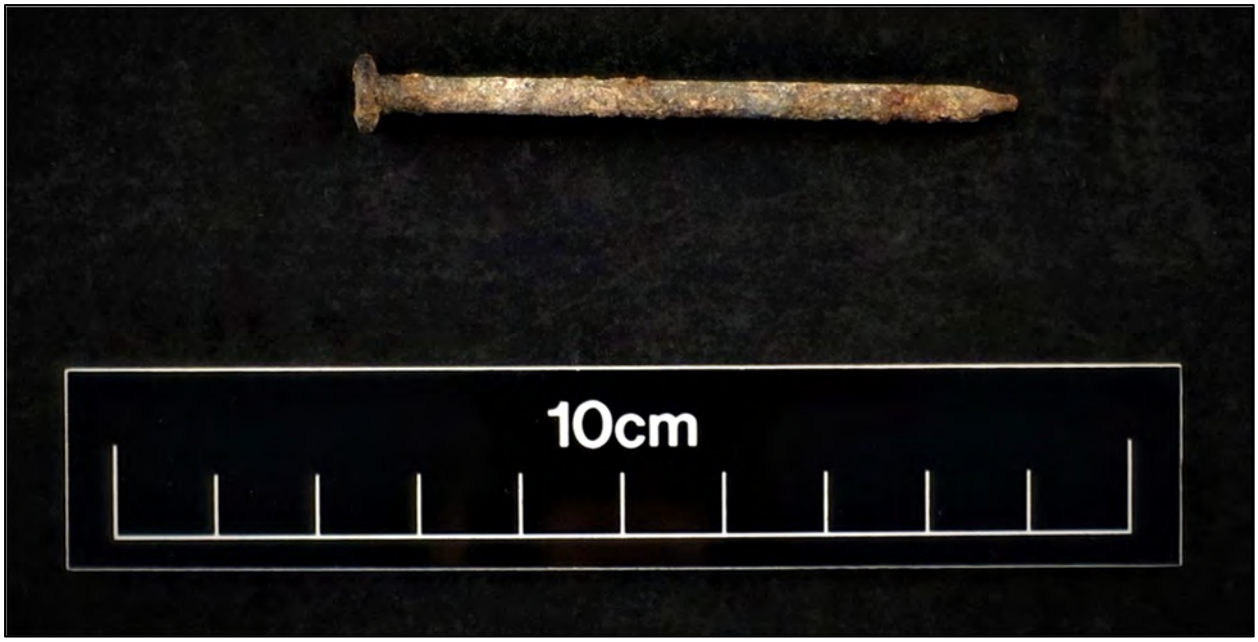

Figure 152. Acc. # 38, wire nail with white corrosion and ferrous rust



Figure 153. Acc. # 138, dark red brick fragment with mortar



Figure 154. Acc. # 137, coral block fragment

5.2.4 Summary

CSH personnel collected 161 artifacts during the AIS. Most are composed of glass (n=89) and ceramics (n=53). Artifacts were collected from fill deposits, including demolition fills and a burnt trash fill (SIHP # -8840 Component 3, Feature 6), and the Stratum IIa/SIHP # -8840 Component 2 habitation layer, mainly from historical trash pit features. In general, the artifact assemblage dates from the mid-nineteenth to mid-twentieth century and consists of domestic items associated with the residential and commercial development of the study area.

The glass artifacts consist primarily of beverage bottles, with more than twice as many mold-blown bottles (1800-1920) as machine-made bottles (post-1908). Many of the mold-blown bottles are early mold types and have applied finishes (1800-1885), although a small number of later two-piece molds with tooled finishes are also present. Most of the bottles for which country of origin could be identified were manufactured in the United States, while the rest are from Scotland, the Netherlands, Japan, and China. Three were identified as having been manufactured for use by Hawaiian companies. Likely manufacture dates of bottles in the current assemblage span the full length of a century from ca. 1850-1950.

The ceramic artifacts are mostly hollowware vessels originating from Euro-American countries, primarily England. Ironstone is the most common ware type, with most dating to the latter half of the nineteenth century. Porcelain artifacts from Japan and China that could be dated from decoration type date primarily to the latter half of the nineteenth century as well. The ceramics from Euro-America date to the late nineteenth to early twentieth century.

The dating of diagnostic artifacts can be used to assess the earliest and latest possible dates for the deposition of fills and structural remnants and the use of cultural layers and features. Artifacts

were collected and analyzed from four pit features associated with the Stratum IIa/SIHP # -8840 Component 2 habitation layer. Three of these features (Features 8, 12, and 14) were documented at the upper boundary of the layer and are interpreted as historical trash pits. The fourth (Feature 17) extended from the lower portion of the layer; its function is indeterminate. As features were documented within different vertical portions of the quite thick layer, Stratum IIa was likely deposited in multiple episodes over a potentially extended period of time. If this were the case, features in the upper portion of the layer would therefore post-date those in the lower portion of the layer. Furthermore, radiocarbon dating (see Section 5.4.3 below) suggests the lower portion of Stratum IIa was in place by 1810. The artifact assemblage supports this timeline, as two diagnostic glass fragments (Acc. #s 74 and 76) collected from Feature 17, at the lower boundary of Stratum IIa, date to 1800-1910, indicating use of the feature during that time period. In contrast, diagnostic artifacts collected from Features 8, 12, and 14, at the upper boundary of the stratum, indicate use of these features post-1910 (Acc. #s 37, 41, and 47), post-1890 (Acc. # 55), and post-1880 (Acc. # 159), respectively.

Furthermore, analysis of artifacts collected from fill deposits overlying the Stratum IIa/SIHP # -8840 Component 2 habitation layer can provide an indication of how long Stratum IIa was exposed and functioned as a surface prior to being in-filled. The results of this analysis indicate Stratum IIa functioned as a surface into the twentieth century, as recently as the mid-1930s. This is based on diagnostic artifacts associated with T-2 Stratum Id (Acc. # 44), T-2B Stratum Ie (Acc. # 26), T-2C Stratum If (Acc. # 161), T-6 Stratum Ie (Acc. # 77), T-10 Stratum Ie (Acc. # 110), and T-12 Stratum Id (Acc. # 126), which date to post-1921, post-1926, 1935, post-1912, 1924-1940, and 1923-1956, respectively.

Artifact analysis also assists in establishing dates of likely deposition for SIHP # -8840 Component 3 infrastructure remnants. For instance, a glass beverage bottle (Acc. # 132) collected from T-1 Stratum Ig, base course associated with SIHP # -8840 Component 3, Feature 1 (oil-rolled crushed coral surface), dates to post-1908, indicating Feature 1 was deposited after that date. Furthermore, the dating of SIHP # -8840 Component 2, Feature 8 (historical trash pit, discussed above), provides a *terminus post quem* of 1910 for SIHP # -8840 Component 3, Feature 2 (hollow tile wall), which directly overlies it.

In addition, artifacts were collected from SIHP # -8840 Component 3, Feature 6, burnt trash fill (T-10 Stratum If). Although none of the collected artifacts were sufficiently diagnostic to be dated to a particular year or even decade, the date ranges for the items fall between the 1840s and 1930s. However, the date range for the deposition of Feature 6 can be narrowed further, since it overlies and therefore post-dates the Stratum IIa/SIHP # -8840 Component 2 habitation layer. Analysis of artifacts from features associated with Stratum IIa and from overlying fill deposits suggests Stratum IIa functioned as a surface until at least 1935 (see discussion above); hence, the Feature 6 burnt trash fill was likely deposited after that date. In addition, a review of historical maps suggests the overlying SIHP # -8840 Component 3, Feature 4 (etched concrete surface), was in place by 1950, indicating Feature 6 pre-dates that time. The Feature 6 artifact assemblage, with its potential range of 1840s to 1930s, is consistent with deposition of the layer sometime between 1935 and 1950.

5.3 Faunal Analysis

5.3.1 Faunal Osseous Remains

CSH personnel collected faunal osseous remains from ten of the 15 test excavations during the current AIS. The identified remains, as shown in Table 21, include pig (*S. scrofa*), cow (*B. taurus*), fish (Osteichthyes), bird (Aves), goat (*C. hircus*), and possibly baleen whale (Mysticeti). These include a Polynesian-introduced species (i.e., pig), historically introduced species (i.e., cow and goat), and possible native/endemic species (fish, birds, and possibly whale). Most of these remains are considered to be food refuse, with many exhibiting evidence of post-Contact butchering methods as indicated by striated cut marks from a saw; these butchered remains are primarily cow and pig. One sample of pig remains also exhibits potential evidence of heat alteration, further supporting its interpreted function as food refuse.

The collected material for which the provenience was known came from fill deposits (Stratum I), usually demolition fill layers, and from Stratum IIa/SIHP # -8840 Component 2, the upper of two habitation layers. Most of the material associated with Stratum IIa/SIHP # -8840 Component 2 was collected from three pit features in T-9 (Features 12–14), interpreted as historical trash pits. These features originate at the upper boundary of the stratum and are therefore interpreted as being more recent than features identified within lower portions of the stratum, which appears to have accumulated over a relatively long period of time and may have functioned as a surface from the pre- or very early post-Contact period into at least the 1920s (see Section 6.2.1 discussion). The identification of faunal osseous material from historically introduced species (goat, cow) and with evidence of post-Contact butchering methods within the features supports this interpretation.

Only in T-12 were faunal osseous remains collected from the general layer of Stratum IIa (i.e., not collected from a feature). Notably, these remains include material tentatively identified as possible baleen whale by Dr. Kenneth Longenecker of the Hawai‘i Institute of Marine Biology, who examined photographs of the material. Whales are divided into two suborders: baleen whales (Mysteceti) and toothed whales (Odontoceti). In place of teeth, baleen whales have baleen, bristly plates composed of keratin, which the whale uses to “filter, sift, sieve or trap” its prey from seawater inside its mouth (Whale and Dolphin Conservation, n.d.). The humpback whale is by far the most common baleen species found in Hawaiian waters, although there have been rare sightings of other species (State of Hawai‘i Division of Aquatic Resources 2019).

Whalers, primarily American vessels, began arriving in Hawai‘i in the early nineteenth century. For Hawaiian ports, especially Lahaina and Honolulu (0.7 km southwest of the current project), the whaling fleet was the crux of the economy at that time, and whale oil was used for heating, lamps, and in industrial machinery (HawaiiHistory.org 2019). Because dried baleen is strong, light, flexible, and hard-wearing, it was useful as construction material. Baleen was used in a variety of commercial enterprises, including the manufacture of fashion items, particularly corsets, collars, and frames for hooped skirts. In addition, it was also used in chimney sweep brushes, umbrella ribs, riding crops, buggy whips, hat brims, and upholstery stuffing (Smithsonian, n.d.; University of Aberdeen Department of Zoology 2002). The discovery of petroleum in 1859 in Pennsylvania signaled the end of the whaling industry (HawaiiHistory.org 2019).

Table 21. Faunal osseous remains collected during the AIS

Provenience	Taxon	Weight (g)	Description
T-1, Str. Ig/SIHP # -8840 Component 3, Fea. 1 Base course	*S. scrofa* (pig)	12.3	Mandible portion with M1, M2
T-2, Str. Id Demolition fill	*S. scrofa* (pig)	27.0	Proximal rib portion, various fragments; possible heat alteration
T-2B, Spoils	*B. taurus* (cow)	177.9	Long bone section, saw-cut
T-2C, Str. If Demolition fill	Medium mammal, inconsistent with human	7.9	Small fragments
T-4, Spoils	Small mammal	4.3	Long bone portion
	B. taurus (cow)	12.7	Rib section, saw-cut
T-6, Str. Ic Demolition fill	Osteichthyes (fish)	0.8	Unknown portion
T-6, Str. Ie, Fill	*Sphyraenidae* sp. (barracuda)	3.8	Dentary
T-9, Str. IIa/SIHP # -8840	Aves (bird)	4.7	Femur, ulna
Component 2, Fea. 12 Historical trash pit	Mammal, inconsistent with human	6.2	Fragments, saw-cut
T-9, Str. IIa/SIHP # -8840 Component 2, Fea. 12 Historical trash pit	Aves (bird)	8.4	Phalanx, carpometacarpus, and distal tibiotarsus, various portions and fragments
	B. taurus (cow)	22.0	Vertebral portion
T-9, Str. IIa/SIHP # -8840 Component 2, Fea. 12, Historic trash pit	*C. hircus* (goat)	5.4	Femur fragment
T-10, Spoils	*B. taurus* (cow)	42.4	Scapula section, saw-cut; other fragment
	Small mammal	1.6	Misc. fragments
T-11, Spoils	Small mammal	1.5	Long bone portion, saw-cut
T-12, Str. IIa/SIHP # -8840 Component 2	Possible Mysticeti (whale)	67.6	Possible baleen
Habitation layer	Osteichthyes (fish)	9.7	Vertebral fragments
	B. taurus (cow)	2.8	Cortical fragment, saw cut

5.3.2 Invertebrate Faunal Remains

Invertebrate faunal remains were collected from a single test excavation (T-9) and are summarized in Table 22. The shells, identified as *Periglypta reticulata*, were collected from SIHP # -8840 Component 2, Feature 12, interpreted as a historical trash pit. This bivalve species is consistent with midden (i.e., food refuse). Based on the completeness of the shells, the consistency of their sizes, and their lack of damage, this is likely historical (i.e., post-Contact) midden. This interpretation is supported by the Feature 12 artifact assemblage, which indicates the feature post-dates 1890.

5.4 Floral Analysis

5.4.1 Pollen Analysis

Ten samples from two test excavations (T-7 and T-9) were submitted to BGP Consulting, LLC, for pollen analysis. The samples target a vertical series of natural alluvium deposits (Stratum II), including interpreted agricultural deposits (SIHP # -8840 Component 1). The samples are summarized in Table 23, and the report by BGP Consulting, LLC (Phillips 2019), is presented in Appendix C. The results of the analysis are discussed below.

It should be noted that no samples were sufficient for standard counts, and pollen is completely absent from four samples. In samples containing pollen, the percentages of degraded grains range from relatively high (19.3%) to very high (39.5%), indicating poor preservation. Hence, the data is likely not an accurate reflection of the original pollen assemblage.

5.4.1.1 Test Excavation 7

Six samples from T-7 were submitted for palynological analysis. The samples were collected from Strata IIa–IIf, naturally deposited alluvium. Strata IIc and IId contain charcoal flecking and oxidized (red) mottling and are interpreted as agricultural deposits (SIHP # -8840 Component 1). The Strata IIa, IIb, and IIf samples contained no pollen and are therefore not discussed further.

Asteraceae and Cheno-Ams dominate the Stratum IIe sample, suggesting a shrubland environment. Grass pollen gradually increases over time (i.e., increases up the column sample), becoming dominant in Stratum IIc. A single large grass grain identified in Stratum IIc may represent rice (*laiki*; *Oryza sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*Heteropogon contortus*) grass. In addition, a high proportion of fern spores in Stratum IIc might reflect increased input from upslope and/or overbank flooding.

5.4.1.2 Test Excavation 9

Four samples from T-9 were submitted for palynological analysis. The samples were collected from Strata IIb and IId–IIf (naturally deposited alluvium). Strata IId–IIf contain abundant oxidized (red) mottling and are interpreted as agricultural deposits (SIHP # -8840 Component 1). The Stratum IIe sample contained no pollen and is therefore not discussed further.

The T-9 assemblage is more diverse than the T-7 assemblage (discussed above), with a greater number of types identified in all productive samples. No distinct temporal trends are apparent; rather, the assemblage is characterized by less common types, particularly the spurge and madder families. Normally, this data would be interpreted as reflecting local stands of shrubs and herbs.

Table 22. Invertebrate faunal remains collected during the AIS

Provenience	Taxon	Comment
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12 Historic trash pit	*P. reticulata*	MNI of 25 valves; completeness of shells, consistency of size, and lack of damage indicate this is likely historic (i.e., post-Contact) midden

Table 23. Samples submitted for palynological analysis

Test Excavation	Sample #	Stratum	Depth (cmbs)	SIHP #	Description
7	1	IIa	44–47	–	Natural alluvium
	2	IIb	76–79		
	3	IIc	107–110	SIHP # -8840	Agricultural deposit
	4	IId	148–151	Component 1	
	5	IIe	172–175	–	Natural alluvium
	6	IIf	190–193		
9	7	IIb	111–114		
	8	IId	128–131	SIHP # -8840	Agricultural deposit
	9	IIe	150–154	Component 1	
	10	IIf	170–173		

Large grass grains in Strata IIb and IId provide additional evidence for rice (*laiki*; *O. sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*H. contortus*) grass, as suggested by the single grain identified in the T-7 Stratum IIc sample (see above). In addition, a single pollen grain from historically introduced *kiawe* (*Prosopis pallida*) was identified in Stratum IIb, and two grains from historically introduced pine (*Pinus* sp.) were identified in Stratum IId.

5.4.1.3 Summary and Interpretation

The most common pollen types identified in the current samples are low-spine Asteraceae (*Ambrosia* type) and Cheno-Am (*‘āweoweo*), spurge family, and grass family. Sedge family pollen, representing wetlands, is present but found in relatively low percentages. Polynesian introductions include coconut (*niu*; *Cocos nucifera*), paper mulberry (*wauke*; *Broussonetia papyrifera*), and possibly ti (kī; *Cordyline fruticosa*). Large grass pollen grains may represent rice (*laiki*; *O. sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*H. contortus*) grass.

Historically introduced mesquite (*kiawe*; *P. pallida*) and pine (*Pinus* sp.), identified in T-9 Strata IIb and IId, respectively, likely indicate disturbance throughout the sample column. Radiocarbon dating of a fire-related feature associated with Stratum IIa (in T-1, see Section 5.4.3) suggests use of that layer as a living surface by 1810. As *kiawe* was not introduced to the island until 1828, the single grain identified in Stratum IIb is likely intrusive from above. The two *Pinus*

pollen grains identified in Stratum IId are even more incongruous, as pine trees were not introduced to the island until the twentieth century.

Although there is strong evidence suggesting the current study area was once in taro cultivation, no *Colocasia* pollen was identified in the samples. According to Phillips (2019), despite the widespread practice of wetland taro cultivation across O‘ahu, *Colocasia* pollen is rare, even in suspected and known agricultural settings, such as the current study area. Typically propagated from a corm/root cutting or from a shoot, taro rarely blooms or sets seeds naturally (Onwueme 1999 in Phillips 2019). Like other members of the Araceae family, taro produces relatively small quantities of pollen when in bloom; in fact, some varieties have never been known to flower. Furthermore, taro is harvested at a time when the edible corm has its highest nutritional value and is most viable for propagation, which occurs before flowering, further reducing the likelihood of pollen deposition.

The likelihood of finding *Colocasia* pollen was further decreased by the very poor pollen preservation within the samples. Only six of the ten samples contain pollen; within those six, the percentages of degraded grains are very high, while the total pollen concentrations are very low. Taken at face value, the data from T-7 suggests a change over time from shrubland to grassland. In nearby T-9, no such change is evidenced, and the assemblage is more diverse. However, given the proximity of the two excavations, these apparent differences are more likely a product of poor pollen preservation rather than an accurate reflection of past vegetation. Sedge pollen, indicative of a wetland environment such as a *lo‘i*, is unexpectedly scarce—likely also a product of taphonomic factors.

5.4.2 Wood Taxa Identification

Two charcoal samples were submitted to the Wood Identification Laboratory at IARII for taxa identification. Both samples were collected from fire-related features in T-1 Stratum IIa/SIHP # -8840 Component 2, designated as Features 2 and 4. The samples are summarized in Table 24, and the report from IARII (Huebert 2019) is included in Appendix D. The results of the analysis are presented in Table 25 and discussed below.

Most of the examined material was small (< 1 cm), and all fragments except one were wood charcoal; the other was parenchyma charcoal. Most of Sample 1 (SIHP # -8840 Component 2, Feature 2) is *kiawe* (*P. pallida*); the rest is indeterminate hardwood. *Kiawe* is a tree native to Peru, Colombia, and Ecuador, which was likely introduced to Hawai‘i by Father Bachelot in 1828 (Huebert 2019:3).

Sample 2 (SIHP # -8840 Component 2, Feature 4) contains wood from native species including *‘ōhi‘a lehua* (*Metrosideros polymorpha*), *koa* (*Acacia* cf. *koa*), *kōpiko* (*Psychotria* sp.), and possibly *hau* (*Hibiscus* sp.). There are seven native shrub and tree species of *Hibiscus*, including several endemic varieties, as well as at least three naturalized historical (i.e., post-Contact) introductions (Wagner et al. 2005 in Huebert 2019:3). Most species feature showy flowers. *Hibiscus tiliaceus*, or *hau*, occurs commonly in moist areas on most of the main Hawaiian Islands. In addition to ornamental plantings, the bark of *hau* was sometimes used to make *lei*, while the soft wood was used for canoe outriggers, fishnet floats, and in the native fireplow (Abbott 1992 in Huebert 2019:3).

Table 24. Samples from T-1 Stratum IIa/SIHP # -8840 Component 2 submitted for wood identification analysis

Sample #	Depth (cmbs)	Fea. #	Description
1	111	2	Fire-related feature at the upper boundary of the habitation layer
2	128–131	4	Fire-related feature in the lower-middle portion of the habitation layer

Table 25. Results of wood identification analysis

Sample #	WIDL #	Taxon	Plant Part	Count	Weight (g)	Comment
1	1916-1	*P. pallida* (*kiawe*)	Wood charcoal	18	0.4	–
	1916-2	Indeterminate hardwood	Wood charcoal	1	0.01	–
2	1916-3	*M. polymorpha* (*‘ōhi‘a lehua*)	Wood charcoal	2	0.06	–
	1916-4	Indeterminate	Parenchyma charcoal	1	0.01	Thin; superficially resembles nutshell but is not endocarp
	1916-5	*Psychotria* sp. (*kōpiko*)	Wood charcoal	1	0.01	–
	1916-6	*Hibiscus* sp. (*hau* and others)	Wood charcoal	1	0.04	–
	1916-7	*Acacia* cf. *koa* (*koa* and others)	Wood charcoal	5	0.08	–
	1916-8	Indeterminate hardwood	Wood charcoal	4	0.06	–

‘Ōhi‘a lehua (*M. polymorpha*) is an endemic species used for making spears, mallets, idols, posts and rafters for houses, and enclosures around temples (Buck 1957, Malo 1951, and Neal 1965 in Huebert 2019:3). *Kōpiko* (*Psychotria* sp.) comprises 11 endemic species, of which five are known to grow on O‘ahu. The species range from small to up to 20 m tall (Wagner et al. 1990 in Huebert 2019:3). *Kōpiko* was used as firewood and to make *kapa* (barkcloth) logs (Malo 1951 in Huebert 2019:4).

None of these are short-lived materials preferred for radiocarbon dating. However, Huebert (2019:2) indicates the parenchyma is not likely to have much inbuilt age, since soft storage tissues are not long-lived; hence, it is the best option available for radiocarbon dating (see Section 5.4.3 below for results). As some *Psychotria* species are small trees, and *Hibiscus* species are fast growing, Huebert (2019:2) suggests one of these as the next best option.

As mentioned above, Sample 1, collected from SIHP # -8840 Component 2, Feature 2, consists mainly of a post-Contact introduction, *kiawe* (*P. pallida*). As it is believed *kiawe* was introduced to the Islands in 1828, its presence indicates the feature was used after that time. In contrast,

Sample 2, collected from SIHP # -8840 Component 2, Feature 4, consists mainly of native or endemic species, with no positive identification of post-Contact introductions; these results are in agreement with the stratigraphic positions of the features. Although both were identified within T-1 Stratum IIa, Feature 2 originates at the upper boundary of the stratum, while Feature 4 is within the lower-middle portion; hence, Feature 2 post-dates Feature 4. As Feature 2 dates securely to the post-Contact period, Feature 4 may therefore date to the pre- or early post-Contact period—a hypothesis supported by the radiocarbon dating results (see Section 5.4.3 below).

5.4.3 Radiocarbon Dating Analysis

One sample was submitted to Beta Analytic, Inc., for radiocarbon dating analysis. This sample comprises parenchyma charcoal recovered from a charcoal sample (Sample 2; see Section 5.4.2 above) analyzed at IARII's Wood Identification Laboratory. The parenchyma charcoal was selected for radiocarbon analysis because it is not likely to have much inbuilt age, as soft storage tissues are not long-lived. The results of the radiocarbon analysis are presented in Table 26 and discussed below. The report from Beta Analytic is included in Appendix E.

The sample was recovered from SIHP # -8840 Component 2, Feature 4, a fire-related feature identified within the lower-middle portion of T-1 Stratum IIa, interpreted as a habitation layer (SIHP # -8840 Component 2). The radiocarbon analysis yielded two-sigma calibrated date ranges of AD 1728-1810 (53.5% probability), 1646-1690 (26.0%), and 1925-post 1950 (15.9%); however, the most recent date range can likely be discarded. While diagnostic artifacts recovered from overlying fill deposits (see Section 5.2.4) suggest Stratum IIa functioned as a surface into the 1930s, the identification of pit features within different vertical portions of the quite thick stratum indicates the layer was not deposited all at once, but rather over a (potentially extended) period of time. As Feature 4 was identified within the lower portion of IIa, it would therefore date to the earlier part of that time period. Furthermore, the cobble-lined fire pit is consistent with traditional Hawaiian fire-related features. Hence, the radiocarbon analysis, like the wood taxa analysis (discussed above), supports a pre- or early post-Contact date for Feature 4 and suggests use of the Stratum IIa habitation layer by 1810.

Table 26. Results of radiocarbon analysis

Lab #	Beta Lab #	Material Dated	SIHP/Fea. #	Stratum (matrix)	Depth (cmbs)	Activity Rep. by Date	Conventional Age (BP)	C12/13 Ratio	Calibrated Dates (AD; 2-sigma) (% probability)
1	541406	Parenchyma charcoal	SIHP # -8840 Component 2, Fea. 4 (fire-related feature)	IIa (silty clay)	128–131	Fire pit use	200±30	-24.3	1728-1810 (53.5%) 1646-1690 (26.0%) 1925-post 1950 (15.9%)

Section 6 Historic Property Description

One archaeological historic property was newly identified during the Halewai‘olu Senior Residences AIS: SIHP # 50-80-14-8840, subsurface cultural deposits. SIHP # -8840 was identified in all 15 test excavations and comprises 0.52 acre (including interpolated boundaries), encompassing nearly the entire AIS study area. It has three components, which are summarized in Table 27 and depicted on Figure 155 through Figure 157. SIHP # -8840 Components 1–3 span the pre-Contact period through the mid-twentieth century and are discussed in detail in Sections 6.1–6.3 below. The significance assessment of SIHP # -8840 is presented in Section 6.4 below.

Table 27. Summary of SIHP # 50-80-14-8840 components

Component #	Formal Type	Function
1	Agricultural deposits	Agriculture
2	Habitation layers	Habitation; human interment
3	Subsurface infrastructure remnants	Residential; commercial

6.1 SIHP # 50-80-14-8840 Component 1

FORMAL TYPE:	Agricultural deposits
FUNCTION:	Agriculture
AGE:	Pre-Contact
NUMBER OF FEATURES:	0
TEST EXCAVATIONS:	T-2, T-2B, T-3 through T-10, and T-12
DIMENSIONS	0.43 acre
TAX MAP KEY:	[1] 1-7-006:012
LAND JURISDICTION:	City and County of Honolulu
PREVIOUS DOCUMENTATION:	N/A

SIHP # 50-80-14-8840 Component 1 consists of multiple buried agricultural deposits, identified throughout the majority of the AIS study area, within 13 of the 15 test excavations (absent only in T-1 and T-11) (see Figure 35 and Figure 155 through Figure 157). These agricultural deposits are within a vertical series of primarily silty clay loam alluvial deposits, which appear to represent Nu‘uanu Stream overflow or flooding episodes. The agricultural deposits were identified beneath the upper two alluvial deposits (Strata IIa and IIb), which functioned as possibly pre- to post-Contact habitation layers and are designated as SIHP # -8840 Component 2 (see Section 6.2 below). As radiocarbon dating suggests use of Stratum IIa by 1810, with Stratum IIb therefore even earlier, the Component 1 agricultural deposits (Strata IIc–IIg) likely date to the pre-Contact period, with at least three chronological periods of agricultural use indicated (Table 28). Given the location of the AIS study area within the floodplain of Nu‘uanu Stream, these agricultural deposits likely represent *lo‘i kalo*.

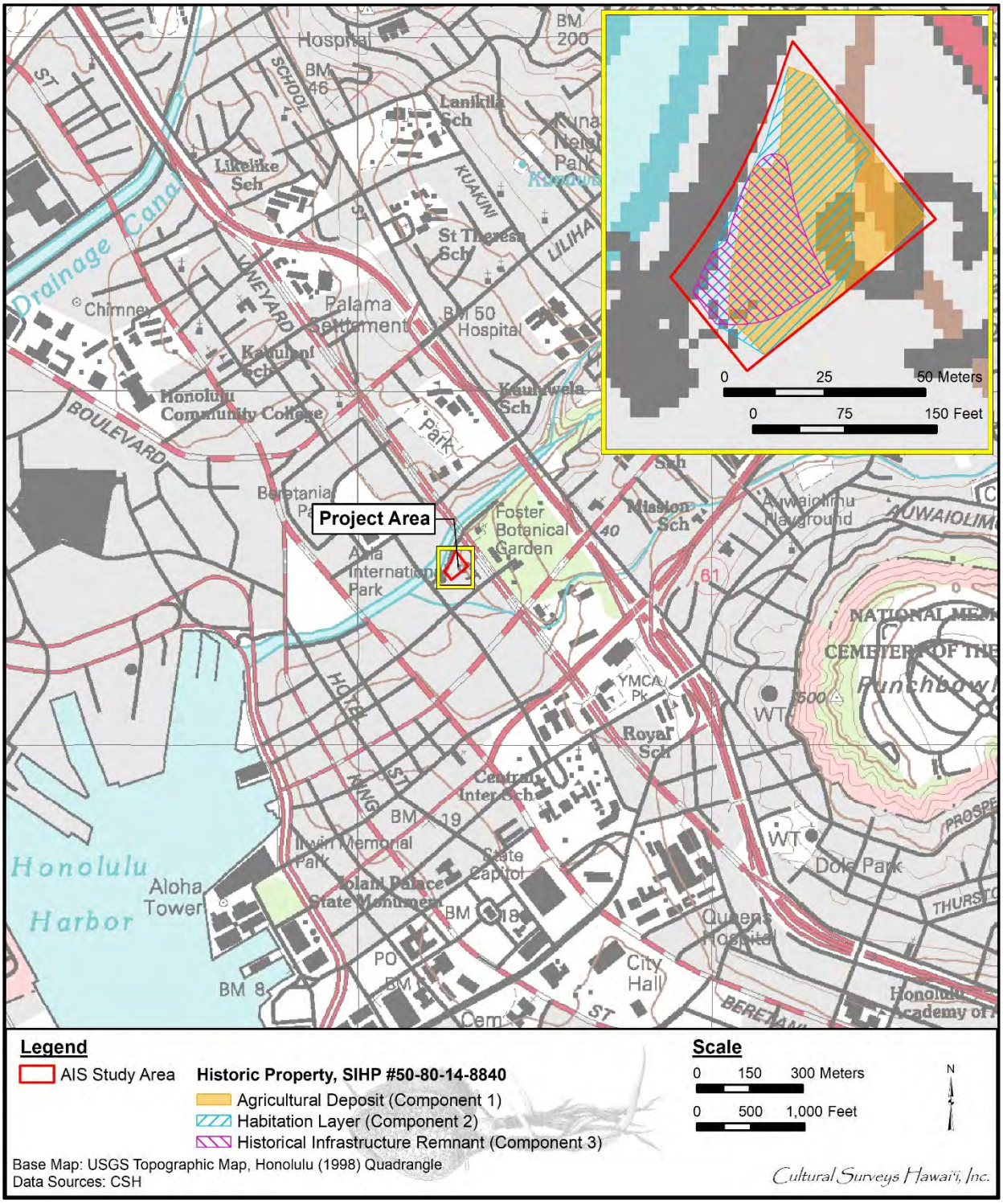

Figure 155. Portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle, showing the distribution of SIHP # -8840 Components 1–3 within the Halewai‘olu Senior Residences AIS study area

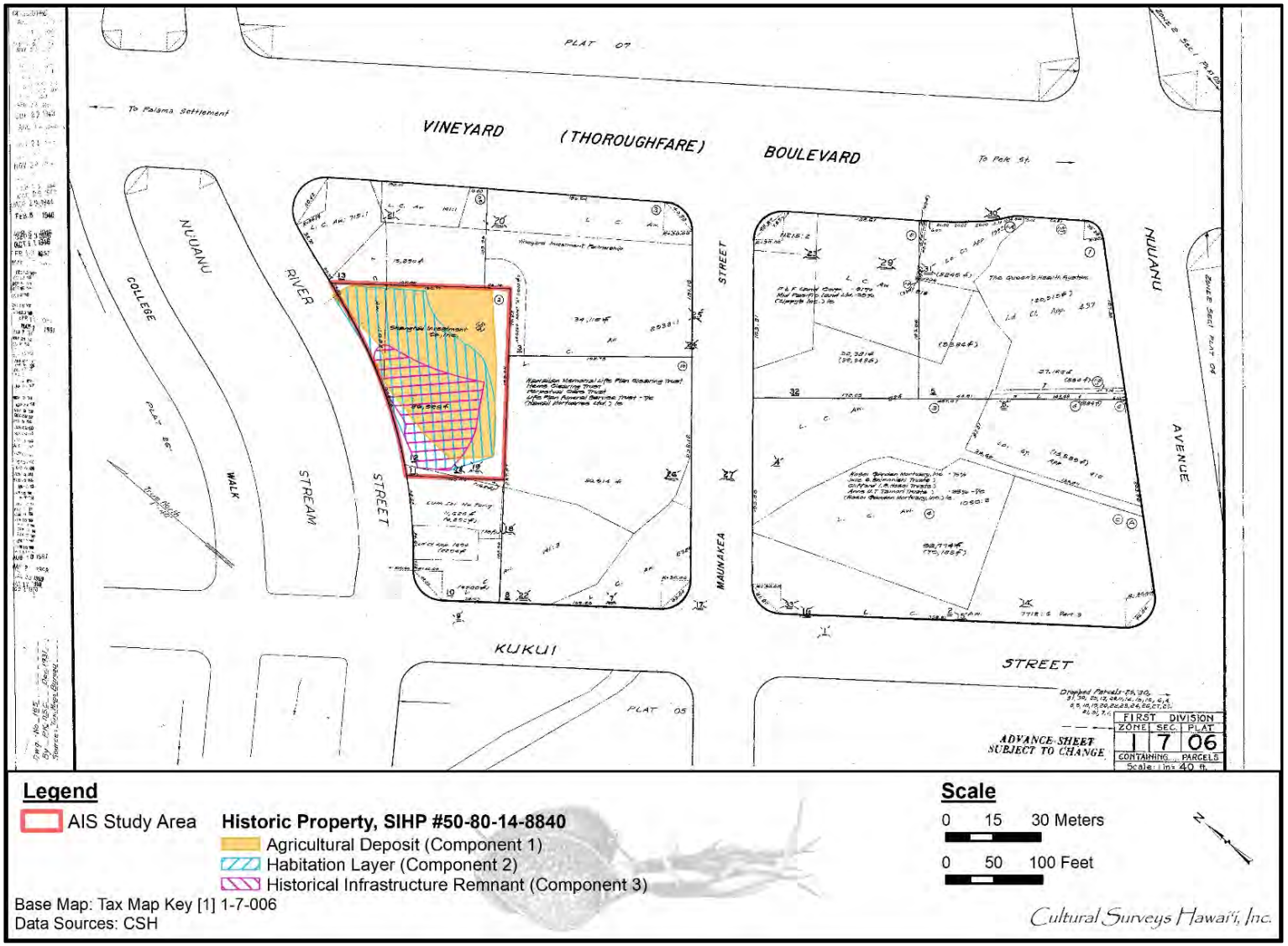

Figure 156. TMK: [1] 1-7-006, showing the distribution of SIHP # -8840 Components 1–3 within the Halewai‘olu Senior Residences AIS study area (Hawai‘i TMK Service 2014)

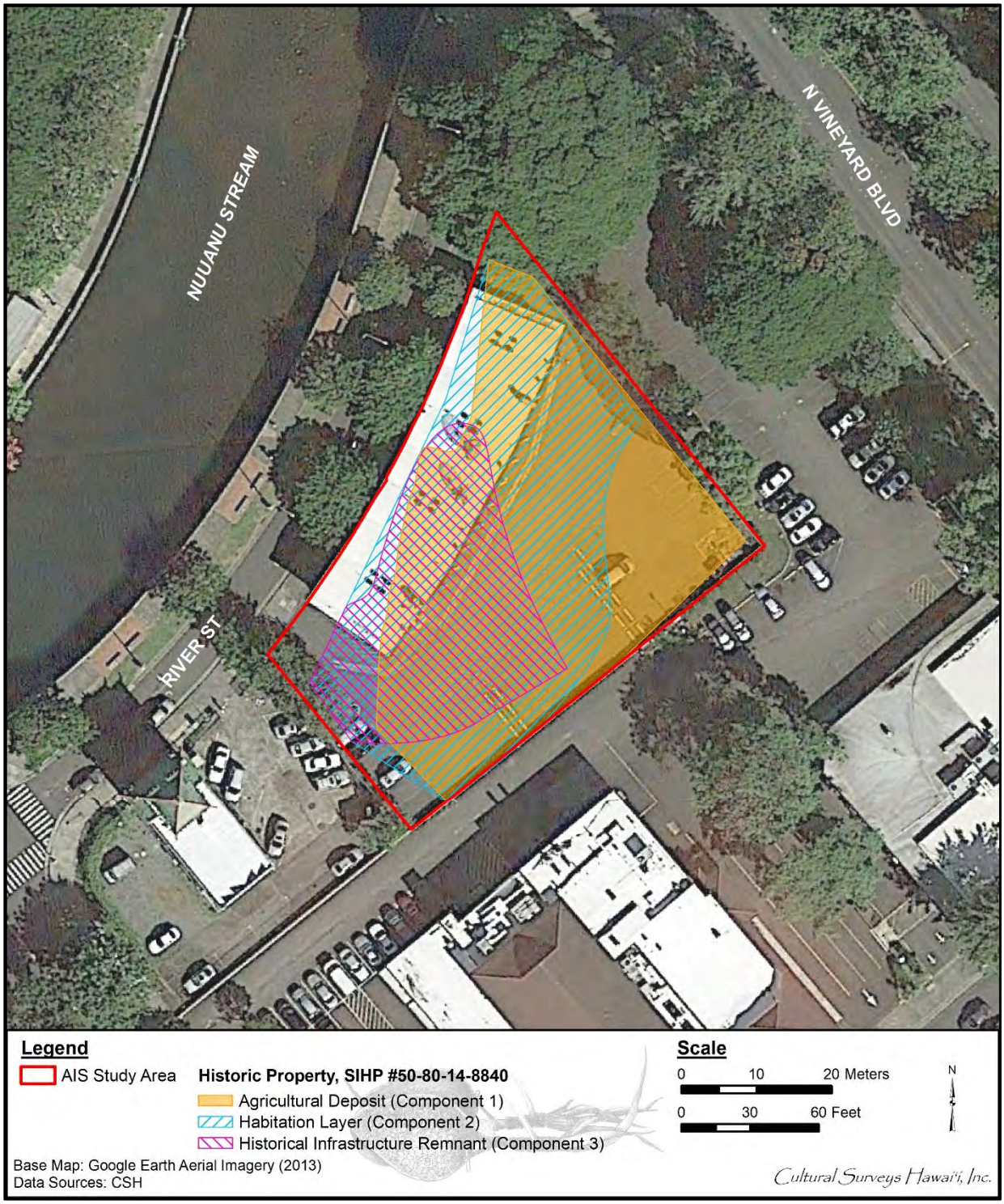

Figure 157. Aerial photograph (Google Earth 2013), showing the distribution of SIHP # -8840 Components 1–3 within the Halewai‘olu Senior Residences AIS study area

Table 28. SIHP # -8840 Component 1 agricultural deposits identified during the AIS

Formal Type	Stratum	Test Excavation
Agricultural deposit	IIc	T-2, T-2B, T-3 through T-8, T-10, and T-12
	IId	T-7, T-8, T-9, T-9B
	IIe	T-4, T-9
	IIf	T-5, T-9
	IIg	T-8
Agricultural berm	IIc	T-9, T-9B

6.1.1 Uppermost Agricultural Deposit

The most recent agricultural deposit (Stratum IIc in T-2, T-2B, T-3 through T-8, and T-10; Stratum IId in T-9 and T-9B) was identified almost ubiquitously across the AIS study area, in 13 of the 15 test excavations. It typically presents as dark brown silty clay loam and contains cinder gravel in some areas (Figure 158 and Figure 159). The deposit is characterized by a dense latticework of oxidized (red) mottling, which is believed to be the result of chemical interactions between taro roots and the surrounding soil. In addition, limonite nodules and/or root casts were identified within bulk samples collected from the uppermost agricultural deposits in T-2B, T-9, and T-12; based on previous archaeological studies (see Section 5.1.1), these are also interpreted as evidence of agricultural use.

This interpretation is further supported in T-9 and T-9B by the presence of small berms (Stratum IIc) adjacent to the uppermost agricultural deposit (Stratum IId) (see Figure 94 and Figure 100). In T-9, the Stratum IIc berm measures approximately 2 m across and 25 cm tall in the southeast sidewall. In the northwest sidewall, it is only 50 cm across, as it appears to be truncated by SIHP # -8840 Component 2, Feature 14 (pit feature). In T-9B, the berm at the *mauka* (northeast) end measures approximately 1.7 m across by 35 cm tall (see Figure 102), while the berm at the *makai* (southwest) end measures approximately 1.5 m across by 30 cm tall, although it is bisected by SIHP # -8840 Component 2, Feature 15 (pit feature). As these berms do not align with the berm identified in T-9, this area may represent the convergence of multiple agricultural plots.

6.1.2 Deeper Agricultural Deposits

Deeper (i.e., older) agricultural deposits were identified within a discrete zone in the central/*mauka* (northeast) portion of the AIS study area (within T-4, T-5, T-7 through T-9B). Directly beneath the youngest agricultural deposit within T-7 through T-9B is a silty clay loam deposit (T-7 and T-8 Stratum IId; T-9 and T-9B Stratum IIe) interpreted as an agricultural layer. This deposit contains a similar latticework of oxidized (red) mottling, although generally less dense than the overlying stratum (Figure 160). The layer is described as brown, dark yellowish brown, or very dark grayish brown and lacks the cinder content of the overlying deposit.

The deepest agricultural deposits were documented within T-4, T-5, T-8, and T-9, just above or at the level of the water table. These deposits (Strata IIe–IIg) range from silty clay loam to sandy clay loam and contain a dense latticework of oxidized (red) mottling similar to the uppermost agricultural deposit (Figure 161).



Figure 158. Close-up of Stratum IIc (youngest SIHP # -8840 Component 1 agricultural deposit) within T-7 northeast wall, showing a dense latticework of oxidized (red) mottling



Figure 159. T-9 Stratum IId, SIHP # -8840 Component 1 agricultural deposit, characterized by oxidized (red) mottling

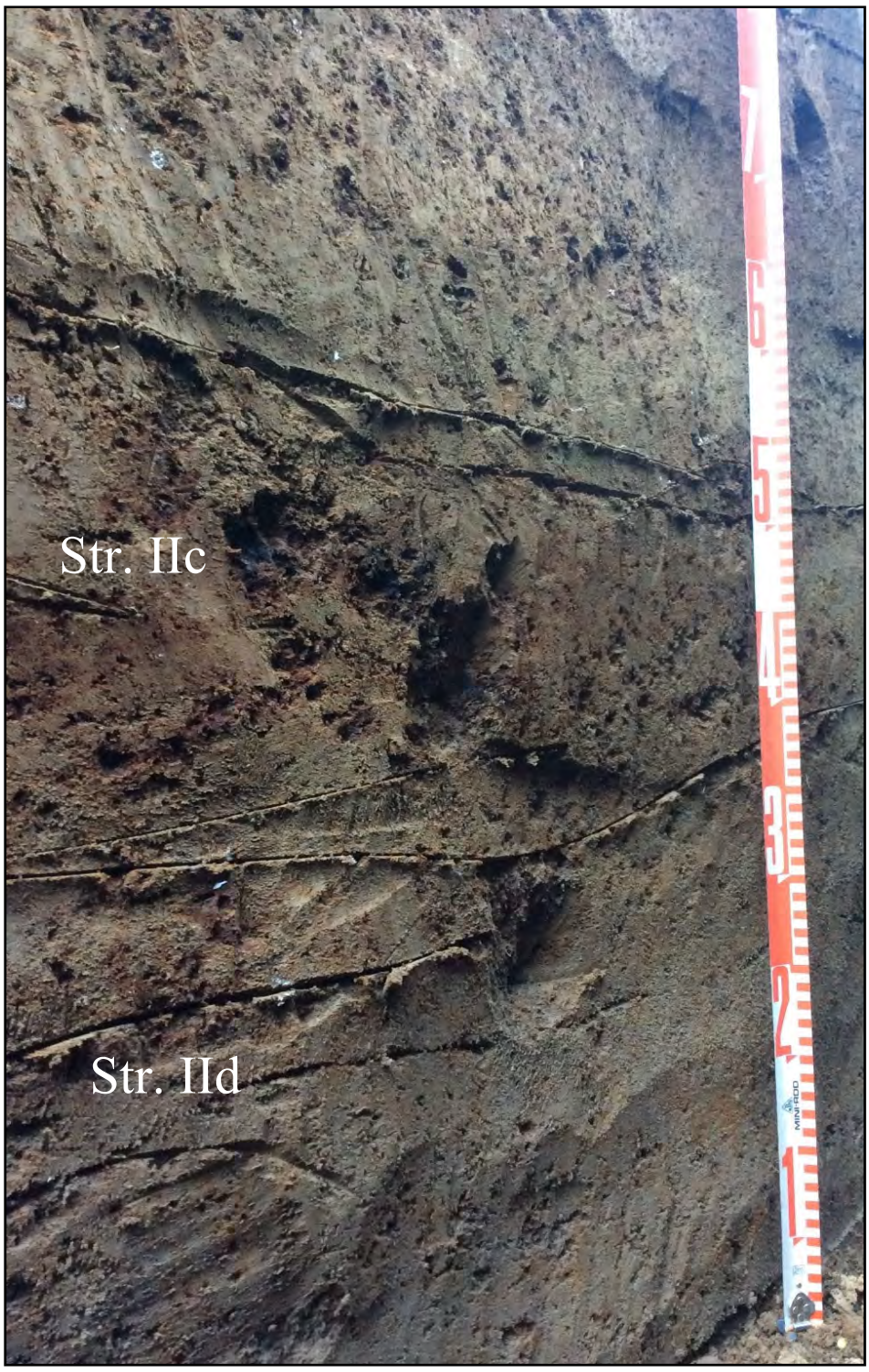

Figure 160. T-7 northeast wall, showing SIHP # -8840 Component 1 agricultural deposits (Strata IIc and IId) characterized by oxidized (red) mottling; the darker areas and voids of Stratum IIc contain cinder gravel



Figure 161. T-9 Stratum IIe, SIHP # -8840 Component 1 agricultural deposit, characterized by oxidized (red) mottling

6.1.3 Pollen Analysis

Abundant bulk samples were collected from the Stratum II alluvium series, including the interpreted SIHP # -8840 Component 1 agricultural deposits. In addition, several column samples were collected; two of these column series (from T-7 and T-9) were submitted for palynological analysis (see Section 5.4.1 for full results).

The most common pollen types identified in the samples are low-spine Asteraceae (*Ambrosia* type) and Cheno-Am (*‘āweoweo*), spurge family, and grass family. Sedge family pollen, representing wetlands (including *lo‘i*), is present but found in relatively low percentages. Polynesian introductions include coconut (*niu*; *Cocos nucifera*), paper mulberry (*wauke*; *Broussonetia papyrifera*), and possibly ti (*kī*; *Cordyline fruticosa*). Large grass pollen grains may represent rice (*laiki*; *O. sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*H. contortus*) grass.

Historically introduced mesquite (*kiawe*; *P. pallida*) and pine (*Pinus* sp.), identified in T-9 Strata IIb and IId, respectively, likely indicate disturbance throughout the sample column. Radiocarbon dating of a fire-related feature associated with Stratum IIa (in T-1, see Section 5.4.3) indicates use of that layer as a living surface by 1810. As *kiawe* was not introduced to the island until 1828, the single grain identified in Stratum IIb is likely intrusive from above. The two *Pinus* pollen grains identified in Stratum IId are even more incongruous, as pine trees were not introduced to the island until the twentieth century; hence, they are also likely intrusive from above.

Although there is strong evidence suggesting the current study area was once in taro cultivation, no *Colocasia* pollen was identified in the samples. According to Phillips (2019), despite the widespread practice of wetland taro cultivation across O‘ahu, *Colocasia* pollen is rare, even in suspected and known agricultural settings such as the current study area. Typically propagated from a corm/root cutting or from a shoot, taro rarely blooms or sets seeds naturally (Onwueme 1999 in Phillips 2019). Like other members of the Araceae family, taro produces relatively small quantities of pollen when in bloom; in fact, some varieties have never been known to flower. Furthermore, taro is harvested at a time when the edible corm has its highest nutritional value and is most viable for propagation, which occurs before flowering, further reducing the likelihood of pollen deposition.

The likelihood of finding *Colocasia* pollen was further decreased by the very poor pollen preservation within the samples. Only six of the ten samples contain pollen; within those six, the percentages of degraded grains are very high, while the total pollen concentrations are very low. Hence, the data is likely not an accurate reflection of the original pollen assemblage.

6.2 **SIHP # 50-80-14-8840 Component 2**

FORMAL TYPE:	Habitation layers
FUNCTION:	Habitation; human interment
AGE:	Possibly pre- to post-Contact
NUMBER OF FEATURES:	19
TEST EXCAVATIONS:	T-1 through T-5 and T-8 through T-12
DIMENSIONS	0.43 acre
TAX MAP KEY:	[1] 1-7-006:012
LAND JURISDICTION:	City and County of Honolulu
PREVIOUS DOCUMENTATION:	N/A

SIHP # -8840 Component 2 consists of buried habitation layers, which developed within the uppermost natural alluvium deposits alongside Nu‘uanu Stream. Component 2 was documented throughout the majority of the AIS study area (absent only in the eastern corner of the AIS study area; see Figure 155 through Figure 157). Only two test excavations (T-6 and T-7) are not included within the boundaries of SIHP # -8840 Component 2 due to negligible cultural content (i.e., only sparse amounts of charcoal flecking). SIHP # -8840 Component 2 is primarily composed of the uppermost (i.e., youngest) natural alluvial deposit, designated as Stratum IIa. Within two adjacent test excavations (T-2 and T-2B) in the southern portion of the AIS study area, the underlying Stratum IIb alluvial deposit also evidences cultural activity and is therefore designated as part of SIHP # -8840 Component 2. A total of 19 features (17 associated with Stratum IIa and two associated with Stratum IIb) were documented. SIHP # -8840 Component 2 layers and features are summarized in Table 29 and discussed in detail below.

6.2.1 Stratum IIa

Stratum IIa typically presents as a very dark grayish brown silty clay loam deposit, between 25 and 70 cm thick. Cultural use of Stratum IIa is indicated by strong charcoal flecking, historical

Table 29. Summary of SIHP # -8840 Component 2 layers and features identified during the AIS

Stratum	Formal Type	Function	Test Excavation/Fea. #
IIa	Habitation layer	Habitation; human burial	T-1 through T-5, T-8 through T-12
	Pit feature (n=17)	Indeterminate (n=7)	T-2 (Fea. 5), T-2B (Fea. 9), T-2C (Fea. 11), T-9B (Fea. 15), T-10 (Feas. 16, 17), T-11 (Fea. 18)
		Historical trash pit (n=4)	T-2B (Fea. 8), T-9 (Feas. 12–14)
		Fire-related feature (n=4)	T-1 (Feas. 1–4)
		Post hole (n=1)	T-11 (Fea. 19)
		Human burial (n=1)	T-2 (Fea. 6)
IIb	Habitation layer	Habitation	T-2, T-2B
	Stacked basalt cobbles (n=1)	Indeterminate	T-2 (Fea. 7)
	Pit feature (n=1)	Indeterminate	T-2B (Fea. 10)

artifacts within the upper 4–15 cm, and/or the presence of pit features. Within five test excavations (T-3 through T-5, T-8, and T-12), the upper portion of the layer contains charcoal, red brick fragments, bottle glass, ceramic, metal, coral, and/or faunal bone. Associated features were documented within eight test excavations (T-1, T-2, T-2B, T-2C, T-9, T-9B, T-10, and T-11). As features were documented originating in different vertical portions of the stratum, it is likely the Stratum IIa sediment was not deposited all at once but rather through multiple episodes over a period of time, with features in the lower portion of the stratum pre-dating those in the upper portion; this hypothesis is supported by the results of various laboratory analyses (discussed in Section 6.2.3 below).

The Stratum IIa features consist of four fire-related features (Features 1–4), one posthole (Feature 19), four historical trash pits (Features 8, 12–14), a human burial (Feature 6), and seven pits of indeterminate function (Features 5, 9, 11, and 15–18) (see Table 29). The 17 features associated with Stratum IIa are described in detail below. Profiles, plan maps, and photographs are presented in Section 4.3 Subsurface Testing Results and are referenced in the descriptions below.

Feature 1 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 41). It was documented between 77 and 93 cmbs and measures 35 cm across. A thin, heat-altered band of reddened sediment, a fire-affected basalt cobble, and a 6-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 2 is a basin-shaped pit feature identified in the northeast wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 36, Figure 37, and Figure 42). It was documented between 71 and 115 cmbs and measures 1 m across. A thin, heat-altered band of reddened sediment and a 4-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. Several small, non-diagnostic bottle glass fragments (not collected) and fire-affected basalt cobbles were also observed within the pit. A charcoal sample was collected.

Feature 3 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 43). It was documented between 76 and 120 cmbs and measures 1.5 m across. Multiple heat-altered bands of reddened sediment and layers of charcoal ranging from 510 cm thick were observed within the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 4 is a pit feature identified in both sidewalls of T-1, within Stratum IIa/SIHP # -8840 Component 2 (see Figure 37 and Figure 44). It was documented between 111 and 127 cmbs and measures 55 cm across; the exposed portion is 85 cm long, spanning the width of the trench. The pit is lined with fire-affected basalt cobbles, and charcoal flecking was observed in the matrix surrounding the cobbles. This is interpreted as a fire-related feature.

Feature 5 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 within both sidewalls of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 60 and 103 cmbs and measures 85 cm across. The exposed portion is 76 cm wide, with the feature spanning the width of the trench. The feature contains red brick, glass, metal, charcoal, FAR, and coral gravel. Its function is indeterminate.

Feature 6 is a small pit feature containing human skeletal remains (see Figure 45, Figure 46, Figure 55 through Figure 57). It was documented between 120 and 127 cmbs within the southwest wall of T-2, near the southeast end of the excavation. It originates at the base of Stratum IIa/SIHP # -8840 Component 2 and terminates in the underlying Stratum IIb/ SIHP # -8840 Component 2. The pit measures 26 cm across and contains the remains of a single fetal individual (at or near birth). Observed skeletal elements comprise the lower limbs; the upper body likely remains in situ within the southwest sidewall (see Figure 56). The remains are in good condition, and the individual is approximately 85% complete.

The majority of the remains were observed in situ (i.e., within the burial pit) and were left in place. Several additional small fragments which had been displaced by cleaning of the sidewall were recovered and reinterred 15 cm northeast of the Feature 6 pit feature, within a small, hand-carved niche. A burial treatment plan (BTP) addressing this human burial site is forthcoming.

Feature 8 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 70 and 145 cmbs at the upper boundary of Stratum IIa/SIHP # -8840 Component 2. Glass, metal, ceramic, and bone artifacts were collected from this feature, which is interpreted as a historical trash pit. A machine-made glass marble (Acc. # 37) dates to post-1910, indicating use of the feature after that date. Feature 8 truncates and therefore post-dates Feature 9, discussed below.

Feature 9 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 115 and 191 cmbs, originating in Stratum IIa/SIHP # -8840 Component 2, intrusive through Stratum IIb, and terminating in Stratum IIc. It is truncated by Feature 8 (described above), which it therefore pre-dates. The exposed portion of the feature is approximately 2 m long. No cultural materials were identified within the feature; its function is indeterminate.

Feature 11 is a small pit feature identified in the southeast sidewall of T-2C (see Figure 65 and Figure 66). It was documented between 137 and 152 cmbs, originating in Stratum IIa/SIHP # -8840 Component 2 and terminating in Stratum IIb. It measures 30 cm across. No cultural materials were observed within the feature; its function is indeterminate.

Feature 12 is a large pit feature identified in both sidewalls of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIb–III and continuing beyond the base of excavation (see Figure 92 through Figure 96). It was documented between 45 and 196 cmbs and measures 65–100 cm across (*mauka-makai*). The exposed portion of the feature is 80 cm wide, spanning the width of the trench. Feature 12 contains abundant bottle glass and ceramics, as well as marine shell midden, faunal bone, charcoal, and FAR. It is interpreted as a historical trash pit. The faunal bone and a grab sample of glass, ceramics, and shell midden were collected. Diagnostic artifacts are mainly of European and Euro-American origin and date from the late nineteenth to possibly early twentieth century. One item, a Dutch glass gin bottle (Acc. #55), dates between 1890 and 1910, placing use of the feature firmly post-1890. The completeness, lack of damage, and consistent size of the collected shells similarly indicate this is historical (i.e., post-Contact) midden.

Feature 13 is a shallow pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northwest sidewall of T-9 (see Figure 93, Figure 95, and Figure 97). It was documented between 45 and 67 cmbs and measures 1.7 m across. It truncates and therefore post-dates the underlying Feature 14 (see description below). Feature 13 contains metal, glass, ceramic, bird (Aves) and cow (*B. taurus*) bone, and charcoal. The faunal bone was collected.

Feature 14 is a large pit feature identified in the northwest sidewall of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIa–IIc, and terminating in Stratum IId/SIHP # -8840 Component 1 (see Figure 93, Figure 95, and Figure 97). It was documented between 44 and 137 cmbs and measures 1.8 m across. The feature contains metal, ceramic, faunal bone, charcoal, and FAR. It is interpreted as a historical trash pit. The faunal bone and a grab sample of metal, glass, and ceramics were collected. Diagnostic artifacts are Euro-American dating from the late nineteenth to possibly the early twentieth century. One glass bottle fragment (Acc. # 159) dates between 1880 and 1920, indicating use of the feature post-1880.

Feature 15 is an oblong pit feature identified in the southeast wall of T-9B. It extends from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum IIe (see Figure 100 and Figure 101). It was documented between 65 and 150 cmbs and measures 35–45 cm across. No cultural materials were identified within the feature; its function is indeterminate.

Feature 16 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northeast wall of T-10 (see Figure 105 and Figure 108). It was documented between 46 and 99 cmbs, overlying and therefore post-dating Feature 17 (see description below). It measures 65 cm across. No cultural materials were observed within the feature; its function is indeterminate.

Feature 17 is a large pit feature identified in the northeast wall of T-10, below Feature 16 (described above), which it therefore pre-dates (see Figure 105 and Figure 108). It extends from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum III. It was documented between 60 and 110 cmbs and measures 95 cm across. Several pieces of bottle glass and FAR were identified at the base of the feature. The bottle glass was collected; two diagnostic fragments date to 1800-1910, indicating use of the feature post-1800. The function of this feature is indeterminate.

Feature 18 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the west corner of T-11 (see Figure 109, Figure 110, and Figure 112). It was documented between 61 and 105 cmbs within the northwest sidewall and southwest endwall. The exposed portion of the feature is 70 cm long (northwest-southeast) by 60 cm wide (northeast-southwest). The feature contains charcoal. Its function is indeterminate.

Feature 19 is a long, rectangular pit feature identified in the northwest wall of T-11 (see Figure 109, Figure 110, and Figure 113). It was documented between 85 and 156 cmbs, originating in Stratum IIa/SIHP # -8840 Component 2, intrusive through Stratum IIb, and terminating in Stratum III. Based on morphology, this feature is interpreted as a posthole. The darker, organic-stained portion at the center of the feature represents the location of the former post, while the surrounding pit matrix is lighter in color (see Figure 113). A small amount of charcoal was observed near the base of the feature.

6.2.2 Stratum IIb

Stratum IIb consists of a fairly homogenous, dark brown to dark yellowish brown fine silty clay loam. Based on its homogeneity and fine silts, it appears to represent a low energy deposit. Stratum IIb was documented within all AIS test excavations; however, it is only designated as part of SIHP # -8840 Component 2 where it contains evidence of human activity, within T-2 and the adjacent T-2B. Within T-2, Stratum IIb contains three stacked waterworn basalt cobbles of indeterminate function (Feature 7). Within T-2B, it contains an angled pit, also of indeterminate function (Feature 10). These two features are described in detail below. Profiles, plan maps, and photographs are presented in Section 4.3: Subsurface Testing Results and are referenced in the descriptions below.

Feature 7 comprises three stacked basalt cobbles identified within Stratum IIb/SIHP # -8840 Component 2 in the northwest wall of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 124 and 160 cmbs and measures 25 cm across. Its function is indeterminate.

Feature 10 is an oblong pit feature identified in the southeast wall of T-2B (see Figure 58, Figure 59, and Figure 63). It was documented at the upper boundary of Stratum IIb/SIHP # -8840 Component 2 between 117 and 171 cmbs and measures 25 cm across. Its function is indeterminate.

6.2.3 Laboratory Analyses

Two charcoal samples, collected from SIHP # -8840 Component 2, Features 2 and 4, were submitted to the Wood Identification Laboratory at IARII for taxa identification (see Section 5.4.2 for full results). Features 2 and 4 are both fire-related features identified in T-1 Stratum IIa. Feature 2 was documented at the upper boundary of the stratum, while Feature 4 was documented in the lower-middle portion of the stratum; hence, Feature 2 post-dates Feature 4.

Most of Sample 1 (Feature 2) was identified as *kiawe* (*P. pallida*), while the rest is indeterminate hardwood. As *kiawe* was likely introduced to Hawai‘i in 1828, Feature 2 therefore post-dates that time and dates securely to the post-Contact period. In contrast, Sample 2 (Feature 4) contains wood from native species including *‘ōhi‘a lehua* (*M. polymorpha*), *koa* (*Acacia* cf. *koa*), *kōpiko* (*Psychotria* sp.), and possibly *hau* (*Hibiscus* sp.); no post-Contact introductions were identified. These results suggest Feature 4 may date to the pre- or early post-Contact period; hence, a subsample recovered from Sample 2 (Feature 4) was submitted to Beta Analytic, Inc., for radiocarbon dating analysis.

The radiocarbon analysis yielded two-sigma calibrated date ranges of AD 1728-1810 (53.5% probability), 1646-1690 (26.0%), and 1925-post 1950 (15.9%). However, the most recent date range (1925-post 1950) can likely be discarded. Although diagnostic artifacts recovered from overlying fill deposits suggest Stratum IIa functioned as a surface into the 1930s (see Section 5.2.4), the identification of pit features within different vertical portions of the quite thick stratum indicates the layer was not deposited all at once but rather over a (potentially extended) period of time. As Feature 4 was identified within the lower portion of Stratum IIa, it would therefore date to the early part of that time period. Hence, the radiocarbon analysis, like the wood taxa analysis (discussed above), supports a pre- or early post-Contact date for the lower portion of Stratum IIa.

The artifact assemblage further supports the timeline suggested by radiocarbon dating and wood taxa identification. Artifacts were collected and analyzed from four pit features associated with the Stratum IIa/SIHP # -8840 Component 2 habitation layer. Two diagnostic glass fragments (Acc. #s 74 and 76) collected from Feature 17, documented at the lower boundary of Stratum IIa, date to 1800-1910, indicating use of the feature during that time period and consistent with an early post-Contact date for that portion of the layer. In contrast, diagnostic artifacts collected from Features 8, 12, and 14, documented at the upper boundary of the stratum, indicate use of these features post-1910 (Acc. #s 37, 41, and 47), post-1890 (Acc. # 55), and post-1880 (Acc. # 159), respectively, reflecting more recent use of that portion of the layer. Although shell midden (*P. reticulata*) was retrieved from Feature 12, it was assessed as likely historical (i.e., post-Contact), rather than traditional Hawaiian, and therefore not in conflict with the interpretation of the feature as a post-1890 historical trash pit.

Stratum IIb underlies and therefore pre-dates Stratum IIa. Based on the radiocarbon dating of the lower portion of Stratum IIa to the pre- or early post-Contact period and the lack of historical materials identified within Stratum IIb and its associated features, Stratum IIb likely dates to the pre- or very early post-Contact period. It is worth noting that this timeline places Stratum IIa during the time of Marín’s Vineyard, which was planted in 1815; however, no evidence of grape cultivation was identified within Stratum IIa. It is possible this portion of Marín’s land was not in active cultivation.

6.3 SIHP # 50-80-14-8840 Component 3

FORMAL TYPE:	Infrastructure remnants
FUNCTION:	Habitation; commercial
AGE:	Post-Contact
NUMBER OF FEATURES:	6
TEST EXCAVATIONS:	T-1, T-2, T-2B, T-4, T-10, and T-11
DIMENSIONS	0.2 acre
TAX MAP KEY:	[1] 1-7-006:012
LAND JURISDICTION:	City and County of Honolulu
PREVIOUS DOCUMENTATION:	N/A

SIHP # -8840 Component 3 consists of historical infrastructure remnants, documented within roughly the *makai* (southwest) half of the AIS study area (see Figure 35 and Figure 162 through

Figure 166). These remnants consist of an oil-rolled crushed coral surface with associated base course (Feature 1; T-1), a hollow tile wall with concrete base (Feature 2; T-2 and T-2B), a concrete footing (Feature 3; T-4), an etched concrete surface (Feature 4; T-10 and T-11), a mortared brick structure (Feature 5; T-10), and a burnt trash fill (Feature 6; T-11). These are summarized in Table 30 and are described in detail in the following subsections. Profiles, plan maps, and photographs are presented in Section 4.3: Subsurface Testing Results and are referenced in the descriptions below.

It should be noted that various demolition layers identified throughout the AIS study area are not included in SIHP # -8840 Component 3. These layers contain concrete, brick, metal, and hollow tile debris, as well as ceramics and bottle glass. They likely represent the remains of previous structures within the AIS study area; however, due to lack of integrity and association, they are not included within SIHP # -8840. Demolition layers were documented within eight test excavations (T-2, T-2B, T-2C, T-3, T-4, T-6, T-10, and T-12).

6.3.1 SIHP # -8840 Component 3, Feature 1, Oil-rolled Crushed Coral Surface with Associated Base Course

An oil-rolled crushed coral surface and associated basalt gravel base course (Strata If and Ig) were identified within T-1, near the southwestern boundary of the AIS study area. They are designated as SIHP # -8840 Component 3, Feature 1. Feature 1 was documented within all four trench walls, although it was absent from the northeastern corner of the excavation (see Figure 36 through Figure 40). Strata If and Ig are each approximately 10 cm thick, and Stratum Ig contains brick, glass, and ceramic fragments, as well as pig (*S. scrofa*) bone. The pig bone and a grab sample of artifacts were collected. Diagnostic artifacts are of primarily Asian origin and date from the mid-nineteenth to twentieth century. One machine-made bottle fragment (Acc. # 132) dates to post-1908, indicating the layer was deposited after that time.

According to an RLS of the project area by Fung Associates (Hibbard and Chiu 2016; see Appendix A), the parking lot was improved in 1966, and aerial photographs (see Figure 25 and Figure 29) indicate the AIS study area was asphalt-paved sometime between 1941 and 1968. Hence, SIHP # -8840 Component 3, Feature 1, likely functioned as a surface for some period of time between 1908 and 1966.

6.3.2 SIHP # -8840 Component 3, Feature 2, Hollow Tile Wall with Concrete Base

A hollow tile wall with concrete base was identified within two adjacent test excavations, T-2 and T-2B, near the southern corner of the AIS study area. It is designated as SIHP # -8840 Component 3, Feature 2. A review of historical maps suggests this wall may have served as a boundary marker between dwellings in the southeastern portion of the AIS study area and tenements in the central portion of the study area. This boundary is indicated with a solid line on the 1906 Dakin map (see Figure 163) and the 1914, 1927, and 1950 Sanborn maps (see Figure 164 through Figure 166). A line in approximately the same location appears on the 1893 Dodge and Wall map (see Figure 162), suggesting the boundary (if not the wall) dates back to at least the nineteenth century, when it appears to have been associated with agricultural and/or house lots of LCA 2938 (see Section 3.1.2.1 discussion). However, it should be noted that although the portion of Feature 2 within T-2 lines up quite well with the boundary on the 1950 Sanborn map (see Figure 166), the portion within T-2B does not line up as well. On the earlier maps, both remnants appear

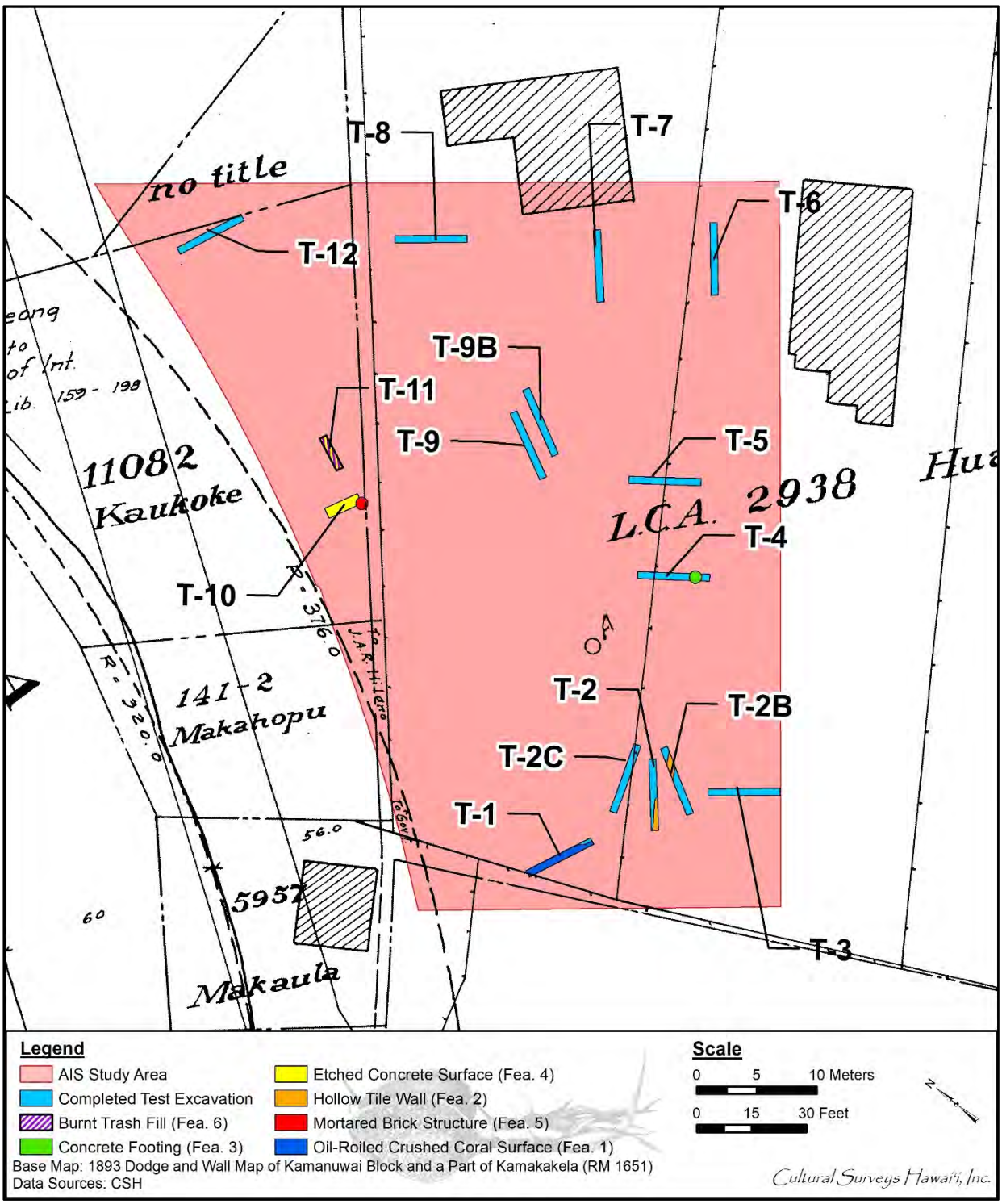

Figure 162. 1893 Dodge and Wall map of Kamanuwai Block and a part of Kamakakela (RM 1651), with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

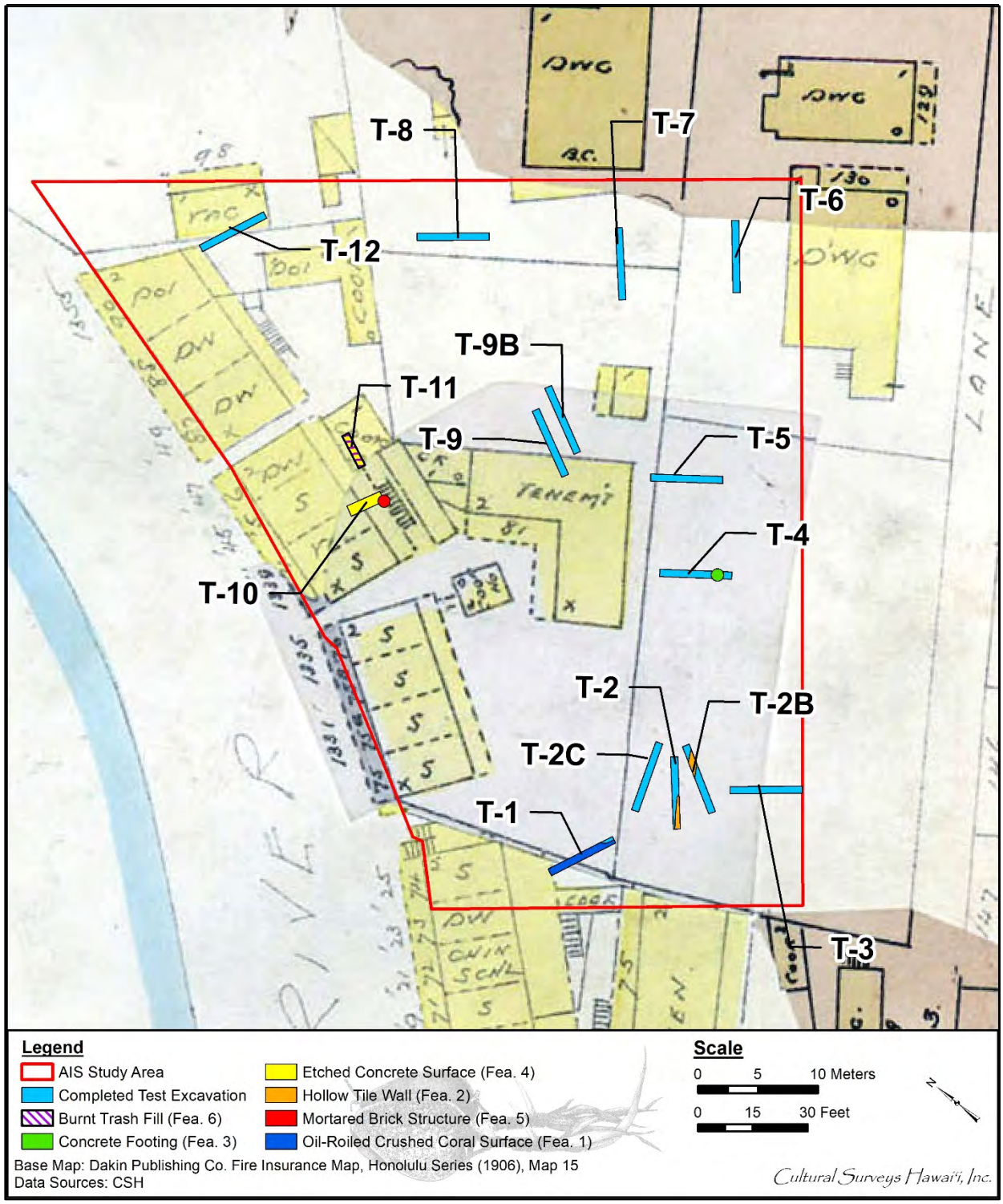

Figure 163. 1906 Dakin Publishing Company fire insurance map, Honolulu series, Map 15, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

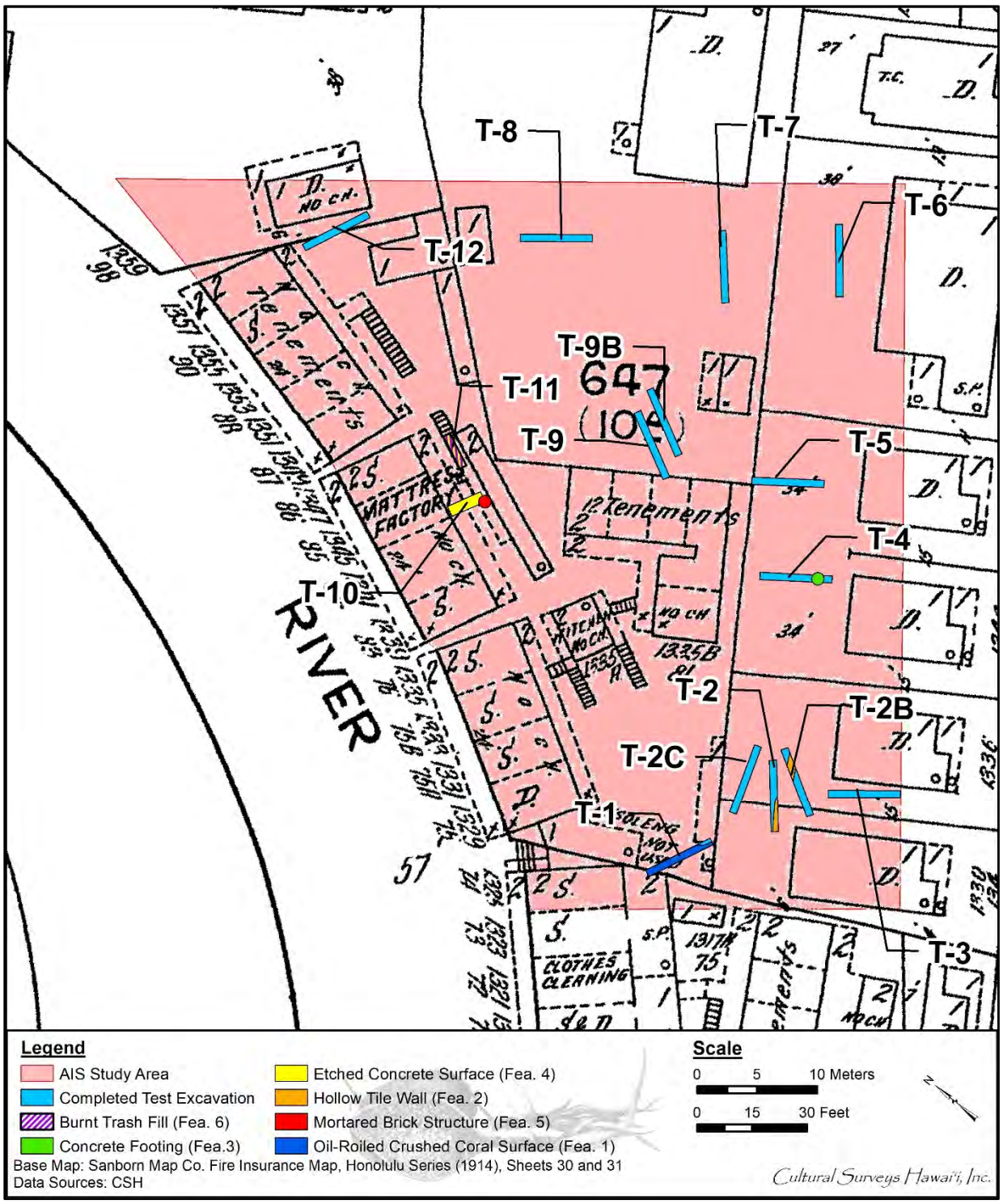

Figure 164. 1914 Sanborn Map Company fire insurance map, Honolulu series, Sheets 30 and 31, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

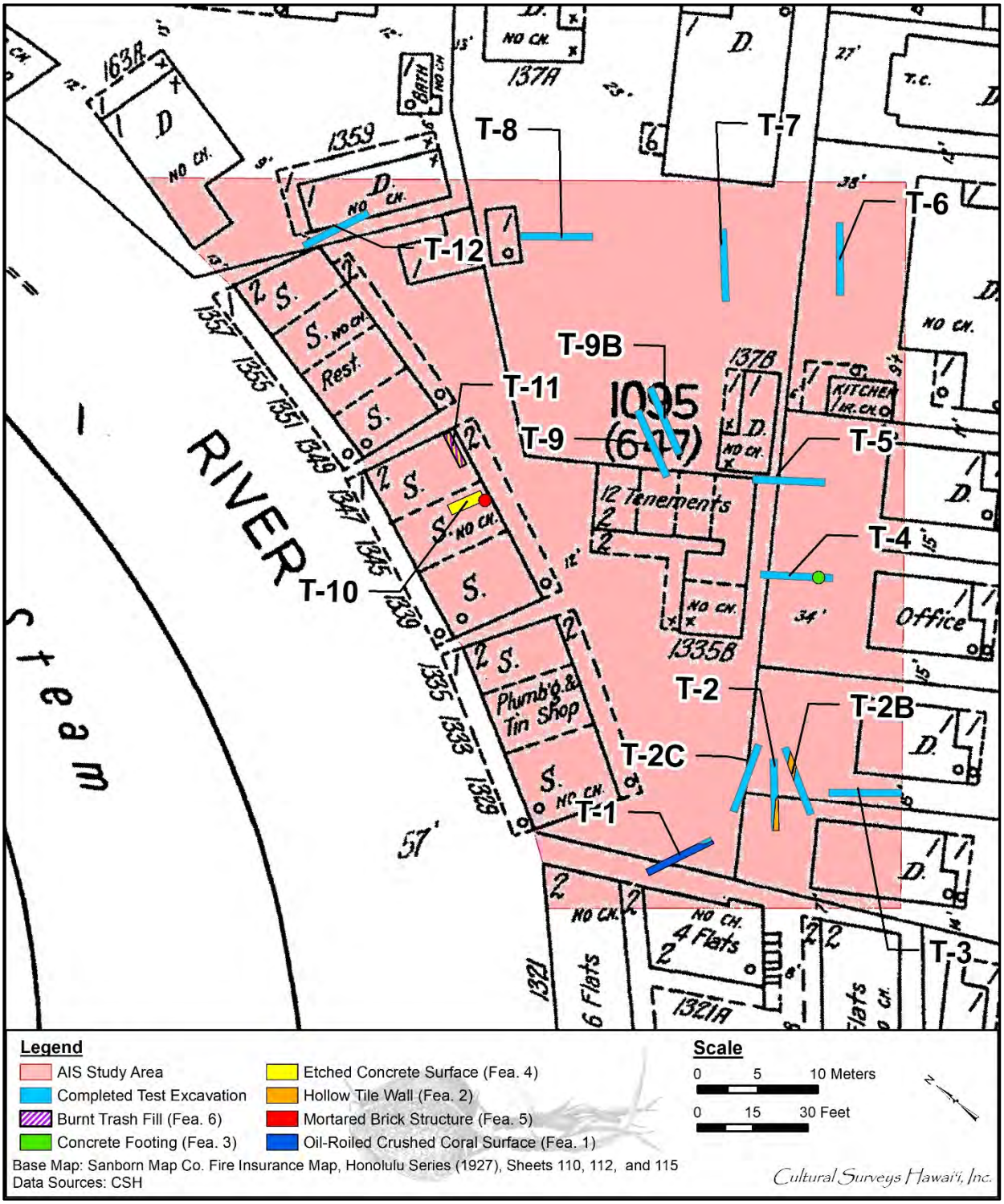

Figure 165. 1927 Sanborn Map Company fire insurance map, Honolulu series, Sheets 110, 112, and 115, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

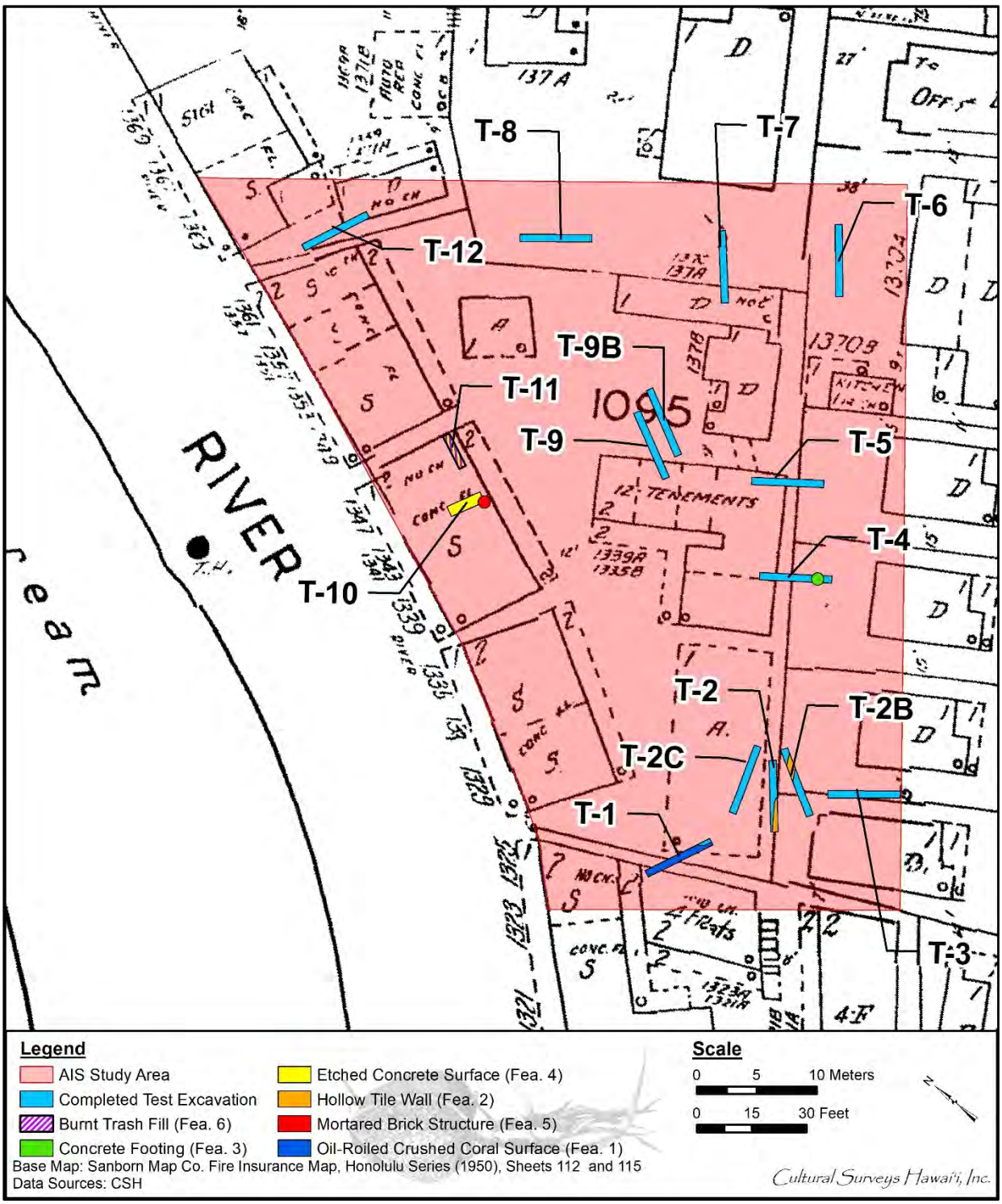

Figure 166. 1950 Sanborn Map Company fire insurance map, Honolulu series, Sheets 112 and 115, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

Table 30. SIHP # -8840 Component 3 features identified during the AIS

Fea. #	Formal Type	Test Excavation	Comment
1	Oil-rolled crushed coral surface and associated base course	T-1	Functioned as a surface for some period of time between 1908 and 1966
2	Hollow tile wall with a concrete base	T-2, T-2B	Possible boundary wall between dwellings and tenements (see Figure 166*)
3	Concrete footing	T-4	Possibly concrete portion of the above hollow tile boundary wall
4	Etched concrete surface	T-10, T-11	Unspecified store fronting River St, present by 1950 (see Figure 166*)
5	Mortared brick structure with a concrete foundation	T-10	Likely constructed between 1847 and 1906
6	Burnt trash fill	T-11	Likely deposited between 1935 and 1950

*Sanborn Map Company fire insurance map, Honolulu series (1950), Sheets 110, 112, and 115

to be several meters southeast of the indicated boundary, although the margin of error for these maps is unknown. Hence, the association between Feature 2 and this former boundary cannot be stated definitively.

SIHP # -8840 Component 3, Feature 2, as identified in T-2 and T-2B, is described in detail below.

6.3.2.1 SIHP # -8840 Component 3, Feature 2 within T-2

SIHP # -8840 Component 3, Feature 2, was documented at the *makai* (southwest) end of T-2, extending roughly east-west from the southwest endwall into the southeast sidewall (see Figure 49 through Figure 52). It was documented between 37 and 70 cmbs. The exposed portion is 3.1 m long with a maximum width of 20 cm. The hollow tile portion comprises a single course and is approximately 20 cm thick. The underlying concrete base is 15 cm thick. No associated builder’s pit was observed; rather, it appeared the wall was founded on Stratum IIa (SIHP # -8840 Component 2, habitation layer; see Section 6.2 above) prior to the deposition of the Stratum Id fill.

6.3.2.2 SIHP # -8840 Component 3, Feature 2 within T-2B

Within T-2B, Feature 2 was documented between 22 and 73 cmbs, extending roughly east-west from near the east corner of the trench into the northwest sidewall (see Figure 58 through Figure 61, and Figure 62). The exposed portion is approximately 2.5 m long, with a maximum width of 35 cm. The hollow tile portion is discontinuous, comprising 1–2 courses where it was observed, with a maximum thickness of 35 cm. The underlying concrete base is approximately 18 cm thick. No associated builder’s pit was observed; rather, it appeared the wall was founded on Stratum IIa (SIHP # -8840 Component 2 habitation layer [see Section 6.2]) prior to the deposition of the Strata Ie and If fills.

Within T-2B, Feature 2 directly overlay a pit feature interpreted as a historical trash pit (SIHP # -8840 Component 2, Feature 8). Artifact analysis indicates use of the underlying pit feature no earlier than 1910; hence, Feature 2 was constructed no earlier than 1910.

6.3.3 SIHP # -8840 Component 3, Feature 3, Concrete Footing

A concrete infrastructure remnant identified as a footing was documented near the southeast end of T-4, within the trench floor and extending into both sidewalls. Designated as SIHP # -8840 Component 3, Feature 3, it appeared to be founded upon Stratum IIa (SIHP # -8840 Component 2 habitation layer [see Section 6.2]) and was documented between 43 and 58 cmbs. The exposed portion is 85 cm long by 45 cm wide and 15 cm thick.

This remnant may represent the concrete base of the hollow tile wall identified in T-2 and T-2B (SIHP # -8840 Component 3, Feature 2; see Section 6.3.2 above); it is of approximately the same thickness, width, and orientation (roughly east-west), as well as being at approximately the same depth and stratigraphic position (founded upon Stratum IIa). Furthermore, the presence of hollow tile debris in the surrounding Stratum Ic fill material suggests the upper hollow tile portion was once present but had been demolished. However, as T-4 is approximately 15 m *mauka* (northeast) of T-2 and T-2B, and since the hollow tile portion was not observed in T-4, the association cannot be stated definitively.

6.3.4 SIHP # -8840 Component 3, Feature 4, Etched Concrete Surface

An etched concrete surface was identified within the two interior excavations, T-10 and T-11, and designated as SIHP # -8840 Component 3, Feature 4. A review of historical maps suggests Feature 4 is associated with a former unspecified store fronting River Street, indicated on the 1950 Sanborn map (see Figure 166) as having a “CONC FL” (concrete floor). SIHP # -8840 Component 3, Feature 5, as documented in T-10 and T-11, is described in detail below.

6.3.4.1 T-10

Within T-10, Feature 4 was documented between 28 and 43 cmbs, beneath the concrete floor of the John R. Gilliland Sr. Building and underlying fill deposit (Strata Ia and Ib) (see Figure 103 through Figure 106 and Figure 108). Feature 4 is 10–15 cm thick and extended across the entire excavation (3.05 m long [northwest-southeast] by 0.89 m wide [northeast-southwest]) prior to being removed. It overlies crushed coral fill (Stratum Id) and construction fill (Stratum Ie).

6.3.4.2 T-11

Within T-11, Feature 4, was documented between 18 and 41 cmbs, beneath the current concrete floor of the John R. Gilliland Sr. Building and associated base course layer (Strata Ia and Ib) (see Figure 109 through Figure 111). It is 15–20 cm thick and extended across the entire excavation (2.96 m long [northeast-southwest] by 0.71 m wide [northwest-southeast]) prior to being removed. As in T-10, it overlies construction fill (Stratum Id) and crushed coral fill (Stratum Ie).

6.3.5 SIHP # -8840 Component 3, Feature 5, Mortared Brick Structure with Concrete Foundation

The remnant of a mortared brick structure with a concrete foundation was identified at the southern corner of T-10, between 60 and 110 cmbs (see Figure 104, Figure 105, and Figure 107). It is designated as SIHP # -8840 Component 3, Feature 5. Each brick is 13 cm long by 10 cm wide

and 6 cm tall; no maker’s mark was observed. The concrete base is approximately 10 cm thick. A maximum of seven courses were observed within the exposed portion of the feature (within the southwest sidewall, not depicted in the profile drawing), which comprises two walls at right angles, representing the northern corner of the former building/structure. The exposed portion of the feature is 50 cm long (northeast-southwest) by 45 cm wide (northwest-southeast) and 50 cm tall. It was not possible to extend the excavation in order to expose the feature further due to the presence of an active subsurface electrical line.

SIHP # -8840 Component 3, Feature 5, appeared to be founded on Stratum IIb, natural alluvium, as no builder’s pit was identified within the surrounding Stratum IIa (SIHP # -8840 Component 2, habitation layer), suggesting Feature 5 pre-dates Stratum IIa. However, according to Lebo (1997:106–107), the first brick structure was built in Honolulu in 1847. As radiocarbon dating (see Section 5.4.3) indicates use of Stratum IIa by 1810, it appears Feature 5 post-dates at least the lower (i.e., earlier) portion of Stratum IIa. A review of historical maps dating from 1906 to 1950 (see Figure 163 through Figure 166) revealed no former brick structure or building in this location, suggesting Feature 5 dates to the period between 1847 and 1906. Furthermore, diagnostic artifacts indicate deposition of the overlying Stratum Ie sometime after 1924, which is consistent with a late nineteenth or early twentieth century date for the construction of Feature 5.

6.3.6 SIHP # -8840 Component 3, Feature 6, Burnt Trash Fill

A thin burnt trash layer (Stratum If), approximately 5–10 cm thick, was documented in T-11, between 45 and 56 cmbs (see Figure 109, Figure 110, and Figure 112). Designated as SIHP # -8840 Component 3, Feature 6, it is composed of very dark brown silty clay loam and contains bottle glass, charcoal, and ceramics; a grab sample of glass and ceramics was collected. A saw-cut faunal bone recovered from the backdirt pile may also be associated with the trash layer; however, its provenience is uncertain.

SIHP # -8840 Component 3, Feature 6, underlies and therefore pre-dates the SIHP # -8840 Component 3, Feature 4 etched concrete surface (see Section 6.3.5 above), which was likely in place by 1950. Based on artifact analysis, the underlying Stratum IIa/SIHP # -8840 Component 2 habitation layer was exposed as a surface until at least 1935. Hence, Feature 6 was likely deposited sometime between 1935 and 1950. Although none of the artifacts recovered from Feature 6 were sufficiently diagnostic to be dated to a particular year or even decade, the date ranges for the items, which fall between the 1840s and 1930s, is consistent with deposition between 1935 and 1950.

6.4 SIHP # -8840 Significance Assessment

SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to HAR § 13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. SIHP # -8840 has provided, and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town

from the nineteenth through mid-twentieth centuries; and on late pre-Contact to post-Contact burial practices. SIHP # -8840 retains integrity of location, materials, and design.

Section 7 Consultation

Consultation regarding the Halewai‘olu Senior Residences project has been ongoing since the project’s inception. This section summarizes consultation efforts among the project proponents, the SHPD, consulting parties, and the River Street community.

On 12 April 2017, Liz Char of Halewai‘olu Senior Development, LLC; Alison Chiu and Tonia Moy of Fung Associates, Inc.; and Matt McDermott of CSH met with Dr. Susan Lebo (Archaeology Branch chief), Kimi Matsushima and Stephanie Hacker (O‘ahu archaeologists), and Tanya Gumpac-Maguire (architectural historian) of the SHPD. This meeting initiated HRS §6E-8 consultation with the SHPD. Ms. Char introduced the project and provided a background of the property ownership, agency of record, proposed development, and known consulting parties. At that time, consulting parties consisted of the Chinatown Community Center Association, the Historic Hawai‘i Foundation, and Lum Sai Ho Tong. Because the demolition of the John R. Gilliland Sr. Building would likely result in an adverse effect, the SHPD staff recommended drafting an MOA in parallel with the project consultation and development and suggested additional parties for consultation. Mr. McDermott noted there was no data about subsurface archaeology within the project area, but that archaeological testing would likely yield findings. The SHPD staff recommended consultation with the O‘ahu Island Burial Council (OIBC) and proposed to meet at a later date to discuss a testing strategy for an AIS.

On 8 May 2019, Matt McDermott of CSH gave a presentation at the OIBC meeting to introduce the project, the AIS, and the consultation process. Mr. McDermott discussed the need for federal historic preservation review of the project triggered by federal funding and discussed previous land use within the AIS study area as indicated by background research. Finally, he presented the proposed subsurface testing strategy for the AIS and explained that as a part of the consultation process, letters would be sent to the OIBC, Chinatown community groups, Nu‘uanu Stream groups, architecture groups, and NHOs. Mr. McDermott asked for suggestions for additional parties to be consulted, and Board Member Aulii Mitchell suggested Kehaulani Lum. Board Member Kali Fermantez inquired as to how the effects of the proposed project on the John R. Gilliland Sr. Building would be mitigated, and Mr. McDermott emphasized the need to balance the impacts of building demolition with the good of the community. Board Chair Hina Wong-Kalu stated she looked forward to future consultation meetings and mentioned that she would come forward as a cultural descendant if she were not the Board Chair, as she is a descendant of both Hawaiian and Chinese in that area. Aulii Mitchell then offered that he is a descendant of the Tong Yees. Finally, Hina Wong-Kalu expressed concern regarding the crematorium at the Hosoi Garden Mortuary (one block Diamond Head [southeast] of the current project) and suggested including the Mortuary in the consultation process.

On 10 June 2019, invitations to the 25 June public meeting (see discussion below) were sent via email or U.S. mail to the SHPD and consulting parties; this letter formally initiated Section 106 consultation with the SHPD. Letters were sent to the following individuals/organizations:

Affiliation/Organization	Point of Contact	Method of Contact
WRNS Studio	Adam Woltag	U.S. mail
Cultural Descendant	Alika Luka	U.S. mail
Docomomo US, Hawaii Chapter	Alison Chiu	Email
Chinatown Community Center Association	Allen Stack, Jr.	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Alvin Au	Email
Chinatown Community Center Association	Alvin Ozaki	U.S. mail
City and County of Honolulu City Council	Ann Kobayashi	U.S. mail
Better Tomorrows	Anni Peterson	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Anthony Chang	Email
Halewai‘olu Senior Development, LLC	Brandon Hegland	U.S. mail
Ali‘i Pauahi Hawaiian Civic Club	Bruce Keaulani	U.S. mail
Lung Doo Benevolent Society	Buck Yong Lee	U.S. mail
State of Hawaii House of Representatives, District 20	Calvin Say	U.S. mail
City and County of Honolulu City Council	Carol Fukanaga	U.S. mail
Norman ‘Ohana	Carolyn Norman	U.S. mail
Aala Dog Park Association	Cathy Au Hoy	Email
Pacific Gateway Center	Christy MacPherson	Email
Chinatown Business and Community Association	Chu Lan Shubert-Kwock	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Chu Lan Shubert-Kwock	U.S. mail
State of Hawaii - House of Representatives, District 29	Daniel Holt	U.S. mail
Cultural Descendant	Dayleen Yokooji	U.S. mail
Chinatown Merchants Association	Denton Chun	Email
Chinatown Community Center Association	Dolores Mollring	U.S. mail
Makaiwi ‘Ohana	Donna Makaiwi	U.S. mail
SHPD Archaeology and Culture & History/Burials Program Branches	Dr. Susan Lebo	U.S. mail
Pacific Gateway Center	Dr. Tim Myaing Thein, Ph.D.	Email
Chinese Chamber of Commerce Hawaii	Eddie Flores, Jr.	Email
Borthwick Mortuary	Ennilee Anulao	U.S. mail
Friends of Chinatown	Eric Wong	Email
Neighborhood Board #13 (Downtown/Chinatown)	Ernest Caravalho	Email
Lung Kong Physical Culture Club	Ernest Loo	U.S. mail
Lam ‘Ohana	Gerald Lam	U.S. mail
Chinatown Business Association	Gifford Chang	U.S. mail
Association of Hawaiian Civic Clubs	Hailama Farden	U.S. mail
Community Engagement & Resources Group, Kamehameha Schools	Hailama Farden	U.S. mail
See Yup Benevolent Society	Henry Chan	U.S. mail
United Chinese Society	Henry Ou	Email
OIBC Kona Rep./Chairperson	Hinaleimoana Wong-Kalu	U.S. mail
Lum Sai Ho Tong	Howard Lum	U.S. mail

Affiliation/Organization	Point of Contact	Method of Contact
Neighborhood Board #13 (Downtown/Chinatown)	Jasmine Mancos	Email
Borthwick Mortuary	Jay Morford	U.S. mail
Onward Creative	Jeff Mull	Email
WRNS Studio	Jeff Warner	U.S. mail
City and County of Honolulu City Council	Joey Manahan	U.S. mail
City and County of Honolulu Department of Community Services	John Chang	U.S. mail
Friends of Chinatown	Johnny Ng	U.S. mail
Sing Tao Newspaper, LTD	Joseph Chow	U.S. mail
Honorary Mayor of Chinatown; D.D.S Retired	Joseph Young	U.S. mail
SHPD Archaeology and Culture & History/Burials Program Branches	Ka‘ahiki Solis	U.S. mail
Office of Hawaiian Affairs	Kamana‘opono Crabbe CEO	U.S. mail
Halewai‘olu Senior Development, LLC	Karen Seddon	Email
World Journal	Karl Kao	U.S. mail
State of Hawai‘i - Senate, District 13	Karl Rhoads	U.S. mail
Lum Sai Ho Tong	Kehaulani Lum	U.S. mail
Tsung Tin Association	Keith Lim	U.S. mail
Historic Hawai‘i Foundation	Kiersten Faulkner	U.S. mail
Friends of Chinatown	Kim Tran	U.S. mail
Wong Kong Har Tong Society	Kimo Wong	U.S. mail
Mun Lun School	Kin Ching	U.S. mail
Lung Kong Kung Shaw	Kristi Quon Esquef	Email
UCS and Chinatown Community Center Association	Larry Siu	U.S. mail
Chinatown Improvement District	Lee Stack	U.S. mail
Aha Moku Advisory Committee Department of Land and Natural Resources	Leimana DaMate	U.S. mail
Cultural Descendant	Leon Letoto	U.S. mail
Faith Action for Community Equity	Leotele Togafau	Email
Chinatown Community Center Association	Liana Benn	U.S. mail
Lum Sai Ho Tong	Lita Lum	U.S. mail
Lum Sai Ho Tong	Luther Chong	U.S. mail
Honolulu Police Department	Major Roy Sugimoto	Email
O‘ahu Island Burial Council	Mana Caceres	U.S. mail
Interstate Realty Management	Mary Keshishian	Email
Kuan Yin Temple	Merle Chong	U.S. mail
Cultural Descendant	Michael Lee	U.S. mail
American Savings Bank	Michelle Bartell	Email
Lum Sai Ho Tong	Milton Hee	U.S. mail
Chinese Chamber of Commerce Hawaii	Mona Choy-Beddow	U.S. mail
Cultural Descendant	Natalie Baldauf	Email

Affiliation/Organization	Point of Contact	Method of Contact
Arts District Merchants Association (ADMA)	Nicole Reid	Email
Caceres ‘Ohana	Norman “Mana” Christopher Moore Kaleilani Caceres	U.S. mail
Enterprise Honolulu	Pono Shim	U.S. mail
Halewai‘olu Senior Development, LLC	Questor Lau	U.S. mail
SHPD Archaeology and Culture & History/Burials Program Branches	Regina Hilo	U.S. mail
Izumo Taishakyo Mission of Hawai‘i	Richard Miyao	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Robert Tom	Email
Chinatown Improvement District	Robert Wu	Email
WRNS Studio	Rochelle Nagata-Wu	U.S. mail
Cultural Descendant	Roddy Akau	Email
Mun Lun School (Center Assoc. and Kalihi-Palama NB 15)	Roland Louie	U.S. mail
City and County of Honolulu	Roy K. Amemiya Jr.	U.S. mail
Hawaii Theater	Ruth Bolan	Email
Louis Pohl Gallery	Sandra Pohl	U.S. mail
Chinatown Community Center Association	Sandra Siu	U.S. mail
Nu‘uanu Valley Auwai Study Group	Shannon Wilson	U.S. mail
Care Companions and Consulting	Sharon L. Pang	U.S. mail
Hawaiian Chinese Civic Association	Sharon L. Pang	U.S. mail
Chamber of Commerce Hawaii	Sherry Menor-McNamara	U.S. mail
Association of Hawaiian Civic Clubs	Soulee LKO Stroud	U.S. mail
Interstate Realty Management	Stacie Brach	Email
Chung Wah Chung Kung Hui	Stanford Yuen	Email
Chinatown Business and Community Association	Stanley Yon (US China People’s Friend)	U.S. mail
United Chinese Society	Ted Li	U.S. mail
–	Tom Dang	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Tom Smyth	U.S. mail
Docomomo US, Hawaii Chapter	Tonia Moy	Email
Kaleikini, Keliinoi ‘Ohana	Tuahine Kaleikini	U.S. mail
Fort Street Mall BID Assoc.	Victor Lim	U.S. mail
United Chinese Society	Victor Lim	U.S. mail
Longevity International Enterprises Corporation dba Chinatown Cultural Plaza	Vina Quick	U.S. mail
Chinatown Community Center	Walter Chang	Email, U.S. mail
Chinatown Community Center Association	Wesley Fong	U.S. mail
Borthwick Mortuary	William Mendel	U.S. mail
Chinese Physical Culture Association	–	U.S. mail
City and County of Honolulu Department of Permitting and Planning	–	U.S. mail

Affiliation/Organization	Point of Contact	Method of Contact
Filipino Community Center - Joseph Rizal Memorial	–	U.S. mail
Foster Botanical Gardens	–	U.S. mail
Friends of ‘Iolani Palace	–	U.S. mail
Hawai‘i Chinese Association of Hawai‘i	–	U.S. mail
Hawai‘i Chinese Buddhist Society	–	U.S. mail
Hawai‘i Chinese History Center	–	U.S. mail
Hawai‘i Chinese Multicultural Museum and Archives	–	U.S. mail
Hawaiian Civic Club of Honolulu	–	U.S. mail
Japanese Cultural Center of Hawaii	–	U.S. mail
See Dai Doo Society	–	U.S. mail
Sun Yat Sen School - Cultural Language School	–	U.S. mail

On 25 June 2019, a public informational meeting was held at the Blaisdell Center. Sandra Pfund (City and County of Honolulu DLM) introduced the project and described the purpose of the meeting. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Alison Chiu and Bethany Zedalis (Fung Associates) provided an architectural background. Matt McDermott of CSH summarized the historical and archaeological background. This was followed by questions from the audience. In attendance were Liana Benn, Wesley Fong, and Roland Louie of the Chinatown Community Center Association; Jay Morford and Ennilee Anulao of Hawaiian Memorial Life Plan; Kiersten Faulkner of the Historic Hawai‘i Foundation; Honorary Mayor of Chinatown Joseph Young; Pamela Liu of the Honolulu Police Department; members of the Caceres ‘Ohana (cultural descendants); Joette Yago and Janet Meinke-Lau of the City and County of Honolulu Department of Planning and Permitting; Karl Rhoads of the Hawai‘i State Senate (District 13); Councilmember Carol Fukunaga and Kim Ribellia from her office; Cheryl Tanaka and Randall Goto of the City and County of Honolulu Department of Budget and Fiscal Services; Christy MacPherson of Faith Action; City and County of Honolulu Managing Director Roy Amemiya; Kehaulani and Howard Lum of Lum Sai Ho Tong; and Donna and Daron Makaiwi of the Marin ‘Ohana. Questions included inquiries about possible project effects on the Mun Lun School; whether the planned multi-purpose room will be used as a community center; whether the project footprint could change as a result of the AIS findings; whether the Native American Grave Protection and Repatriation Act (NAGPRA) applies to the project; and the possible effects of mortuary smoke on the new building and its residents.

On 9 July 2019, a Section 106 consultation meeting was attended by Alison Chiu and Bethany Zedalis of Fung Associates; Tanya Gumpac-Maguire of the SHPD (Architecture Branch); Sharon Har and Questor Lau of Halewai‘olu Senior Development, LLC; Keith Kurahashi of R.M. Towill; Sandra Pfund from the City and County of Honolulu DLM; and Matt McDermott of CSH. Sharon Har provided an overview of the project and comments from consulting parties, including a request to incorporate historical documentation of the presence of *ali‘i* in the area and the Battle of Nu‘uanu, how smoke from the crematorium might affect the project, questions surrounding possible NAGPRA triggers, the name of the multi-purpose room, the impacts of construction and mitigation concerns, and whether the results of the AIS could alter the footprint of the senior residences. Mr. McDermott provided an update of the ongoing AIS, including the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6). Ms. Chiu and Ms. Zedalis proposed the area

of potential effect (APE) for the project to consist of an archaeological APE and an additional architectural APE. Ms. Gumpac-Maguire concurred with the two APEs.

On 22 July 2019, Ena Sroat and Matt McDermott of CSH met with Susan Lebo of the SHPD (Archaeology Branch) to discuss the results of the AIS testing up to that point and additional testing based on the identification of an in situ burial (SIHP # -8840 Component 2, Feature 6) in T-2. Based on this discussion, it was agreed that the AIS testing strategy would be increased by three test excavations—two in the vicinity of T-2 and one in the vicinity of T-9, where a potential agricultural berm had been identified.

On 14 August 2019, Matt McDermott of CSH presented the results of the current AIS investigation at the OIBC meeting. Mr. McDermott discussed the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6) and how excavation of two additional trenches—one on either side of the initial trench—failed to identify any additional remains. He explained that the forthcoming burial treatment plan (BTP) will be part of the MOA and that NAGPRA does not apply as the project does not involve tribal or federal land; this is confirmed by Kamana‘o Mills (large landowner). Board Member Aulii Mitchell inquired as to whether testing would be conducted to determine the burial date, and Mr. McDermott explained that the remains were found in a sediment layer that is not pre-Contact; hence, the burial is likely historic. He stated that Board Member Mana Caceres had been involved in the early stages of consultation regarding the burial find, and that Mr. Caceres would be applying as a cultural descendant of the remains.

On 19 September 2019, a second public informational meeting was held at the Blaisdell Center. Sandra Pfund of the City and County of Honolulu DLM explained the purpose of the meeting was to provide the community with an update regarding the AIS and CIA studies and how they relate to the project’s historic preservation review process. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Bethany Zedalis (Fung Associates) provided an architectural background. Matt McDermott of CSH presented the preliminary results of the project’s AIS and proposed mitigation commitments, including burial treatment. There were no questions from the audience members, who included Sharon Pang of Care Companions & Consulting; cultural descendants Mana Caceres, Logan Keola, and Gerry Lam; Jay Morford of Hawaiian Memorial Life Plan; Cheryl Tanaka and Randall Goto of the City and County of Honolulu Department of Budget and Fiscal Services; Howard Lum of Lum Sai Ho Tong; Anni Peterson of Better Tomorrows; Allen Stack and Wesley Fong of the Chinatown Community Center Association; Karl Rhoads of the Hawai‘i State Senate (District 13); and Kiersten Faulkner of the Historic Hawai‘i Foundation. Also in attendance were Tonia Moy of Fung Associates; Ben Edger and Questor Lau of Halewai‘olu Senior Development, LLC; and Chantel Spencer and Kamuela Ka‘apana of CSH.

On 6, 8, and 9 October 2019, the following notice was published in the *Honolulu Star-Advertiser*:

> NOTICE TO INTERESTED PARTIES IS HEREBY GIVEN that human skeletal remains were identified by Cultural Surveys Hawai’i, Inc. during the course of an archaeological inventory survey related to the Halewai’olu Senior Residences, Honolulu Ahupua’a, Honolulu (Kona) District, O’ahu, TMK: [1] 1-7-060:120 [sic].
>
> Following the procedures of Hawai’i Revised Statutes (HRS) Section 6E-43, and Hawai’i Administrative Rules (HAR) Chapter 13-300, these remains are considered

previously identified. Based on the context of the finds, they are over 50 years old and most likely Native Hawaiian.

Background research indicates that this burial was located in the ‘ili of Kalawahine, within the boundaries of a Land Commission Award (LCA) to Huanu for Lahilani, daughter of Francisco Manini (Francisco Marin). On an 1871 Lyons map this particular award is identified as LCA 3:189; on an 1893 Dodge and Wall map it is identified as LCA 2938. Nearby LCAs include an award to Kaukoke (identified variously as LCA 2:1025 ‘Apana 3 and LCA 11082), an award to Makahopu (LCA 141-2), and an award to Keikenui no Makahopu (LCA 141-3).

The project proponent is the City and County of Honolulu—contact the Department of Land Management, ATTN: Director, 558 S. King Street, Honolulu, Hawai’i 96813 [Tel: (808) 768-4277].

The project proponent has proposed preservation in place for these remains; however, the decision to preserve in place or relocate these previously identified human remains shall be made by the O’ahu Island Burial Council in consultation with the State Historic Preservation Division (SHPD) and any recognized lineal and/or cultural descendants, per the requirements of HAR Section 13-300-33. Appropriate treatment shall occur in accordance with HAR Section 13-300-38.

All persons having any knowledge of the identity or history of these human remains are requested to immediately contact Ms. Regina Hilo, SHPD Burial Site Specialist, at 601 Kamokila Boulevard, Room 555, Kapolei, Hawai’i 96707 [Tel: (808) 692-8015, Fax: (808) 692-8020, Email: Regina.Hilo@hawaii.gov].

All interested parties shall respond within thirty (30) days of this notice and file descendancy claim forms and/or provide information to the SHPD adequately demonstrating lineal descent from these designated burials or cultural descent from ancestors buried in the same ahupua’a or district.

At the 9 October 2019 OIBC meeting, Brandy Caceres and ‘Ohana were recognized as cultural descendants of the *‘iwi kupuna* (human remains) identified on 8 July 2019 (SIHP # -8840 Component 2, Feature 6).

On 19 November 2019, a Section 106 Consultation meeting regarding the project’s MOA was attended by Susan Lebo (Archaeology Branch) and Tanya Gumpac-McGuire (Architecture Branch [via phone]) of the SHPD; Randy Chiu of the City and County DLM; Howard and Kehaulani Lum of Lum Sai Ho Ton; Liana Benn of the Chinatown Community Center Association; cultural descendants Mana and Kalehua Caceres; Daron Makaiwi of the Marin ‘Ohana; Sharon Har, Questor Lau, and Benjamin Edger of Halewai‘olu Senior Development, LLC; Matt McDermott of CSH; Tonia Moy and Alison Chiu of Fung Associates; Jay Morford of Hawaiian Memorial Life Plan; Mel Kalahiki of Borthwick Mortuary; Kiersten Faulkner of the Historic Hawai‘i Foundation; and Sylvia Young of the HawaiiUSA Federal Credit Union. Ms. Har explained that the purpose of the meeting was to discuss mitigation. Mr. McDermott explained that the MOA is being developed to alleviate the adverse effect of the project’s construction on the John R. Gilliland Sr. Building and the archaeological historic property identified during the AIS. SHPD staff proposed that mitigation should focus on benefitting the community. Ms. Faulkner suggested this could be

achieved through a display, a video, an oral history, a traveling exhibit, or by putting funds into an adjacent building. She further emphasized that the MOA needs to be enforceable, with a timeline and specific stipulations as to who does what and to what standard. Discussion also included the proposed activity center within the senior residence, and that it will not just be for residents but also for the community at large.

On 21 November 2019, Matt McDermott and Ena Sroat of CSH met with Susan Lebo, Samantha Cragen, and Andrew McCallister of SHPD's Archaeology Branch. Discussion topics included the outstanding SIHP numbers for the historic property identified during the AIS and possible mitigation measures.

Section 8 Summary and Interpretation

At the request of Halewai‘olu Senior Development, LLC, CSH has prepared this AIS report for the Halewai‘olu Senior Residences project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 1-7-006:012. The Halewai‘olu Senior Residences project is at 1331–1347 River Street, between Vineyard Boulevard and North Kukui Street. The John R. Gilliland Sr. Building and its surrounding parking lot are planned for demolition, to be replaced by proposed affordable senior housing.

The current project is within the portion of downtown Honolulu surrounding the mouth of Nu‘uanu Stream, known to Hawaiians as “Kou.” Kou had a long tradition as a royal center, where the *ali‘i* would meet and entertain. It also possessed shoreward fishponds and irrigated fields, and nearby Honolulu Harbor was brimming with marine resources. The land surrounding Nu‘uanu Stream was particularly densely populated, with a concentration of *lo‘i* and *‘auwai*. Historical maps show the AIS study area as within that dense cluster of *lo‘i*.

By the 1830s, Western commercial and missionary interests had supplanted the Native Hawaiian traditions that once shaped the environment, and Western and urban ideals propelled Honolulu’s growth. The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. Historical maps indicate the majority of the AIS study area was within LCA 2938 to Huanu, for the heirs of Lahilahi (Gilliland ‘Ohana). Huanu was the grandson of Francisco de Paula Marín, whose land within the current study area was known as “The Vineyard.” Marín had planted his vineyard with grape cuttings sourced from California in 1815.

A review of twentieth century historical maps and aerial photographs indicates modern development within the study area by 1906. At that time, a tenement was at the center of the study area, while several dwellings and stores were along the northwestern boundary. By 1950, additional dwellings were present in the eastern and southeastern portions of the study area, and a parking area for automobiles was in the southern corner. The John R. Gilliland Sr. Building was constructed within the study area in 1958. In 2016, Fung Associates assessed this two-story commercial building as eligible inclusion on the National Register under Criterion C, as a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s.

Based on background research, it was anticipated that the current AIS could identify buried agricultural deposits and features associated with taro and/or grape cultivation; pre- and/or post-Contact habitation layer(s) with associated features, potentially including human remains; landscape features or structural remnants associated with LCA boundaries; and nineteenth and twentieth century structural remnants with associated artifacts and/or historical trash pits. As the AIS study area consists of a two-story commercial building (the John R. Gilliland Sr. Building) and associated asphalt parking lot, no surface archaeological historic properties were anticipated.

Fifteen test excavations (T-1 through T-12, including T-2B, T-2C, and T-9B) were completed. In general, the observed stratigraphy consists of the modern land surface, fill deposits, and infrastructure remnants (Stratum I); a vertical series of natural alluvium (Stratum II); and a buried streambed, likely associated with a former braid of Nu‘uanu Stream (Stratum III). In addition, one

archaeological historic property was identified: SIHP # -8840, subsurface cultural deposits, documented in all 15 test excavations.

SIHP # -8840 is a newly identified historic property with three components spanning the pre-Contact period through the mid-twentieth century. Component 1 consists of agricultural deposits, likely representing pre-Contact taro farming along the banks of Nu‘uanu Stream; these comprise the deeper alluvial deposits (Strata IIc–IIg) and reflect at least three periods of agriculture. Associated berm structures (Stratum IId) were identified in two adjacent test excavations (T-9 and T-9B), indicating that area may represent the intersection of two or more agricultural plots.

Component 2 consists of habitation layers with associated pit features, including a human burial site (Feature 6). This component comprises the upper alluvial deposits (Strata IIa and IIb), which likely functioned as living surfaces from the late pre-Contact period at least into the 1930s. The uppermost alluvial deposit, Stratum IIa, is a thick layer with pit features documented throughout its vertical extent. This layer likely accumulated over an extended period of time and, based on radiocarbon dating, functioned as a surface by 1810. Hence, Stratum IIa was likely contemporaneous with Marín’s Vineyard, although no evidence for grape cultivation was identified within the layer. It is possible this portion of the Vineyard was not actively cultivated.

Component 3 consists of historical infrastructure remnants, including an oil-rolled crushed coral surface, a hollow tile wall remnant, a concrete footing, an etched concrete surface, a mortared brick structural remnant, and burnt trash fill. Based on stratigraphic context and analysis of associated artifacts, all of these remnants date to the twentieth century, except possibly for the brick structural remnant (Feature 5), which may date to the nineteenth century (post-1847, the date of the first brick structure in Honolulu).

SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to HAR §13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. SIHP # -8840 has provided, and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town from the nineteenth through mid-twentieth centuries; and on late pre-Contact to post-Contact burial practices. SIHP # -8840 retains integrity of location, materials, and design.

Section 9 Significance Assessment

Once a historic property is identified, then an assessment of significance shall occur pursuant to HAR §13-275-6. To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following significance criteria:

a. be associated with events that have made an important contribution to the broad patterns of our history;
b. be associated with the lives of persons significant in our past;
c. embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master, or possess high artistic value;
d. have yielded, or is likely to yield, information important for research on prehistory or history; or
e. have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations being important to the group's history and cultural identity.

Table 31 presents the significance assessment and mitigation commitments for the historic property identified during the Halewai‘olu Senior Residences AIS, SIHP # -8840 (subsurface cultural deposits). This significance assessment is included in this AISR for the review and concurrence of the SHPD. In addition, historic property integrity, which is the ability of a property to convey its significance, was assessed based on the guidance provided in National Register Bulletin #15, "How to Apply the National Register Criteria for Evaluation" (NPS 1997) and "Assessing Site Significance: A Guide for Archaeologists and Historians" (Hardesty and Little 2000). The seven aspects of integrity and their descriptions are as follows:

- *Location* is the place where the historic property was constructed or the place where the historic event occurred
- *Design* is the combination of elements that create the form, plan, space, structure, and style of the property
- *Setting* is the physical environment of a historic property
- *Materials* are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property
- *Workmanship* is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory
- *Feeling* is a property's expression of the aesthetic or historic sense of a particular period of time
- *Association* is the direct link between an important historic event or person and a historic property (NPS 1997; Hardesty and Little 2000)

Table 31. Archaeological historic property integrity, significance, and mitigation commitments

SIHP # 50-80-14-	AIS Test Excavations	Formal Type/Name	Function	Age	Integrity							Hawai‘i State Significance Criteria	National Register Eligibility Criteria	Mitigation Commitments
					Location	Design	Setting	Materials	Workmanship	Feeling	Association	HAR §13-275-6	36 CFR 60.4	
8840	T-1 through T-12	Subsurface cultural deposits	Agriculture, habitation, human interment, commercial and residential infrastructure	Pre-Contact to mid-twentieth century	Y	Y	N	Y	N	N	N	d and e	D	Archaeological monitoring; burial treatment (BTP forthcoming)

SIHP # -8840, subsurface cultural deposits, has three components, designated as Components 1–3. Component 1 comprises agricultural deposits. Component 2 comprises habitation layers with associated pit features, including a human burial. Component 3 comprises historical infrastructure remnants. SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. SIHP # -8840 has provided, and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town from the nineteenth through mid-twentieth centuries; and on late pre-Contact to post-Contact burial practices. SIHP # -8840 retains integrity of location, materials, and design.

Section 10 Project Effect and Mitigation Commitments

The following project effect and mitigation commitment discussions are intended to facilitate project planning and to support the proposed project's required historic preservation consultation. It is also intended to provide specific mitigation commitments for the Halewai‘olu Senior Residences project.

10.1 Project Effect

Under Hawai‘i State historic preservation review legislation, one of two project effect determinations must be established: 1) "No historic properties affected," the project will have no effect on significant historic properties; or 2) "Effect, with proposed mitigation commitments," the project will affect one or more significant historic properties, and the effects will potentially be harmful. However, the agreed upon mitigation commitments involving one or more forms of mitigation will reasonably and acceptably mitigate any harmful effects (HAR §13-275-7).

One significant archaeological historic property (SIHP # -8840) was documented during the Halewai‘olu Senior Residences AIS, and the proposed project has the potential to affect this historic property. Based on the AIS investigation, the project effect determination per HAR §13-275-7 is "effect, with agreed upon mitigation commitments." In addition, under Section 106 of the NHPA, the proposed project will have an "adverse effect" on the identified archaeological historic property, SIHP # -8840. The mitigation commitments outlined below will reduce the project's potential adverse effect on SIHP # -8840, subsurface cultural deposits.

10.2 Mitigation Commitments

Under Hawai‘i State historic preservation review legislation, if a project will have an "effect" (impact) on significant historic properties, then a mitigation commitment proposing the form of mitigation to be undertaken for each significant historic property shall be submitted for SHPD review and acceptance. Mitigation may occur in the following five forms: A) Preservation, B) Architectural Recordation, C) Archaeological Data Recovery (which includes archaeological monitoring), D) Historical Data Recovery, and E) Ethnographic Documentation (HAR §13-275-8).

This AIS indicates the Halewai‘olu Senior Residences AIS study area contains one archaeological historic property: SIHP # -8840, subsurface cultural deposits. SIHP # -8840 was identified in all 15 test excavations. Under Section 106 of the NHPA, the proposed project will have an "adverse effect" on this archaeological historic property. In addition, due to the inherent limitations of any sampling strategy, it is possible additional historic properties may be identified during construction activities.

Based on the AIS results, the agreed upon mitigation commitments consist of a burial treatment plan (BTP) addressing the previously identified human burial site (SIHP # -8840 Component 2, Feature 6) and data recovery in the form of archaeological monitoring for SIHP # -8840 Components 1–3 (see Table 31). Mitigation measures will be detailed in the MOA currently being prepared pursuant to 36 CFR Part 800.6.

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Appendix A Gilliland Building RLS

HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM – Reconnaissance Level

FOR SHPD USE ONLY:	Site # Click here to enter text.	TMK # Click here to enter text.

I. GENERAL INFORMATION

Common / Present Name:	John R. Gilliland Building
Historic Name:	Same
Property Owner:	City and County of Honolulu
Address:	1331 River Street / Units 1331, 1341, 1343, 1347, 201 through 216
City/ Town/ Location:	Honolulu
County:	Honolulu
TMK [(X)-X-X-XXX:XXX)]:	(1)-7-0-060: 120: 000 through 020
Subdivision/Neighborhood:	Chinatown
Latitude:	157°51'35"W
Longitude:	21°18'56"N
Parcel Number:	
Historic District:	N/A
Original Use:	Commercial
Current Use:	Commercial
Architect/ Builder (if known):	Kenneth Sato
Date of Construction (if known):	1958

II. Photograph of Resource



Prepared By: Don Hibbard and Alison Chiu **Consulting Firm:** Fung Associates, Inc.
Address: 1833 Kalakaua Avenue, Suite 1008, Honolulu, HI 96815
Telephone Number: (808) 941-3000 **Email:** Alison@funghawaii.com **Date:** 09/09/2016

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HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM – Reconnaissance Level

FOR SHPD USE ONLY: **Site #** Click here to enter text. **TMK #** Click here to enter text.

III. CONDITION ASSESSMENT

Category (select all that apply):

- ☐Building(s)
  - ☐Residential ☒**Commercial** ☐Educational ☐Public/Civic ☐Religious
- ☐Structure(s)
- ☐Object(s)
- ☐Site(s)/Landscape(s)
- ☐Archaeology or potential for archaeology (Please provide a description of the potential for archaeology within VI. Description of Resource Features below.)

Condition:

- ☐Excellent
- ☐Good
- ☒**Fair**

Eligibility (select all that apply):

- ☐National Register of Historic Places
- ☐State Register of Historic Places
  - ☐Not Eligible
  - ☒**Eligible**
  - ☐Listed
  - ☐Contributing to Historic District:
    Name of District: Click here to enter text.
  - ☐Unknown

Criteria of Significance (select all that apply)

- ☐A: Associated with Events
- ☐B: Associated with Significant Person(s)
- ☒**C: Distinctive characteristics of a type, period or method of construction; work of a master; possess high artistic values (Architecture, Engineering, Design)**
- ☐D: Have yielded or may be likely to yield information important to history or prehistory.

IV. MAP



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HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM –Reconnaissance Level

FOR SHPD USE ONLY: **Site #** Click here to enter text. **TMK #** Click here to enter text.

V. DESCRIPTION

Materials (please check those materials that are visible):

Height

☒**Stories: 2**	☐N/A
☐Below Ground	☐Other:

Exterior Walls (siding):

☐Aluminum Siding	☐Metal	☐Plywood
☐Asbestos	☐Shingles-Asphalt	☐OSB
☐Brick	☐Shingles-Wood	☐Fiberboard
☐Ceramic	☐Stone	☐Fiber Cement
☒**Concrete**	☐Stucco	☐Vinyl Siding
☐Horizontal Wood Siding	☐Vertical Wood Siding	☐Other:
☐Log	☐Engineered Siding	

Roof

☐Asphalt, shingle	☐Slate	☐Wood Shingle
☐Asphalt, roll	☒**Built Up**	☐None
☐Metal	☐Ceramic Tile	
☐Other:		

Foundation

☐Brick	☒**Concrete Slab**	☐Stone
☐Concrete Block	☐Poured Concrete	☐Raised/Pile
☐Other:		

Structural Support

☐Baled Hay	☐Frame-wood	☐Puddled Clay
☐Concrete Block	☐Frame-metal/steel	☐Rammed Earth
☐Concrete Framed	☐Brick-load bearing	☐Sod
☒**Concrete Poured**	☐Stone-load bearing	
☐Other:		

Windows

☐Double Hung Sash	☒**Jalousie**	☐Stained Glass
☐Single Hung Sash	☐Glass Block	☐Replacement
☐Casement	☐None/Unknown	☐Aluminum
☒**Fixed**	☐Ribbon	☐Vinyl
☐Other:		

Lanai(s)

☐Arcade	☐Recessed	☐Wrap-around
☐Balcony	☐Stoop	☐Verandah
☐Porte-Cochere	☐Portico	☒**None**
☐Other:		

Chimney

☐Brick	☐Stuccoed Masonry	☐Stove Pipe
☐Concrete	☐Stone	☐Siding
☒**None**	☐Other:	

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HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM –Reconnaissance Level

FOR SHPD USE ONLY:	Site # Click here to enter text.	TMK # Click here to enter text.

VI. Narrative Description

Include within the description of resource features any changes to the resource that have been made over time.

A. Describe exterior features:

This two-story modern style building is distinguished by a canopy between the first and second stories that runs the length of the façade and has a folded plate roof with a drip edge. The façade is further enriched by the roof, which is a series of front-facing, segmental-arched, barrel vaults with overhanging eaves on both the front and rear elevations of the structure. The reinforced concrete building is eight bays wide, with all the bays being of similar width except the northeast-most bay, which is narrower. The barrel vaults define the bays with one covering each bay. On the second story each bay features a picture window, flanked on either side by a pair of jalousie windows. A window air-conditioning unit is set in the lower half of one jalousie window in each bay. At ground level, each bay contained a store front, but the three southeast bays have been modified to address the consolidation of the interior spaces to develop a larger restaurant area. The original store fronts have a hinged door to the north with an adjoining display window to the south. The windows have been modified over time. The kick plate below the windows is simply the flat wall, which is composed of concrete masonry units (CMU) blocks. The narrower, north bay has a set of three jalousie windows on the second story and on the first a tri-fold door, opening the store space to the sidewalk. The three south bays each have six panels. The six north-most panels are solid, while in the middle bay each panel contains a fixed, plate glass window in its upper portion. The south-most bay has a north of center, recessed doorway with a fixed plate glass window to the entry's south. A box neon sign is suspended from the canopy above the entry and reads, "Uptown Café." A second box neon sign is similarly suspended from the canopy in the third bay from the north and this one reads, "Hanagasa Inn."

The rear, southeast side of the building on the ground level has a single door entry in each bay at its south side. The second story is handled the same as the façade's second story. A 3'-6" concrete sidewalk runs the length of the rear elevation and is defined by a 3" curb on its parking lot edge. The parking lot is elevated above the sidewalk and is flush with the top of the curb. Air conditioning/ventilation duct work, conduits, and electrical equipment protrude from the face of the rear elevation.

At either end of the building a double stair, each stair having eighteen steps, leads up to the second floor. The steps are concrete, and a flat roof extends 3'-9" from the sides of the end barrel vaults to protect the stairs from the elements. The space under the stairways has been enclosed with T-111 in recent years, to provide storage areas. The storage spaces are accessed by a centered, hinged, T-111 door. The stairways retain their wrought iron railings with their stylized post and rail pattern. A hinged, metal, security screen door is at the head of the stair.

B. Describe distinguishing interior features:

The screen doors at the head of the stairs provide access to a double-loaded, central hallway. The hall is approximately 4'-0" wide and curves to follow the line of the street. The ceiling in the hallway follows the vaulting of the roof and is approximately 20'-6" high at its apex. The concrete floor has been covered by modern tiles. There are eight doors on each side of the hall, which lead into office spaces. Nine of the doors are original and feature four horizontal-paned windows. At the bottom of some of the doors is a gravity flap letter plate. None of the original doors retain their original knobs. Each office has a picture window flanked on either side by a pair of jalousie windows, except the narrower, northern-most offices which only have a set of three jalousie windows. In a corner of each office is a half bath, which is entered via a single panel door. None of these doors have their original knobs. The offices have 9'-4" high dropped ceilings and originally had connecting doors in the plastered partition walls to allow access to the other office spaces. A number of these openings have been sealed up, but some original single panel doors still remain, again minus their original knobs.

HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM –Reconnaissance Level

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On the ground floor only two spaces are occupied: the Uptown Café and Hanagasa Inn. The former occupies the three southern-most bays of the building. It has an L-shaped dining area with a bar niche at the north end of the dining room. It was remodeled around 2000. The Hanagasa Inn occupies the second and third bays from the north. It was remodeled in the 1990s. Chikara Mochi occupied the space south of Hanagasa Inn. It still retains obscure, wire fire glass jalousie windows in its front and rear walls, a material which is rarely found today.

C. Describe the landscape and setting (include adjacent sites/resources):

This commercial building sits on a flat, 26,925 square foot lot, and fronts on River Street with vacant lots to either side. Three Royal Poincianna trees (*Delonix regia*) line the sidewalk in front of the building. A blacktop-paved parking lot occupies the rear of the property behind the building. The rear parking lot was improved and enclosed in 1966 by a CMU retaining wall.

VII. Statement of Significance

The Gilliland Building was constructed in 1958, following designs prepared by Kenneth Sato. It is architecturally significant as a very good example of a small retail/office building constructed in Hawaii in a modern style in the 1950s. It is typical of its period in its design, materials, workmanship, and construction methods. It is also important as a very good example of the architectural work of Kenneth Sato.

The façade of the building is distinguished by its folded plate canopy and segmental arched barrel vaulted roof. Folded plate technology originated in Germany in 1925 when it was utilized to cover a coal bunker. The idea spread to Russia and its earliest known use in the United States was in a 44'-0" x 77'-0" San Francisco warehouse in 1935. Other warehouses in California utilized this new type of roof, but as late as 1949, it was still not well known in the United States. An assembly of flat plates, or slabs, inclined in different directions and joined along their longitudinal edges, the folded plate structural system is capable of carrying loads without the need for additional supporting beams along mutual edges. Typically made of cast *in situ* or precast reinforced concrete, these roofs require less material, are cheaper to construct, are simpler to manufacture than other shells and are economical over long spans that need to be free of internal columns. Following World War II the distinctive, eye catching appeal of the form slipped nicely into the mid-century modern architectural vocabulary, celebrating the new age, the wonders of technology and its accompanying affluence. The only other use of a folded plate canopy utilized on a commercial building in Honolulu's downtown area is at 1165 Bethel Street.

The segmental ached, barrel-vaulted, concrete roof also enunciated the advances in concrete technology as applied to the building trade. The designer of the building, Kenneth Sato, also utilized this form at the Waimalu Shopping Center in both the roof and first-story canopy.

As such the building stands as an excellent example of the dramatic and eye-catching mid-century modern movement in Hawaii. The building's folded plate canopy, combined with its concrete barrel vaulted roof, make it a distinctive architectural statement, celebrating the plastic qualities of concrete and the variety of forms it could assume. There are no other comparable buildings in the city.

Kenneth Sato (1908-2006) was born in Kahuku, on Oahu, graduated from McKinley High School, and received a degree in civil engineering from the University of Hawaii in 1930. He owned the Kewalo Steel Company, and designed a number of churches, apartments, and low rise commercial buildings, and worked on a number of public schools and bridges for the Territory of Hawaii. Other works include the Waiola Congregational Church in Lahaina, the Miyamoto Buildings at 1331 Nuuanu Avenue, and the Door of Faith Church on Young Street in Honolulu.

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VIII. Survey Analysis

Please provide your observations about the survey; including constraints and opportunities for future research and/or survey in connection to this site.

The survey was straight-forward and encountered no problems. Two of the ground floor commercial spaces were boarded up and could not be accessed. It would be of value to learn more about the designer of the building, Kenneth Sato, and at some point an inventory should be compiled on folded plate roofs in Honolulu.

IX. References

City and County of Honolulu Real Property Tax records.

Polk's City Directories for Honolulu, 1957-1965.

Building Permit 142902.

"Kenneth Kenkichi Sato," obituary. *Honolulu Advertiser*, June 28, 2006: p. B-2.

Hibbard, Don. *Buildings of Hawaii*. Charlottesville, Virginia: University of Virginia Press, 2011.

Wang, Y. P. (1965). *Analysis of Continuous Folded Plate Roofs (Master Thesis), Missouri University of Science and Technology*. Accessed on September 16, 2016 at http://scholarsmine.mst.edu/cgi/viewcontent.cgi?article=7693&context=masters_theses.

Wilby, C. B. *Concrete Folded Plate Roofs*. Burlington, Massachusetts: Elsevier Butterworth-Heinemann, 1998.

Internet Archive. "Concrete Shell and Barrel Roofs." Accessed on September 16, 2016 at https://archive.org/stream/ConcreteShellAndBarrelRoofs/ConcreteShellAndBarrelRoofsCca113193_djvu.txt.

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X. Continuation Sheet

Please use this sheet those that follow to attach additional information about the site; including, but not limited to additional floor plans, drawings, photographs, maps, etc.



Figure 1: View of River Street façade, showing typical store front spaces with folded plate concrete awning at first floor and second floor offices with thin shell concrete barrel arched roof. View facing southeast.

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Figure 2: “John R. Gilliland Sr. Building, 1958” nameplate and stair railing detail. View facing northeast.

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Figure 3: Open entry door detail at south end of second floor hallway. View facing southwest.

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Figure 4: Overall at second floor hallway, showing original 4-pane office door and barrel arched roof.

View facing southeast.

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Figure 5: Typical second floor office space with barrel arched roof. View facing east.

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Figure 6: First floor former Chikara Mochi commercial space. View facing southeast.

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Figure 7: First floor New Hanagasa Inn. View facing northeast.

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Figure 8: First floor Uptown Café bar. View facing northeast.

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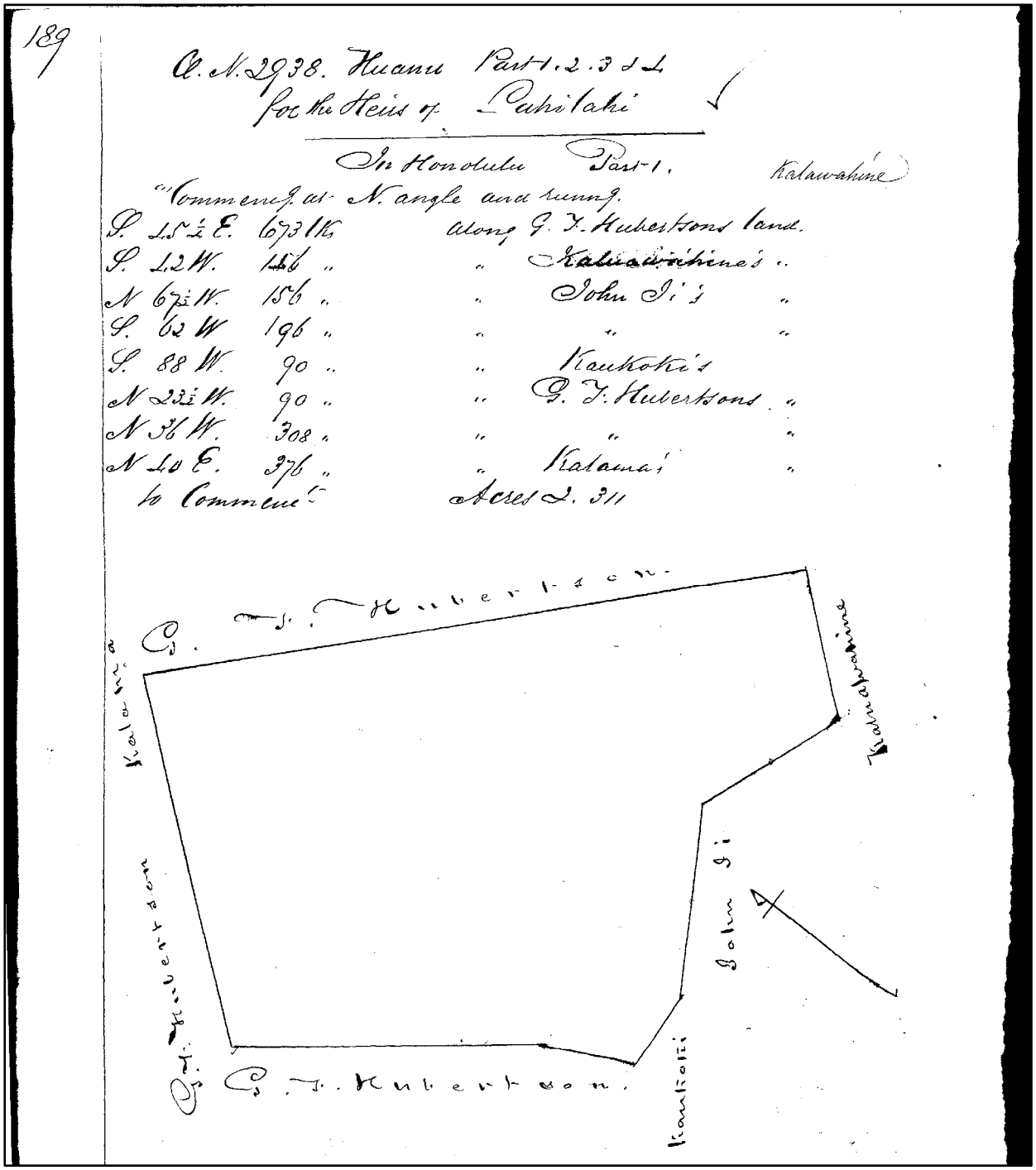
Appendix B LCA Documentation

LCA 2938:1


189

R. N. 2938. Kuanu Part 1. 2. 3 & 4
for the Heirs of Pahi'ahi

In Honolulu Part 1. Kalawahine

"Commencing at N. angle and running.

S. 15½ E.	673 lks	along	G. J. Hutchinson's land.
S. 12 W.	156 "	"	Kaliawahine's "
N 67½ W.	156 "	"	John Ii's "
S. 62 W.	196 "	"	" "
S. 88 W.	90 "	"	Kaukoki's
N 23½ W.	90 "	"	G. J. Hutchinson's "
N 36 W.	308 "	"	" "
N 40 E.	376 "	"	Kalamai "
to Commence		Acres 2. 311	

LCA 11082

1025

Helu 11,082. Kaukoke.

Ua koi mai oia no kona Mau **wahi ma** Kalawahine, Honolulu Aina **no ka mea, ua loaa ia ia keia** Mau **wahi** no Makahopu i ka M. H. 1836.

a ua noho keakea ole ia a hiki i keia manawa.

Oia ka makou e hooko nei no Kaukoke **he kuleana hoi kona malalo o ke ano Alodio. Ina e uku mai oia i ko ke Aupuni hapa ; alaila, ua ku pono ia ia ka palapala sila Alodio.**

Pono nae ia ia ke uku no ka hookolokolo a me ka hooholo ana i ka olelo. Penei,

		$	ken.
W. L. Lee	*No ka rumi a me ke pai ana i ka olelo ma ka Nupepa,*	1	
G. M. Robertson	*No ke kope ana i ka olelo koina* 1 *aoao,*		50
J. H. Smith	*No ka palapala kii,*		50
	No ka hana ana i ka la 3. Mei 1850	1	
	No ke kope ana i na olelo a na hoike, 2 aoao.	1	50
Joane di	*No ka ana ana i ka la* 20, Novemaba 1850, 3 Aina	7	50
J. Kekaulahao	*No ke kope ana,*	1	50
	No ka hooholo ana i ka olelo, 2 Dekemaba 1850.	2	50
		$ 16.00	

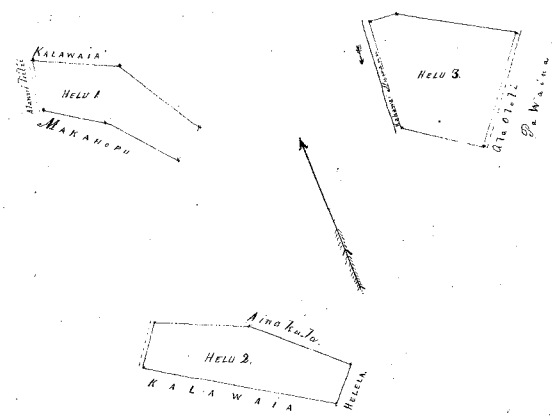
Eia na palena,

Anaia e James Dillon

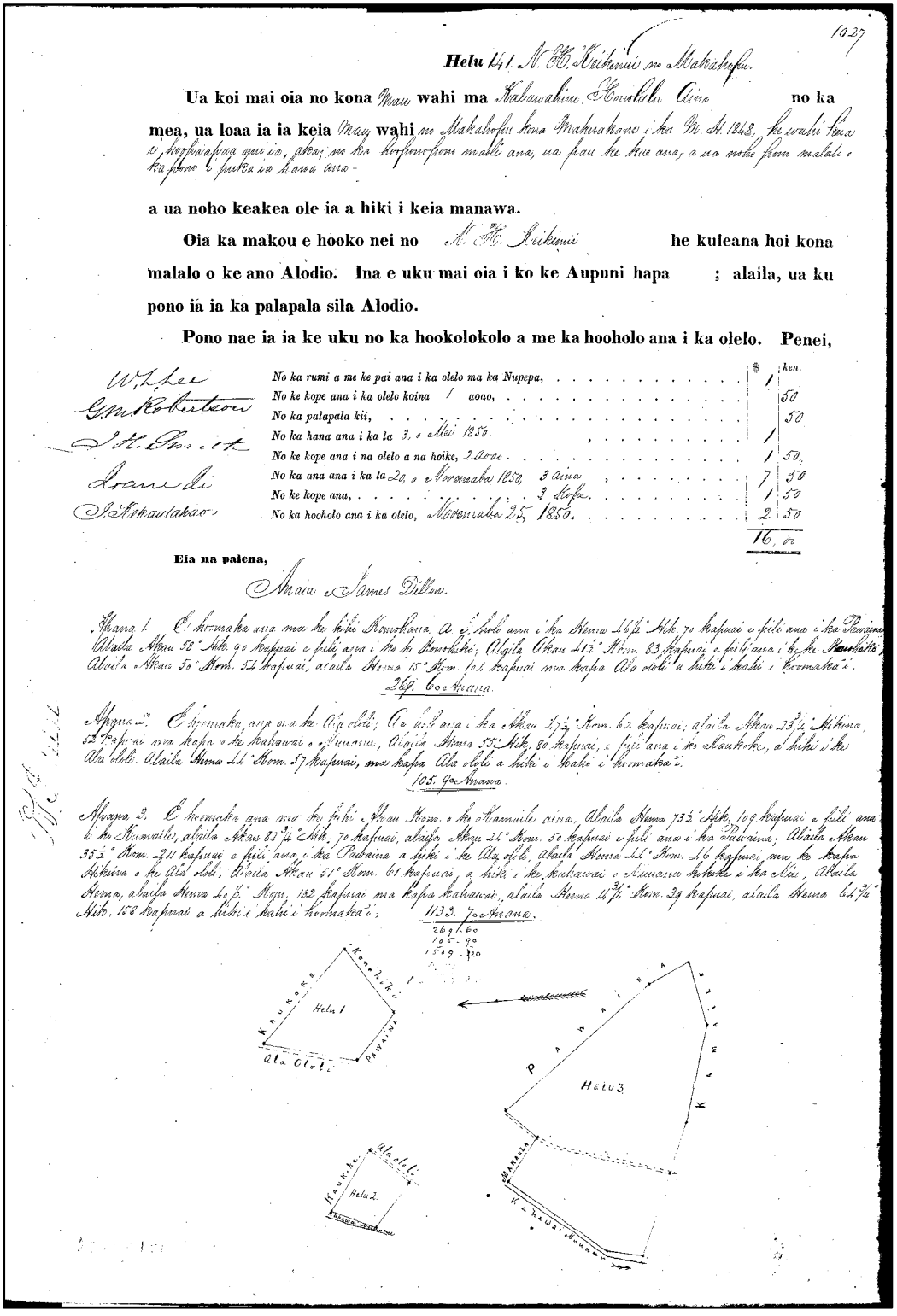
Helu 1. E hoomaka ana ma ke kihi Hema. A e holo ana i ka Akau 41½° Kom. 83 kapuai, e pili ana i ko Makahopu. Alaila holo Akau 50° Kom. 54 kapuai, alaila Akau 15° Hik. 48 kapuai e pili ana i ke Alanui hilii. Alaila Hema 57° Hik. 80 kapuai e pili ana i ko Kalawaia; alaila Hema 21° Hik. 95 kapuai, alaila Hema 61° Kom. 37 kapuai a hiki i kahi i hoomaka'i.
194 Anana

Helu 2. E hoomaka ana ma ke kihi Hema; A e holo ana i ka Akau 53° Kom. 174 kapuai e pili ana i ko Kalawaia; Alaila Akau 32½° Hik. 46 kapuai, e pili ana i ke Ala olelo. Alaila Hema 58½° Hik. 90 kapuai. Alaila Hema 39½° Hik. 102 kapuai e pili ana i ka aina kula; Alaila Hema 47° Kom. 40 kapuai e pili ana i ko Helela.
247¼ Anana.

194
247.25
Helu 3. E hoomaka ana ma ke kihi Komohana A e holo ana i ka Akau 5° Hik. 107 kapuai e pili ana i ke kahawai o Nuuanu. Alaila i ka Hema 79¾° Hik. 26 kapuai. Alaila Hema 60¼° Hik. 114½ kapuai a hiki i ke Ala olelo; alaila Hema 38½° Kom. 118 kapuai ma ke Ala olelo, a me ka Pawaina; alaila Akau 55° Kom. 80 kapuai a hiki i kahi i hoomaka'i.
330.8 Anana.



LCA 141



1027

Helu 141. M. H. Keikumii no Makahapu.

Ua koi mai oia no kona Mau **wahi ma** Kahauhimu Honolulu Aina **no ka mea, ua loaa ia ia keia** Mau **wahi** no Makahapu kona Makuakane i ka M. H. 1848, he waahi kona e hoopaapaa mai ia, aku; no ka hoopomopomo mahele ana, ua pau ke kua ana, a ua noho kona malalo o kapono e pukaa na kanaka ana -

a ua noho keakea ole ia a hiki i keia manawa.

Oia ka makou e hooko nei no M. H. Keikumii **he kuleana hoi kona malalo o ke ano Alodio. Ina e uku mai oia i ko ke Aupuni hapa ; alaila, ua ku pono ia ia ka palapala sila Alodio.**

Pono nae ia ia ke uku no ka hookolokolo a me ka hooholo ana i ka olelo. Penei,

W. L. Lee
G. M. Robertson
I. H. Pi. ke
Loane Ii
I. Kanaulakao

		ken.
No ka rumi a me ke pai ana i ka olelo ma ka Nupepa,	1	
No ke kope ana i ka olelo koina / aono,		50
No ka palapala kii,		50
No ka hana ana i ka la 3, o Mei 1850.	1	
No ke kope ana i na olelo a na hoike, 2 Aoao	1	50
No ka ana ana i ka la 20, o Novemaba 1850, 3 Aina	7	50
No ke kope ana, 3 Aoao	1	50
No ka hooholo ana i ka olelo, Novemaba 25 1850.	2	50
	16	00

Eia na palena,

Maia James Dillon.

Apana 1. E hoomaka ana ma ka kihi Komohana a E. hele aku i ka Akau i ka Hema 16½° Hik. 70 kapuai e pili ana i ka Pauma Alaila Akau 58° Hik. 90 kapuai e pili aku i ka ko Konohiki; Alaila Akau 41½° Kom. 83 kapuai e pili ana i ka Kuahaka, Alaila Akau 50° Kom. 55 kapuai, alaila Hema 15° Kom. 50 kapuai ma kapa Ala olelo a hiki i kahi i hoomaka'i.

269. 60 Aoana.

Apana 2. E hoomaka ana ma ke Ala olelo; A e hele aku i ka Akau 2½° Kom. 62 kapuai; alaila Akau 23½° Hikina, 52 kapuai ma kapa o ke Kuahawai o Kuwanua, Alaila Hema 55° Hik. 80 kapuai, e pili ana i ko Kauhoke, a hiki i ke Ala olelo. Alaila Hema 11 Kom. 57 kapuai, ma kapa Ala olelo a hiki i kahi i hoomaka'i.

105. 90 Aoana.

Apana 3. E hoomaka ana ma ke kihi Akau Kom. o ka Kamaile aina, Alaila Hema 73½° Hik. 109 kapuai e pili ana i ka Kamaile, alaila Akau 83¾° Hik. 70 kapuai, alaila Akau 24° Kom. 50 kapuai e pili ana i ka Pukaina; Alaila Akau 35½° Kom. 211 kapuai e pili ana i ka Pukaina a hiki i ke Ala olelo, alaila Hema 11° Kom. 46 kapuai, ma ke kapa Hikina o ke Ala olelo. Alaila Akau 51° Kom. 61 kapuai, a hiki i ke kuahawai o Kuwanua hoheke a ka Kai, Alaila Hema, alaila Hema 64½° Kom. 132 kapuai ma Kapa kuahawai, alaila Hema 41¾° Kom. 39 kapuai, alaila Hema 64¾° Hik. 158 kapuai a hiki i kahi i hoomaka'i.

1132. 70 Aoana.

269. 60
105. 90
1509. 20

LCA 715

99

Helu 715 Kalama

Ua koi mai oia no kona hau wahi ma Makaaku Honolulu aina no ka mea, ua loaa ia ia keia hau wahi mamua o ke kau ana o na Kanawai i ka wa o Kaahumanu I e ola ana.

a ua noho keakea ole ia a hiki i keia manawa.

Oia ka makou e hooko nei no Kalama he kuleana hoi kona malalo o ke ano Alodio. Ina e uku mai oia i ko ke Aupuni hapa ; alaila, ua ku pono ia ia ka palapala sila Alodio.

Pono nae ia ia ke uku no ka hookolokolo a me ka hooholo ana i ka olelo. Penei,

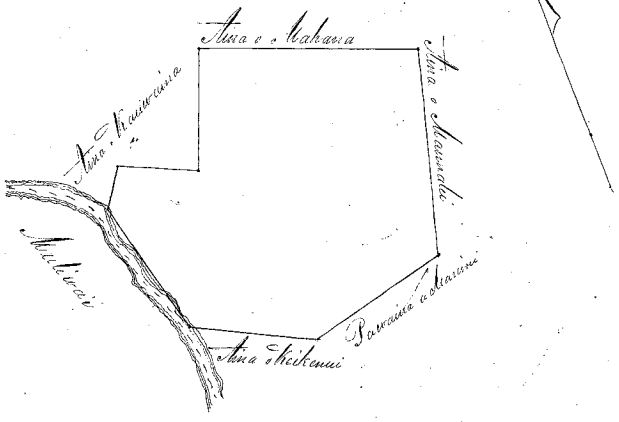
Wm L. Lee
Ke Kakauolelo
M. M. Kanaka
o Honolulu

	$	ken.
No ka rumi a me ke pai ana i ka olelo ma ka Nupepa,	1	
No ke kope ana i ka olelo koina 1 aoao,	1	
No ka palapala kii,		50
No ka hana ana i ka la 16 Pepeluari 1848	1	
No ke kope ana i na olelo a na hoike, 1 aoao		75
No ka ana ana i ka la 20, 29 Novemaba 1848	2	50
No ke kope ana,		50
No ka hooholo ana i ka olelo, Apelila 10, 1849	2	50
	9	75

Eia na palena, Anaia e D. Kalanikahua

Apana 1.

Ke ano o ka ana ana i ka aina o Kalama ma Makaaku o Honolulu mokupuni Oahu. E hoomaka ana i ke ana ana ma ke kihi o Ahaa o ka pa waina a Manini, ma ke kihi Komohana hui o ka aina o Maunalei. A hiki aku ka waa mua ma kahi a Manini olelo ma ke kuauna hui o ka Aina 17° Hikina 2 Kaulahao 16 1/2, hiki i ke kihi Hema o ka aina o Makaaku, huli Akau 67° Komohana 2 Kaulahao 22 3/12 kapuai, hiki i ke kihi Hikina o ka aina o Kauwaina, huli Hema 23° Komohana 1 Kaulahao 19 10/12 kapuai, hiki i ke kihi Hema o ka aina o Kauwaina, huli Akau 61° 30' Komohana 88 1/2 kapuai, hiki i ke kihi Komohana o ka aina o Kauwaina, huli Hema 31° 30' Komohana 28 5/12 kapuai, hiki i ka lepo mauka o ka mullwaa e kahe ana i kahi e kau ai na moku, huli Hema 12° 30 Hikina 1 Kaulahao 31 4/12 kapuai, hiki i ke kihi Akau o ka Aina o Keikemui, mauka hui o ka mullwai, huli Hema 61° 30' Hikina 1 Kaulahao 25 9/12 kapuai, hiki i ke kihi Hikina o ka aina o Keikemui e pili ana i ka pa waina a Manini; alaila huli i kahi e hoomaka'i ke ana ana Akau 75° 30' Hikina 1 Kaulahao 38 1/2 kapuai. Eia ka ili 5 Kaulahao, 82 Anana 31 kapuai.



Appendix C Pollen Analysis

Pollen Analysis

Bruce G. Phillips
BGP Consulting LLC

In advance of development at the Halewai‘olu Senior Residences, Honolulu *ahupua‘a*, Honolulu District, Island of O‘ahu, Cultural Surveys Hawai‘i (CSH) identified multiple buried agricultural deposits, designated CSH 1. Also identified were habitation layers, designated CSH 2. Trench 7 was excavated in the area consisting primarily of agricultural deposits (CSH 1); six sediment samples were collected from Trench 7. Trench 9 was excavated an area where both habitation and agricultural layers were found (CSH 2); four sediment samples were collected. Subsequently, the ten sediment samples were submitted to BGP Consulting for pollen analysis, with the goal of identifying past cultural activities in the area and characterizing vegetation communities at the time of deposition.

The project area is situated on former floodplain of and immediately adjacent to Nu‘uanu Stream. Elevation is approximately 10 feet above mean sea level. Annual rainfall averages 24 to 31 inches (Giambelluca et al. 1986). Soils in the project area are mapped as Ewa silty clay loam, deep, well drained soils that formed in alluvium on alluvial fans and river terraces (Soil Survey Staff 2019). *Mauka* of the project area are soils classified as Kaena clay, deep, poorly drained soils that formed in alluvium and colluvium, primarily found on alluvial fans. Prior to urban development and channelization of Nu‘uanu Stream in the early 20th century, the area served for many centuries as irrigated *lo‘i kalo* (taro wetland fields).

Before Polynesian agriculture transformed coastal lowlands, natural vegetation along the coastline would have primarily been characterized as Coastal Dry communities, having elevations less than 50 feet and rainfall less 47 inches per year (Gagne and Cuddihy 1990). Local edaphic conditions determine the makeup of various herblands, grasslands, shrublands, forests, and mixed communities. In turn, these communities can be further differentiated based on dominant species, such as *‘aki ‘aki* Grassland dominated by *Sporobolus virginicus*. Many areas once covered with extensive grasslands are now dominated by alien species, such as *kiawe* (*Prosopis pallida*) forests.

Coastal Wet communities occur on all of the main islands. Native examples, however, were much disturbed by the early Hawaiians, as nutrient-rich floodplains, marshes, and lowland riparian areas were turned into fishponds and irrigated farmlands (*lo‘i*) for the cultivation of *kalo* (taro; *Colocasia esculenta*). Much of these same farmlands were subsequently turned into rice fields. Common natural constituents would have included members of the sedge family (Cyperaceae) and grass family (Poaceae).

Methods

Sediment samples were sent to the Palynology Laboratory, Texas A&M University, College Station, for pollen extractions (fern-type spores are herein included under “pollen”). Sample bag contents were thoroughly mixed and 10-gram subsamples were taken. Approximately 19,666

grains of *Lycopodium* were added to estimate pollen concentration. Samples were then treated with 10 percent hydrochloric acid to reduce carbonates, followed by a swirl-and-decant step (Mehringer 1967):136–137) to reduce the heavier matrix fraction (greater than 180 µm). Silicates were reduced by a hydrofluoric acid treatment of approximately 20 hours. Heavy liquid flotation in zinc bromide (with a specific gravity of 1.9) was followed by acetolysis to further reduce organics. The remaining residues were washed with water and alcohol, stained with saffranin, and suspended in glycerol.

At BGP Consulting facilities, extracts were mounted and examined at a viewing power of 400X on an Olympus BHTU compound microscope. Typically, standard counts of 100- to 200-pollen grains are conducted. In the current project, however, total pollen concentrations were insufficient for standard counts. In this case, entire slides were scanned and all grains were counted. Identifications were aided by BGP Consulting reference material and by keys (Selling 1946, 1947; Moore et al. 1991). Each fossil pollen grain was identified to the generic level when possible. If a grain could not be differentiated from similar genera, it was identified to the family level. Pollen grains that were broken, corroded, or degraded beyond recognition were assigned to the "degraded" category. Percentages of types were calculated for each sample. Pollen concentrations were calculated with the following formula:

$$\text{Concentration (grains/gram)} = \frac{\text{pollen grains counted}}{\text{tracers counted}} \times \frac{\text{tracer concentration}}{\text{sample weight}}$$

Results

No samples were sufficient for standard counts and pollen was entirely absent from four samples. Twenty-five types of pollen and spores are identified (Table 1). The assemblage is diverse, primarily reflecting relatively dry shrub-covered terrain; forested land upslope is indicated by fern spores. In samples containing pollen, the percentages of degraded grains range from relatively high (19.3) to very high (39.5), indicating poor preservation within the sample set (Tables 2 and 3). Therefore, the data likely are not an accurate reflection of the original pollen assemblage. That is, they probably do not convey a realistic scenario of the former floral landscape.

The most common types are low-spine Asteraceae (*Ambrosia* type), Cheno-Am (*aweoweo*), spurge family, and grass family, all in variable percentages. Sedge family pollen, representing wetlands, is present, but found in relatively low percentages. Polynesian introductions include *niu* (coconut), *wauke* (paper mulberry), and possibly *ti*. Historic introductions are pine and *kiawe* (mesquite). Large grass pollen grains could represent *laiki* (rice) and/or *ko* (sugarcane) farming in the area, or the collection of *pili* grass (*Heteropogon contortus*). In practice, *laiki*, *ko*, and *pili* grass pollen grains have common traits under light microscopy and cannot be distinguished (Moore et al. 1990); SEM is required.

Considerations

Despite the widespread practice of *lo'i kalo* cultivation across O'ahu, *Colocasia* pollen is rare in suspected and even known agricultural settings, such as the current project area. Typically propagated from a corm/root cutting or from a shoot, *kalo* rarely blooms or sets seed naturally (Onwueme 1999). Like other members of the Araceae (arum family), *kalo* produces relatively small quantities of pollen when in bloom. Some varieties have never been known to flower. *Kalo* is harvested at a time when the edible corm has its highest nutritional content and is most viable for propagation. This occurs before flowering, further reducing the possibility of pollen deposition.

Degraded pollen assemblages are not uncommon in archaeological contexts (Hall 1981, 1985; Holloway 1981). Unfortunately, there currently are no standards and guideline by which analysts record and report degraded pollen grains (Bryant and Hall 1993), often making comparisons difficult. Many factors cause pollen deterioration, and the process is not well understood. Mechanical factors can cause grains to be crushed or torn apart, whereas chemical agents can affect their structural integrity. Chief among chemical agents is the cycle of wetting and drying (Holloway 1989). It is possible that pollen in sediments at or near the water table have suffered deterioration due to fluctuations in groundwater level, caused by climatic (e.g., rainfall) and/or oceanic (e.g., sea levels) factors, or possibly even tides. Also affecting the number and distribution of pollen types is the amount of sporopollenin in grains of different plants. Sporopollenin is a highly resistant organic compound that allows pollen to be preserved in sediments and other settings. Because Cheno-Ams and Asteraceae have large amounts of the compound and hence preserve well, they are often over-represented in the pollen record. Soil chemistry can also cause pollen to degrade. For example, ancient soils in the American Southwest are highly basic, causing deterioration. This likely is not the case in young A and C horizons along the O'ahu coast. Mechanical processes include degradation during fluvial transport and repeated trampling in high-traffic areas. Although technically not a process of degradation, mechanical sorting can affect the amount of pollen in sediment samples. That is, during fluvial transport, pollen acts like clastic particles, moving and settling according to water velocity; the largest grains are deposited in coarse silt and fine sand, while smaller grains settle in fine silt and clay. As most samples come from clay layers, mechanical sorting likely is not responsible for the differences in pollen concentrations. Although Stratum IIc is somewhat gravelly and potentially affected by sorting, the layer in Trench 7 has the highest pollen concentration in the assemblage (296 grains per gram), albeit extremely low. Although soil pH may not have caused pollen deterioration, some other chemical factor might be to blame, such as reduction/oxidation reactions. A likely cause is repeated cycles of wetting and drying near the water table, though this may not be the only cause.

Discussion

Within Trench 7, no data is available for Strata IIa and IIb, the habitation layers (CSH 2). Representing CSH 1, Stratum IIc contains a single large grass grain, potentially reflecting nearby *laiki* or *ko* farming. The grain might also be intrusive. In the lower portion of the sample column (Stratum IIe), Asteraceae and Cheno-Ams dominate, suggesting a shrubland environment. Grass pollen gradually increases over time, becoming dominant in Stratum IIc. If taken at face value,

the data suggest a shift from shrubland to grassland. A high portion of fern spores in Stratum IIc might reflect increased input from upslope, and more overbank flooding.

The Trench 9 assemblage is more diverse than Trench 7, having greater numbers of types in every productive sample. No distinct temporal trends are apparent. Rather, the assemblage is characterized by a relative abundance of less common types, particularly the spurge and madder families. A spike of *Helianthus*-type pollen in Stratum IId also is unusual. Under normal circumstances, these data would be interpreted as reflecting local stands of herbs and shrubs. Preservation, however, must be taken into account. Higher percentages of large grass grains in Strata IIb and IIc than in Trench 7 are stronger evidence for *laiki* or *ko* farming. *Kiawe* pollen in Stratum IIb and pine pollen in Stratum IId indicate disturbance throughout the sample column.

Although preservation must be considered, there are some distinct differences between the Trench 7 and Trench 9 assemblages. As mentioned above, the Trench 9 assemblage is more diverse, suggesting a richer flora. Trench 7 is dominated by grass and shrub pollen versus the abundance of rather unusual types in Trench 9, further suggesting contrasting vegetation. Given the proximity of the trenches, these differences are more likely the result of taphonomic factors than actual variation on the former landscape.

In recent investigations of suspected *lo‘i kalo* fields in Waikiki (e.g., Phillips 2019), the common element of pollen assemblages was high proportions of sedge family pollen, often in excess of 60 percent. While *kalo* pollen was extremely rare or absent, the abundance of sedge pollen reflected the wetland environment in which the staple was cultivated. In some cases, relatively high percentages of large grass grains indicated samples were from *laiki* fields. In the current project, sedge pollen is found low percentages or absent, suggesting sample columns in neither trench represented wetland environments.

Regarding pollen preservation, although degradation such as that found in the current assemblage is uncommon, it is not unprecedented. As part of the Transit Corridor Project (Phillips 2016), a highly degraded assemblage was obtained from a site in Waikele *ahupua‘a*: only five of ten samples contained pollen. The norm, however, are pollen-rich assemblages with concentrations in excess of 5,000 grains per gram in nearly every sample (e.g., Phillips 2018).

In summary, six of ten samples contain pollen. Within the six, the percentages of degraded grains are very high and total pollen concentrations extremely low, both indicating very poor preservation. The pollen data should be viewed in this light. Polynesian introductions include *niu, wauke,* and possibly *ti*, all found in scarce quantities. Large grass pollen grains might reflect *laiki* and/or *ko* farming in historic times. If taken at face value, pollen data from the Trench 7 sequence suggest a change over time from shrublands to grasslands. No such landscape change transformation is seen in Trench 9. Rather, a diverse assemblage and a relative abundance of otherwise unusual types reflects a rich local flora. Given the proximity of the trenches, the differences likely are due to poor pollen preservation rather than actual conditions of former vegetation. Sedge pollen is scarce and no distinct indication of a former *lo‘i* is present.

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Soil Survey Staff

2019 Web Soil Survey. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Available online at the following link: https://websoilsurvey.sc.egov.usda.gov/. Accessed [12/4/2019].

Appendix D Wood Taxa Identification

IARII INTERNATIONAL ARCHAEOLOGICAL RESEARCH INSTITUTE, INC.
ARCHAEOBOTANICAL SERVICES • WOOD IDENTIFICATION LABORATORY

October 3, 2019

Ena Sroat
Cultural Surveys Hawai‘i, Inc.
P.O. Box 1114
Kailua, Hawaii 96734

RE: Analysis of charcoal samples from Halewaiolu Senior Housing Project, Honolulu, HONOLULU 87 [WIDL1916]

Greetings Ena,

The report for analysis of your charcoal samples from the Halewaiolu Senior Housing Project, Honolulu (HONOLULU 87) is attached. Don't hesitate to contact me if you would like to discuss the results. Digital microscope photographs of some of your specimens have been archived at IARII. Should you wish to view the images or use them in a report, please let me know.

Best regards,

Jennifer Huebert
(808) 946-2548, Ext. 107
jhuebert@iarii.org

* * * * * * * * *

METHODS

The freshly fractured transverse, tangential, and radial facets of selected charcoal fragments were examined with an epi-illuminated microscope at magnifications of 50–500X. Taxonomic identifications were made by comparing observed anatomical characteristics with those of woods in the IARII reference collection. Vouchers associated with this collection have been verified and archived at the Department of Botany, University of Hawai‘i at Mānoa. Other published references, including books, journal articles, technical documents, and wood atlases, were also consulted. Material that was not examined was returned to its original packaging and marked as residual.

PREHISTORIC & HISTORIC INVESTIGATIONS • CULTURAL RESOURCES ASSESSMENTS & PLANNING • PALEOENVIRONMENTAL STUDIES

HAWAI'I: 2081 Young Street, Honolulu, Hawai'i 96826-2231 - Tel: (808) 946-2548 - Fax: (808) 943-0716 - E-mail: HonoluluOffice@iarii.org
GUAM: P.O. Box 22621, GMF, Guam 96921 - Tel/Fax: (671) 646-7552 - E-mail: GuamOffice@iarii.org

RESULTS

WIDL No.	Taxon	Plant Part & State of Preservation	Count	Weight (g)	Comment
Sample 1, Fe.2, Test Unit 1, 111 cmbs, IIIa					
1916-1	*Prosopis pallida* (*kiawe*)	Wood charcoal	18	0.4	
1916-2	Indeterminate hardwood	Wood charcoal	1	0.01	
Sample 2, Fe.4, Test Unit 1, 128-131 cmbs, IIIa					
1916-3	*Metrosideros polymorpha* (*‘ōhi‘a lehua*)	Wood charcoal	2	0.06	
1916-4	Indeterminate	Parenchyma charcoal	1	0.01	Thin; superficially resembles nutshell but is not endocarp
1916-5	*Psychotria* sp. (*kōpiko*)	Wood charcoal	1	0.01	
1916-6	*Hibiscus* sp. (*hau* and others)	Wood charcoal	1	0.04	
1916-7	*Acacia* cf. *koa* (*koa* and others)	Wood charcoal	5	0.08	
1916-8	Indeterminate hardwood	Wood charcoal	4	0.06	

The two submitted samples were moist and were dried before analysis. Many fragments became quite brittle and/or crumbly; this can occur naturally when charcoal is subject to wetting and drying while in the ground, or when it is dried too quickly after recovery from a moist matrix. Most of the examined material was small, well under 1 cm, and all fragments but one were wood charcoal.

Most of Sample 1 is *kiawe*. The unidentified residual fragments are all extremely small; they all appear to more *kiawe* charcoal. Sample 2 contained a variety of wood from native taxa, including *‘ōhi‘a lehua*, *koa*, possibly *hau*, *kopiko*, and a fragment of some type of thin parenchymous (storage) tissue.

None are the short-lived materials preferred for radiocarbon dating. The parenchyma (1916-4) is not likely to have much inbuilt age, however, as soft storage tissues such as these are not long-lived. Some *Psychotria* (1916-5) are smaller trees (but see below), and *Hibiscus* are fast-growing, so either might be the next best choice to date. *Koa* and *‘ōhi‘a lehua* trees can be very long-lived. Several papers regarding the selection of charcoal for radiocarbon dating can be provided upon request (Allen and Huebert 2014, Athens and Rieth 2013). Consider choosing one fragment of material for radiocarbon dating, when possibly, to eliminate the chance of dating more than one event (Ashmore 1999; also see Higham and Petchey 2000:Table 4).

A brief systematic review is given below; for more information on Hawaiian plants, suggested references are the Manual of the Flowering Plants of Hawai‘i (Wagner et al. 1999; also available online at http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/query2.cfm) and the Bishop Museum’s Hawaiian Ethnobotany Online Database (http://data.bishopmuseum.org/ethnobotanydb).

TAXA REVIEW

LEGUMINOSAE / FABACEAE (Pea family)

Acacia koa A. Gray (*Koa*)

One of the largest endemic trees in Hawai‘i, *koa* may attain 35 m in height at higher elevations (Wagner et al. 1990:641-642) and not branch until 12 m or more above the ground (Rock 1913:175). This straight trunk was especially useful for canoes as well as paddles, and surfboards (Malo 1951:126, 223). *Koa* trees which are also found at lower elevations in the dry regions, have a distribution range of 60 to 2,060 m on all of the main Hawaiian Islands except Ni‘ihau and Kaho‘olawe (Wagner et al. 1990:641).

Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth (*Kiawe*, mesquite)

This tree, native to Peru, Colombia and Ecuador, is believed to have been introduced into Hawai‘i by Father Bachelot who grew a tree from a single seed in 1828. Today the 8-20 m tall trees may dominate low elevation, dry, and disturbed sites and can be found in vegetation from behind the beaches up into degraded dry forests, ranging in elevation from sea level to 610 m on all of the main Hawaiian Islands (Wagner et al. 1990:693).

MALVACEAE (Mallow family)

Hibiscus sp. (*Hau, hau hele, koki‘o,* and others)

In the Hawaiian Islands, there are 7 native shrub and tree species of *Hibiscus*, several of which include endemic varieties, and at least 3 naturalized historic introductions (Wagner et al. 2005-onwards). *H. tiliaceus*, or *hau*, occurs commonly in moist areas from sea level to over 1,000 m in elevation on most of the main islands (Wagner et al. 1990:888). Most species feature showy flowers. In addition to ornamental plantings, the bark of *hau* was sometimes used to make *lei*, there are herbal remedies made from different parts of the various species, and the soft wood was used for many purposes including canoe outriggers, fishnet floats, and in the native fireplow by rubbing a harder wood against it (Abbott 1992).

MYRTACEAE (Myrtle family)

Metrosideros polymorpha Gaud. (*‘Ōhi‘a lehua*)

This endemic species ranges in habit from prostrate shrubs to tall trees and in distribution from sea level to 2200 m elevation in many ecological situations on all of the main Hawaiian Islands (Wagner et al. 1990:967). The hard wood was once used for making spears and mallets, idols, posts and rafters for houses, and enclosures around temples (Buck 1957:87; Malo 1951:20; Neal 1965:638).

RUBIACEAE (Coffee family)

Psychotria sp. (*Kōpiko*)

The 11 endemic species of *Psychotria* in the Hawaiian Islands are found in mesic to wet forests. Five species are known on O‘ahu; these species range from small trees to trees up to 20 m tall (Wagner et

al. 1990:1160-1170). *Kōpiko* was previously used as firewood, and also to make kapa logs (Malo 1951:21).

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Appendix E Radiocarbon Dating Analysis

Beta Analytic
TESTING LABORATORY

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

November 06, 2019

Ms. Gina Farley
Cultural Surveys Hawaii
P.O. Box 1114
Kailua, HI 96734
United States

RE: Radiocarbon Dating Results

Dear Ms. Farley,

Enclosed is the radiocarbon dating result for one sample recently sent to us. As usual, specifics of the analysis are listed on the report with the result and calibration data is provided where applicable. The Conventional Radiocarbon Age has been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

The reported result is accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 standards and all pretreatments and chemistry were performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 program participated in the analysis.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result. The reported d13C was measured separately in an IRMS (isotope ratio mass spectrometer). It is NOT the AMS d13C which would include fractionation effects from natural, chemistry and AMS induced sources.

When interpreting the result, please consider any communications you may have had with us regarding the sample. As always, your inquiries are most welcome. If you have any questions or would like further details of the analysis, please do not hesitate to contact us.

Thank you for prepaying the analysis. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,



Ronald E. Hatfield Director

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Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Gina Farley — Report Date: November 06, 2019

Cultural Surveys Hawaii — Material Received: October 25, 2019

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 541406	**Sample 1**	**200 +/- 30 BP**	IRMS δ13C: -24.3 o/oo
(53.5%)	**1728 - 1810 cal AD**	**(222 - 140 cal BP)**	
(26.0%)	**1646 - 1690 cal AD**	**(304 - 260 cal BP)**	
(15.9%)	**1925 - Post AD 1950**	**(25 - Post BP 0)**	

Submitter Material: Plant Tissue
Pretreatment: (charred material) acid/alkali/acid
Analyzed Material: Charred material
Analysis Service: AMS-Standard delivery
Percent Modern Carbon: 97.54 +/- 0.36 pMC
Fraction Modern Carbon: 0.9754 +/- 0.0036
D14C: -24.59 +/- 3.64 o/oo
Δ14C: -32.70 +/- 3.64 o/oo (1950:2019)
Measured Radiocarbon Age: (without d13C correction): 190 +/- 30 BP
Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

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BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL13)

(Variables: d13C = -24.3 o/oo)

Laboratory number **Beta-541406**

Conventional radiocarbon age **200 ± 30 BP**

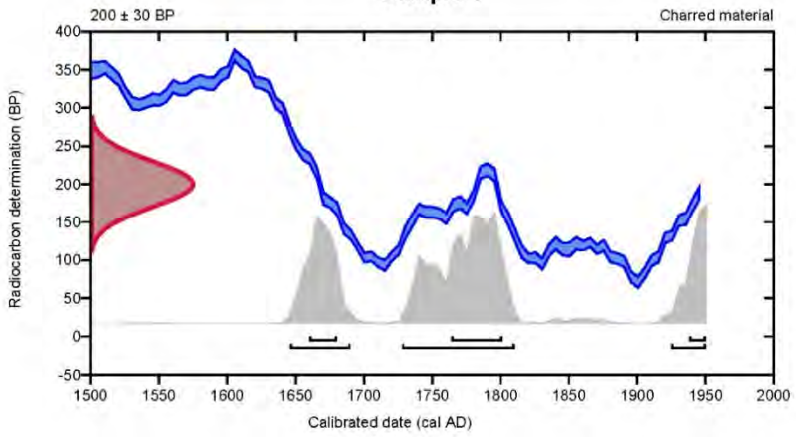
95.4% probability

(53.5%)	1728 - 1810 cal AD	(222 - 140 cal BP)
(26%)	1646 - 1690 cal AD	(304 - 260 cal BP)
(15.9%)	1925 - Post cal AD 1950	(25 - Post cal BP 0)

68.2% probability

(36.8%)	1764 - 1801 cal AD	(186 - 149 cal BP)
(19.2%)	1660 - 1680 cal AD	(290 - 270 cal BP)
(12.3%)	1938 - Post cal AD 1950	(12 - Post cal BP 0)

Sample 1



Database used

INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

Beta Analytic Radiocarbon Dating Laboratory
4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

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Appendix O

Downtown Neighborhood Board No. 13 Meeting Record

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, AUGUST 6, 2015
PAUAHI COMMUNITY CENTER

CALL TO ORDER: Chair Alvin Au called the meeting to order at 7:01 p.m., **with a quorum of eight (8) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present: Alvin Au, Anthony Chang, Jasmine Mancos, Dolores Mollring, Chu Lan Shubert-Kwock, Tom Smyth, Robert Tom, and Stanford Yuen.

Board Members Absent: None.

Guests: Captain James Hull (Honolulu Fire Department); Lieutenant Stephen Silva and Sergeant Jeffrey Nagai (Honolulu Police Department); Diana Ronquillo and Clare Ann Ronquillo (Neighborhood Citizen's Patrol); Pat Lee (Honolulu Rail Transit Project); Lee Stack (Chinatown Improvement District); Nicole Reid (Arts District Merchants Association); John Chang (Mayor Kirk Caldwell's Representative); Liz Char and Sandy Pfund (City and County of Honolulu); Councilmember Carol Fukunaga; Sonny Le (Representative Karl Rhoads Office); Senator Suzanne Chun Oakland; Sam Lanai (Scarlet Honolulu LLC); Wesley Fong and Howard Lum (Chinatown Community Center Association); Gwen Abella (Winston Hale); James McCarthy, Jonathan Saupe, Sandra Pohl, Stanley Yon, Kelly Griffith, Ronald Higa, John Donaldson-Selby, Jenny Grondin, David Segarra, Bradley Rhea, Rhonda Jones, Julia Cornell, Serena Hashimoto, and Ray Rudie; Ericson Cristobal (Videographer); Neil Baarde (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS: Board members introduced themselves at this time.

FILLING OF ONE (1) AT-LARGE VACANCY

- James McCarthy – McCarthy noted that he has lived in the Downtown area for eight (8) years but has been a part of the community for 15 years. McCarthy noted that he was the pioneer for the Chinatown lofts and is a faculty member of SEEK Middle School. McCarthy noticed all the changes going on within the neighborhood and would like to be a member of the Board.
- Jonathan Saupe – Saupe noted that he has been a resident living in the heart of Chinatown for five (5) years. He was the former Executive Producer at Hawaii News Now, but is now an owner of a retail boutique, Barrio Vintage. Barrio Vintage was started four (4) years ago as a small pop-up concept and has grown to one (1) of the State's most popular destinations for vintage clothing and treasure hunters. Saupe sees the main issues facing the Downtown/Chinatown area as homelessness, affordable housing, community space development, and noted it is in need of a push for more tourism dollars to find their way to the historic streets of Chinatown.
- Sandra Pohl – Pohl noted that she has lived and grew up in the Chinatown area and commented that it is the best place. Pohl noted that she also owns a store and has been around for at least 15 years. Pohl noted she is a committed volunteer and a community advocate and commented that she is working to make the Downtown/Chinatown area a better place. Pohl noted that she has helped organize many different clean ups and events including the Walk on the Wild Side event. Pohl commented that she sees the things occurring in the area every day and noted that she wants to make a difference.
- Stanley Yon – Yon noted that he lives at Honolulu Park Place and is currently working at St. Andrew's Priory and is responsible for the grounds and the maintenance. Yon noted that he lives and works right in the center of the Downtown/Chinatown community. Yon is also on the Board of Directors of a 175 low income senior housing and noted that he is active in multiple locations as well as the Downtown/Chinatown area. Before coming to Hawaii, Yon noted he was a part of Los Angeles Economic Development and has worked in the Foreign Trade Zone. Yon commented that he also served on the Planning Advisory Committee as well as attending most of the Downtown Board Meetings and listens, observes, and noted that he has learned many things about the community. Yon commented that he would like to engage in the community as well as adding his skills and personality to the Board because he shares the same vision for the Downtown/Chinatown area.

Hearing no other nominations, Chair Au called for the vote.

- **James McCarthy received no votes, 0-8-0.** (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Smyth, Tom, and Yuen.)
- **Jonathan Saupe did not receive enough votes to fill the vacancy, 4-4-0.** (**AYE**: Au, Chang, Mancos, and Smyth.) (**NAY**: Mollring, Shubert-Kwock, Tom, and Yuen.)
- **Sandra Pohl did not receive enough votes to fill the vacancy, 1-7-0.** (**AYE**: Smyth) (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Tom, and Yuen.)
- **Stanley Yon did not receive enough votes to fill the vacancy, 3-5-0.** (**AYE**: Mollring, Shubert-Kwock, and Yuen.) (**NAY**: Au, Chang, Mancos, Smyth, and Tom.)

Comments – Smyth noted that the Board has seen the way the votes are spread and noted that some members can change their minds.

Chair Au called for the vote.

- **James McCarthy received no votes, 0-8-0.** (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Smyth, Tom, and Yuen.)
- **Jonathan Saupe did not receive enough votes to fill the vacancy, 4-4-0.** (**AYE**: Au, Chang, Mancos, and Tom.) (**NAY**: Mollring, Shubert-Kwock, Smyth, and Yuen.)
- **Sandra Pohl did not receive enough votes to fill the vacancy, 1-7-0.** (**AYE**: Smyth) (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Tom, and Yuen.)
- **Stanley Yon did not receive enough votes to fill the vacancy, 3-5-0.** (**AYE**: Mollring, Shubert-Kwock, and Yuen.) (**NAY**: Au, Chang, Mancos, Smyth, and Tom.)

Comments – Chair Au thanked the candidates and noted that he was very impressed and asked the candidates to return to the September 2015 Board meeting, if they are still interested in filling the vacancy.

Chair Au deferred the filling of the vacancy to the September 2015 meeting.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Captain James Hull reported the following:

- July 2015 Fire Statistics – There were 6 structure, 0 wildland, 0 vehicle and 4 rubbish fires; 130 medical emergencies, 1 search and rescue, and 34 miscellaneous calls for service. There were no major or unusual incidents.
- Fire Safety Tip – Hawaii is in hurricane season from June 2015 to November 2015. The HFD encourages every family to take the necessary steps to prepare for a hurricane; every family should have an evacuation plan, survival kit, and to know how to remain informed about hurricane disasters. More information about hurricane preparedness can be found at the Department of Emergency Management's (DEM) website at www.honolulu.gov/dem.

Questions, comments, and concerns that followed:

1. Fire Alarm – Mollring apologized to her neighbors and the community because of the fire alarm that was blaring around 1:00 a.m. to 2:00 a.m. Mollring commented that she looked outside her window and saw HFD not moving, so Mollring knew it was not anything serious. Mollring noted that the new system that was installed should only ring in the event of a real fire. Captain Hull responded that in his experience fire alarms are the most frequent calls that HFD responds to and noted that when HFD goes to inspect, the people stay in their rooms even though there is a possibility of a real fire. Captain Hull reminded the community that if an alarm goes off, the residents should go outside and stay outside to help HFD do their job. Tom noted that the same thing occurred around the same time at Capitol Place.
2. Fire Lane – John Donaldson-Selby asked if Fort Street Mall is a usable fire lane. Captain Hull responded that HFD can use Fort Street because of the stand pipes if needed because the high rises on Fort Street Mall.

Honolulu Police Department (HPD) – Lieutenant Stephen Silva and reported the following:

- July 2015 Crime Statistics – There were 8 motor vehicle thefts, 4 burglaries, 74 thefts, 18 unauthorized entries into a motor vehicle (UEMV), 36 assaults, 6 sex assaults, 2 graffiti and 3 drug offenses, for a total of 2,399 calls for service.

- Safety Tips: Hurricane Preparedness was emphasized and the importance of having a "To-go" kit and "Stay" kit. Lt. Lee explained what each kit should contain. Also, in an emergency, listen for updated information and seek the nearest shelter.

Questions, comments and concerns followed:

1. Crime Trends – Shubert-Kwock noted that she was surprised in the thefts and assault numbers and asked if Lieutenant Silva can give any information. Lieutenant Silva responded that the crime that has increased could be because it is summer time.
2. Cameras – Shubert-Kwock raised a concern and asked about the status of cameras. Lieutenant Silva responded that there are three (3) nonfunctional cameras and the rest are all functional. Shubert-Kwock noted that HPD needs to request the refund for the camera work and asked if it would be possible. Lieutenant Silva responded that he was not aware of the situation but will make some inquiries.
3. Arrests – Mancos asked if the reported drug incidents count as arrests made. Lieutenant Silva responded that he is guessing three (3) arrests were made but it could be possible that no arrests were made. Mancos asked if HPD should encourage to community, that if someone sees something, they should say something. Lieutenant Silva responded that HPD always encourages the community to call and report. Serena Hashimoto raised a concern about the number of drug arrests because her shop calls HPD about drugs at least 20 times a day and noted that everyone knows Chinatown's reputation which is upsetting to the Neighborhood Board. Lieutenant Silva responded that the statistics given are the patrol statistics and noted that the NARC/VICE unit has their own statistics as well. Donaldson-Selby noted that the Board should request the NARC/VICE unit to the meetings for statistics. Lieutenant Silva noted that he will forward the request.

Neighborhood Citizen's Patrol – Mollring reported that her group was a part of the National Citizen's Patrol Walk. Over 50 people came to walk down Pauahi Street then to Aala Park where a potluck was held. Calare Ann Ronquillo noted that the River/Pauahi group also participated in the walk and noted that their block captain thanked HPD for their work and for always patrolling near River Street and Pauahi Street. Ronquillo noted that their group members are dwindling, but noted that HPDs efforts are making the area cleaner and safer.

COMMUNITY CONCERNS:

Hawaii Pacific University (HPU) – No representative present; no report provided. Smyth commented that the large fence that used to enclose Aloha Tower has been taken down but many small fences have been put up. Smyth noted that the public can no longer walk through the campus area or the center lane.

Safe Haven – No representative was present. No report was provided.

Honolulu Rail Transit Project – Pat Lee reported the following:

- Transit Savings Report – Every month, the American Public Transportation Association (APTA) releases a Transit Savings Report which shows how much a person can save on a monthly and yearly basis by taking public transit. In Honolulu, individuals who ride public transportation instead of driving can save more than $12,000 per year. APTA determines the cost of the average monthly transit pass and compares it with the costs of driving, including gas, maintenance, tires, insurance, registration and parking fees.
- Rail Systems – Rail is about transportation and land use, but also about social equity. There are many people who are too young or too old to drive, unable to drive or cannot afford to own and operate a car. These residents depend heavily on public transportation to get to their jobs, school, run errands and carry on with their lives. Rail would improve public transportation by increasing efficiency and reducing travel times compared to a bus-only trip, due to its frequent service and reliability. Bus routes would be redesigned to feed into the rail system from other areas to service more riders. Rail will also enable Transit Oriented Development near stations and along its route. TOD brings new retail and commercial opportunities, but also new opportunities for affordable housing in proximity to good public transportation. This would help those in the income groups who need housing and depend on public transportation.
- Construction Highlights – These are the latest construction highlights: 267 foundation shafts have been placed, 187 columns erected, 3,090 segments casted, and 139 spans. The West Oahu Farrington Highway Guideway portion (from East Kapolei to Pearl Highlands) is now 66% completed. The Kamehameha Highway portion (from Pearl Highlands to Aloha Stadium) is 39% completed, and the Rail Operations Center in Waipahu is 74% completed. Over three (3) miles of guideway are completed and the rail guideway is now proceeding into the Waipahu area. For traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Chinatown Business & Community Association (CBCA) – Chu Lan Shubert-Kwock reported the following:

- Mid Pauahi Crosswalk – The mid Pauahi crosswalk is finally getting built. This crosswalk was initiated by CBCA back in 2009-2010 and are thankfaul it will be completed by mid-August 2015.
- Chinatown Meetings – CBCA attended two (2) important Chinatown meetings regarding the senior housing on River Street, working on the needs of the community. These include the Chinatown Community Center which will be 10,000 square feet and will be multipurpose community center. CBCA asked that the immigrants be honored with trees and flowers brought to the islands to remind them of their ancestral homes.
- Dr. Sun Yat Sen's 150th Anniversary – The Dr. Sun Yat Sen's 150 anniversary will be honored with a new garden at Foster Gardens. $150,000 has been approved by the City Council. CBCA thanks all those who worked hard for this to happen.
- Bills 44 and 46 – The Bills passed 3rd reading and will expand sit/lie hours in Union Square and the Chinatown Mall by Aala Park.
- Kalihi Business Association Meeting – Shubert-Kwock and Director Judi Rod attended the Kalihi Business Association Meeting to learn more about their concerns. CBCA learned that business owners have suffered due to illegal camping and filth. Some of the homeless are not willing to move into shelters for various reasons. CBCA asks that shelters which received money from tax dollars do more, leaving them on the sidewalks is not helping the community.
- Bill 49 – Bill 49 allows the sale and consumption of liquor on Fort Street Mall and other Chinatown Malls is a bad bill introduced by Councilmember Fukunaga with little input from tenants and residents around the mall.
- Economic Revitalization – CBCA is very unhappy that the City is pushing more liquor on the public streets and malls under the misguided belief that it is "economic revitalization" for Downtown and Chinatown. 589 Chinatown merchants and residents petitioned the Mayor, HLC, DTS, and Councilmember Carol Fukunaga that they do not think liquor and noise help the area. Promoters leave after close up time, but leaving drunks for the community to deal with.
- Homeless – CBCA is hopeful that Governor Ige convened a high powered committee on Homelessness and CBCA hopes it will help the City to produce more permanent housing for the homeless and also provide help to the mentally ill.
- Chinatown Heroes Banquet – CBCA will be hosting the 6th Chinatown Heroes Banquet on Saturday, October 17, 2015 at the Golden Palace. CBCA will be honoring Councilmember Fukunaga, for the Chinatown bathrooms; David Chang, Little Village Noodle House and Epic; KHON2 news for extensive coverage of Chinatown issues; Hawaii 5-0 for bringing business/highlighting Chinatown; Ernie Loo, the long time unsung hero of Chinatown. Tickets are $35/person and sponsor tables are $1,000 each for a group of 10.
- Chinese Moon Festival/Concert – On Saturday, September 12, 2015 at 2:00 p.m. at the Mission Memorial Building, 550 South King Street, there will be a Chinese Moon Festival/Concert. Admission is free.
- Next Meeting – The next CBCA Chinatown Dim Sum meeting is scheduled for Tuesday, August 11, 2015, Empress Restaurant from 8:30-10:00 a.m.

Chinatown Improvement District (CID): Lee Stack reported that the Sustaining Chinatown: The next one (1) - hour series to learn how to maintain and protect historic structures is scheduled for Tuesday, August 25, 2015 at the Lyons Associates, 45 N. King Street. Presentations are free, but reservations are recommended. For more information visit www.cidchinatownhawaii.org.

Arts District Merchants Association (ADMA): Nicole Reid highlighted the following:

- First Friday – ADMA is hosting a public health crawl, which will go through different businesses. All businesses have agreed and will give discounts to all those who wish to be a part of the event. The money made will go to a non-profit.

Public:

- Representative Brower – Gwen Abella raised a concern about Representative Tom Brower and noted that what he did to the shopping carts was wrong. Abella noted that she is not glad he got beat but it was criminal act what he did and commented that it did not help anyone.
- Queens Hospital – Ray Rudie raised a concern about the Canal Street off ramp and asked if the City can increase parking on the street. Rudie noted that it has yet to be done and asked for an update because Lisbon Street is too narrow for parking and a two (2) way street and suggested that it be turned into a one (1) way street with parking since the streets adjacent are both two (2) way streets.

ELECTED OFFICIALS:

Mayor Kirk Caldwell's Representative – John Chang reported the following:

- Mango Jam Honolulu – The "Mango Jam Honolulu" showcases the mango and how it brings the many cultures in Hawaii together. On stage there will be community groups and entertainers. There will also be an open market. The event is sponsored by the Hawaii Maoli and the Mayor's Office of Culture and the Arts (MOCA), at the Fasi Civic Center, from 4:30 p.m. to 9:30 p.m. on Friday, August 7, 2015, and 10:00 a.m. to 9:30 p.m. on Saturday, August 8, 2015.
- Title VI Program Report Public Hearing – As a recipient of Federal Transit Administration (FTA) funds, DTS-PTD is required to comply with FTA requirements that prohibit discrimination on the basis of race, color, national origin, gender, or disability in all programs, activities, and services. DTS-PTD must submit a Title VI Program report to FTA every three years. DTS-PTD is in the process of finalizing the report and welcomes any public participation/input. All public input regarding the report will be included in the final version to be submitted to the Transportation Commission and City Council for approval. Upon approval, the report will be submitted to FTA in December 2015. For more information call 768-8374, email thebusstop@honolulu.gov, or visit http://www.thebus.org/AboutTheBus/DraftTitleVIProgram.asp.
- Bill 48 – In regards to Bill 48, sitting does not apply to bus stops. If an individual is lying at the bus stop, Bill 48 applies. Officers checked the area at various times of the day and did not observe anyone lying at the bus stops. If anyone sees any individual lying down, please call 911.

Questions, comments and concerns followed: Action Summit in Chinatown – Shubert-Kwock noted that the Action Summit in Chinatown was a success and asked if a report can be compiled and given to the Board. Mollring noted that her son in law called the Federal Justice Department (FJD) who said that the FJD is saying that the Sit and Lie Bill is unconstitutional.

Councilmember Carol Fukunaga – Councilmember Fukunaga distributed her report and highlighted the following:

- Hiroshima Commemoration – Today, there was a commemoration for the 70th anniversary of the bombing of Hiroshima.
- Clean Ups – The next Clean Up will be Saturday, August 15, 2015. The area's that will be cleaned will be Sun Yat Sen Park and College Walk. Participants asked if they can paint the bridge red to better deter graffiti. Councilmember Fukunaga noted that hopefully it will work with the Administration.
- Bills 44 and 46 – Bills 44 and 46 were adopted by Council and has passed 3rd reading. Councilmember Fukunaga noted that the bills will probably get the support needed by Mayor Caldwell. Bill 44 will extend the hours for other businesses that stay open later. It was noted that the Mayor may not support this bill.

Questions, comments and concerns followed: Bill 49 – Shubert-Kwock noted that she attended the Bill 49 hearing and noted that the Director allowed to have a bathroom at the mall and noted that liquor licenses cannot be issued. Councilmember Fukunaga responded that the Department of Parks and Recreation (DPR) and Liquor Commission allows consumption of liquor in controlled areas and are trying to be more flexible for Fort Street Mall. Donaldson-Selby asked if the public can get the minutes from that hearing. Chair Au noted that a member of the Board also sits on the Board of Directors too, and commented that they can give him the information. Stack raised a concern and noted that it is great to have a dialogue but there needs to be at least two (2) people to have a dialogue. Howard Lum thanked Councilmember Fukunaga for Bill 46 and noted that she has done a great job for Chinatown.

Charter Commission – No representative was present; no report was provided.

Governor David Ige's Representative – No representative present; no report provided.

Senator Suzanne Chun Oakland – Senator Chun Oakland was present earlier in the meeting. A report was available.

Representative Scott Saiki – No representative present; A report provided.

Representative Karl Rhoads – Chair Au read the following report:

- Update – The City replaced the "parking" sign that points to the Chinatown Municipal Parking lot on Beretania Street.
- Drug Dealing Activity – Received a complaint regarding suspecting drug dealing activity across the street from 1315 River Street. The issue was forwarded to HPD.

- Hotel Street – Received a complaint regarding bicyclist riding down Hotel Street on the wrong side of the road and ignoring traffic lights. This happens most often at the intersection of Hotel Street and Smith Street. The issue has been forwarded to HPD.

NEW BUSINESS:

Discussion on Transfer of Business from The Empire Inc. to Scarlet Honolulu, LCC – Shubert-Kwock noted that she did not write a letter to the Liquor Commission but Wayne Luke has been notified. Shubert-Kwock commented that the Board does not know what is going on but it is a concern of the community and the new owner should at least come to the Board for dialogue. The Liquor Commission does ask for the Neighborhood Boards opinion and commented that the Board lost their opportunity. Sam Lanai commented that he is the owner of Scarlet Honolulu, LCC and noted that he has also opened a LGBT night club, which has been very successful in the three (3) weeks it has been open. The Scarlet Honolulu is small but the other half will be a Tiki lounge and restaurant, like a new upscale happy hour. Chair Au noted that it was nice to meet Lanai and hear what he had to say and offered a spot on the agenda to Lanai once his business is established to give an update. Mollring noted that all the reports received have been awesome and welcomed Lanai to the neighborhood.

Discussion on Murphy's Bar and Grill Street Closure – Chair Au announced that the 19th annual Pigskin Pigout fundraiser for the UH Football program will be on Thursday, August 27, 2015. Shubert-Kwock noted that the event will help cancer patients and commented that the community needs to be notified for courtesy. Chair Au noted that the Liquor Commission was informed and told Murphy's Bar and Grill that they need to come to the Neighborhood Board to present and notify the community. Chair Au commented that Murphy's Bar and Grill are usually good events that are controlled.

Community Update and Discussion for the Affordable Senior Rental Housing on River Street – Sandy Pfund reported that there were some concerns about the design and the possible impact it will have on the neighbors. Pfund noted she has been working with the architects to make sure that the plans are refined and commented that it takes time to evaluate all of the designs and will take longer than originally anticipated. Pfund noted that the architects will reduce the number of exceptions and will come back to the Board in September 2015 with another update for the Board and the community. Pfund commented that the Kuhio Park Terrace Community Center tour is occurring and noted that Senator Chun Oakland is the holder of the master list of those who are interested, the community can call or email Senator Chun Oakland for an appointment tour.

Questions, comments, and concerns that followed: Community Center – Shubert-Kwock noted that the community center is one (1) of the best things to happen to Chinatown and noted she hopes the community center can be functional in the long run and asked for feedback on the project. Pfund responded that they will for an advisory committee because they are trying to make a flexible committee that is interested in the design as well.

Discussion – Wesley Fong noted that he has met with the City agencies and Michaels Co. and noted that the Chinatown Community Center Association (CCCA) would like to echo the comments and recommendations of the Historic Hawaii Foundation on preserving the historic and cultural character of Chinatown especially the location of the proposed Chinatown Community Center and affordable senior housing project on River Street. To preserve the character of the neighborhood surrounding the site, the density of the proposed housing project needs to be at a height that will not destroy the historic and cultural character of the mauka area of Chinatown bordered by Vineyard Boulevard. As mentioned, there are temples, a shrine, low rise Chinatown Cultural Plaza, low rise Chinese Schools, low rise apartment complexes all located along or in proximity of the River. Across Vineyard Boulevard is the Kwan Yin Temple and Foster Garden. This site above Beretania Street is surrounded by a unique blend of cultural and historic sites making up the unique character of the area and this character must be preserved. Lum thanked the City, Pfund, Councilmember Fukunaga, and the Neighborhood Board for being sensitive to the community's concerns and the temple.

Questions, comments, and concerns that followed:

1. Addiction – Smyth raised a concern about the occupants who do not have an alcohol or drug dependency and asked how those who are dependent will be taken care of. Fond responded that he will leave it up to the City because he cannot dictate people. Shubert-Kwock raised a concern about the recommendations of representatives because CBCA is not on the list. Shubert-Kwock noted that she is disappointed for not being recognized. Fong responded that he has a letter from CBCA and noted that some members are on the Board of Directors. Fong commented that it is not for CCCA to determine and noted that they only makes suggestions.
2. Compromise – Reid raised a concern and asked what would happen if the City does not comply with the rules. Fong responded that it is a matter of compromise and it is not an all or nothing kind of deal. If there is

no compromise, CCCA will not encourage or sponsor the project. Pfund noted that there was a meeting held where those comments were made and commented that the City does notice the opinions but cannot put the comments in the documents until completed, but the City is always open to suggestions to improve the fair housing situation for all.

APPROVAL OF JULY 2, 2015 MEETING MINUTES – This item was deferred until the September 2015 meeting.

BOARD BUSINESS AND REPORTS:

Chair's Report=

- Chair Au reported that he invited the Department of Emergency Management (DEM) to come to the September 2015 meeting to inform the community about the Downtown/Chinatown danger zones as well as the safe zones.
- Shubert-Kwock asked if the Board can have an update from Hawaii Theater and from DPR to talk about the concrete box at Sun Yat Sen Park and to also talk about the park rules and the malls. DPR needs to educate the Board. Sam Moku also needs to come and give an update on Aloha Tower. Mollring noted that she took the tour of Aloha Tower and noted that there is a large room where the Neighborhood Board can have meetings and asked the other Board members to think about it. Shubert-Kwock noted that the room is a 350 square foot room with a nice view and an AC unit.
- Tom raised a concern about the Mayor's Homeless Task Force and noted that the City is trying to move the homeless out of Kakaako. The concern is that the homeless might settle in the Downtown/Chinatown area. Chair Au responded that there is a shelter behind the transit building on Dillingham Boulevard. The family is willing to sell their house for the homeless.
- Shubert-Kwock noted that in regards of the Chinatown Action Summit, the Board should invite Harrison Rue and raised another concern about the lack of signage for the new hygiene center because it would be helpful to let the public know that the bathroom hours are from 7:00 a.m. – 7:00 p.m. and asked if the Chair can make the request.

Other Liquor License Applications or Street Closure Events – No report.

Future Agenda Item Requests – No report.

Neighborhood Commission Updates – No report.

Treasurer's Report – Treasurer Mollring reported a $300.27 remaining balance. The report was filed.

City and County Affairs – No report.

Shubert-Kwock departed the meeting at 8:48 p.m.; Seven (7) members present.

Oahu Metropolitan Planning Organization (OahuMPO) – Smyth reported the committee is working on changing the by-laws to reflect the changes in the federal laws.

ANNOUNCEMENTS:

- Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, September 3, 2015, Pauahi Community Center at 7:00 p.m.
- Neighborhood Citizen's Patrol (NCP) – The NCP meets each Tuesday on the Diamondhead side of Kukui Plaza at 8:00 p.m. Please consider joining the patrol and supporting its efforts as they express their service and pride in our Downtown/Chinatown community.
- Broadcasts – Videotape of Board meetings are scheduled to be shown on the third Thursday, and on the second and fourth Saturday on `Olelo Channel 49.

ADJOURNMENT: The meeting adjourned at 8:50 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant
Reviewed by: Nola J. Frank, Neighborhood Assistant
Final Review: Chair Alvin Au, Secretary Robert Tom

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, NOVEMBER 5, 2015
PAUAHI COMMUNITY CENTER

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:03 p.m., **with a quorum of seven (7) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang, Jasmine Mancos, Dolores Mollring, Jonathan Saupe, Chu Lan Shubert-Kwock (arrived at 7:35 p.m.), Tom Smyth, Robert Tom, and Stanford Yuen (arrived at 7:43 p.m.).

Board Members Absent – None.

Guests – Fire Fighter 1 Gerald Higgins and Captain Ken Kahahawai (Honolulu Fire Department); Major Calvin Tong, Lieutenant Stephen Silva, Sergeant Stuart Yano, and Sergeant Michael O'Neill (Honolulu Police Department); Laurel Johnston (Governor David Ige's Office); Noelle Wright (Mayor Kirk Caldwell's Representative); Representative Karl Rhoads; Andrew Tang (Department of Planning and Permitting); Pat Lee (Honolulu Rail Transit Project); Allen Stack Jr. (Chinatown Improvement District); Nicole Reid (Arts District Merchants Association); Clare Ann Ronquillo (River/Pauahi Citizens Patrol); Gwen Abella (Winston Hale); Todd Iocovelli and James Donnelly (Make-A-Wish); Greg Payton (Safe Haven); Nathanial Howard and Anya McClent (Hawaii Pacific University); Cameron McElroy (Real Office Centers); Monika Mordasin and Karen Seddon (Michael's Development Company); Rochelle Nagata-Wu (WRNS Studios); Michelle Bartell (American Savings Bank); Paul Mallory (Michaels Corporations); Lori Lum, Howard Lum, Kehaulani Lum, Roland Louie, and Wesley Fong (Chinatown Community Center Association); Vina Quick, and Ronald Higa; Ericson Cristobal (Videographer); Neil Baarde (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Board members introduced themselves at this time.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Fire Fighter 1 Gerald Higgins reported the following:

- October 2015 Statistics – There were 5 structure, 17 vehicle, 1 nuisance, 1 cooking, and 21 activated alarms. There were 183 medical emergencies, 5 motor vehicle collision with pedestrians, 7 motor vehicle collisions, 1 mountain rescue, 1 ocean rescue, 1 hazardous material incident, with 7 unusual incidents.
- Fire Safety Tip – This holiday season, consider a fire-resistant, artificial Christmas tree. If a natural tree is purchased, select one (1) that is as fresh as possible. Cut off at least 1/2 '' at the bottom end of the trunk prior to placing the tree in a stand to allow the tree to absorb water. Keep the tree hydrated and away from heat sources. Use noncombustible materials for decorations. Choose only Underwriter's Laboratory approved electrical decorations and follow the manufacturer's instructions for installation. Do not overload the extension cords.

Honolulu Police Department (HPD) – Lieutenant Stephen Silva reported the following:

- October 2015 Crime Statistics – There were 9 motor vehicle thefts, 10 burglaries, 89 thefts, 52 unauthorized entries into a motor vehicle (UEMV), 29 assaults, 1 sex assault, 1 graffiti and 6 drug offenses, for a total of 2,605 calls for service.
- UEMV Prevention Tips
    - Lock the Doors – Simply locking the car doors will deter those who might just be waiting around for an easy target. Suspects have been known to check car door handles to see if the car is unlocked.
    - Keep Car Neat – Keep shopping bags and other items out of sight. A car that appears empty is not appealing to thieves.
    - Stash Before Parking – Stash and conceal all items before paring the car. Suspects have been known to conduct surveillance while looking for an opportunity to steal again. During the holiday season, do not leave bags in the car for thieves to steal.
    - Park Visibly – Always park under a lighted area or where it is visible to the public. Never behind a

wall or bushes where visibility is blocked and offers good concealment to the suspects who want to break in.
- o Layer Defenses – Increase the safety of the car with a vehicle alarm or steering wheel anti-theft wheel lock. These measures deter theft.
- o Lastly – Ensure the vehicle registration and insurance cards are hidden inside the vehicle. Thieves are known to steal the vehicle's paperwork, read the owners address on the registration, and burglarize the home.

Questions, comments and concerns followed: Thanks – Howard Lum thanked HPD and the City for sweeping and patrolling along Kukui Street and Vineyard Boulevard. Lum noted that he has noticed much change since the sweep and commented that the neighborhood feels safer.

Narco/Vice Commander – Major Calvin Tong introduced himself and was available to take questions.

1. Trends – Smyth raised a concern about the crimes that are not on the report and noted that the Board has been asking if the trend is going up or down. Major Tong responded that he has not noticed any real trends and asked the public to keep their eyes open and make the report so Narco/Vice can patrol or take action. Major Tong noted that the hotline number to report anonymously is 723-3933.
2. Drug Activity – Tom asked if most of the drug activity occurs in the daytime or the nighttime. Major Tong responded that the activity is never certain because all of the reported activities are always different. Tom noted that he heard of HPD foot patrolling the area but has never seen them and asked for more foot patrol. Lieutenant Silva responded that there are foot patrolling officers including in the evening. They might not be visible but they are around.
3. Suspicious Coffee Shop – Miki Lee raised a concern about a coffee shop on Nuuanu Avenue and Smith Street and noted that it does not feel safe for women to walk by. Major Tong responded that the coffee shop could be on HPDs radar and asked for extra details on the side. Patrick Wilson noted that the coffee shop being mentioned, definitely has suspicious activity going on for years. Wilson also raised a concern about being offered drugs across the street and "The Arcade" on Hotel Street and asked why the locations are not being investigated. Major Tong responded that he understands the community's frustration but HPDs resources are the issue. HPD is doing their best but can always do better and asked if Wilson reported to HPD after being offered drugs. Wilson noted that he lives in the heart of Waikiki and has noticed all the activity slowly disappear and noted that it should not take that much resource for the Downtown/Chinatown area. Major Tong responded that HPD will not stop doing their best.

Neighborhood Citizen's Patrol – Mollring reported that her group been walking every Tuesday night and announced that on Saturday, November 14, 2015 a sign waiving event will be at Kekaulike Mall from 8:00 a.m. A potluck will follow after the event. Clare Ann Ronquillo reported that the River/Pauahi Street block captain would like to thank HPD for their assistance with the homeless and the rowdy teenagers that have been out past their curfew.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No representative present; no report provided.

Safe Haven – Greg Payton reported the following:

- Moving – Safe Haven will be moving from Beretania Street to Pauahi Hale in February 2016.
- Statistics – One (1) person was discharged to their family on the mainland and one (1) person moved in. The activity center is awesome and is doing well.
- Landlord Summit – The Landlord Summit will be on Tuesday, November 17, 2015. Governor Ige and Mayor Caldwell will be in attendance to help find all the landlords in Hawaii in order to help the homeless. Payton is looking for a willing landlord to rent to a program who helps the homeless. Payton noted that they will be trying to get a loading zone area in front of Pauahi Hale.

Honolulu Rail Transit Project – Hearing no objections, Chair Au tabled the report until Pat Lee arrives.

Chinatown Business & Community Association (CBCA) – Hearing no objections, Chair Au tabled the report until Shubert-Kwock arrives.

Chinatown Improvement District (CID) – Allan Stack reported that CID is a part of the planning process for the beautification project with the City for Smith Street Park. Stack noted that they are completing the final draft of the plan that will include planters and hedges.

Arts District Merchants Association (ADMA) – Nicole Reid highlighted the following:

- Clean Up – The clean up scheduled for November 2015 has been put on hold. ADMA will inform the public when a date has been set.
- Downtown Shop Around – The Downtown shop around will be on Friday, November 27, 2015 and is a Black Friday event with certain shops in the Downtown/Chinatown area. The event is also partnering with Uber, for less traffic congestion.
- Street Parking Stalls – There has been an uptick in the rental of public street parking stalls. Many streets had private stalls before and Reid encouraged the Board to invite DTS to explain why certain stalls are permitted.

Public Concerns

- Rubbish on the Streets – Resident Miki Lee distributed some photos of rubbish on the streets of Downtown and Chinatown and noted that as a result of the rubbish and the homeless the area smells of urine and feces, and is unattractive to residents and visitors.
- Empty Spaces in Buildings – Gwen Abella raised a concern about the buildings in the Chinatown area being empty and asked why the space cannot be used to house the homeless.
- HPU Student Body President – The HPU Student Body President Nathaniel Thomas Howard thanked the Board for having him and noted that he will try to be in attendance from now on. Chair Au commented that Sam Moku is the HPU representative but has missed the last few meetings and asked if Howard can talk to the President or Moku to get at least some news to give to the community.
- Kapolei Christmas Parade – Ronald Higa announced that the Kapolei Christmas Parade will be on Saturday, December 12, 2015 at 6:00 p.m. There will be fireworks and the Kapolei High School Band will be playing.

ELECTED OFFICIALS

Shubert-Kwock arrived at 7:35 p.m.; Eight (8) members present.

Mayor Kirk Caldwell's Representative – Noelle Wright reported the following:

- Clarification on DTS Permitting – DTS works closely with the Honolulu Film Office on filming permit requests and strives to balance the needs of production with the needs of the community. The requests for permits typically come from the Honolulu Film Office. Permits are granted for available meters with an emphasis on parking production vehicles in front of closed businesses or adjacent to park areas whenever possible. Depending on the shot, parking may be restricted to provide a clear area for the shot or where the camera needs to be placed for the shot.
- Rubbish on Kukui Street and Vineyard Boulevard – DPR noted that the area described is not under the jurisdiction of DPR. ENV noted that they are looking into the concern and will provide a response at the December 2015 meeting.
- Grass Overgrowth – DFM noted that the area was previously maintained by DPR, but recently DFM took over the grass cutting maintenance for this area. The grass is scheduled to be cut on Friday, November 6, 2015.
- Community Assistance with City Clean Up Projects – DPR noted that the community should contact Clinton Jamile at 768-3034 to plan community clean up projects and learn about the DPR's "Adopt-A-Park" Program. DFM noted that there are a number of ways to assist the City on community cleanup projects. Community members can participate in DFM's storm water quality adopt a block and adopt a stream projects that address various locations throughout Oahu throughout the year. Information can be obtained through the Environmental Concern Line at 768-3300 or through the City's website.
- Jaywalking Citations – From January to August 2015, HPD issued 3,575 citations for jaywalking.
- Chinatown Action Summit – Andrew Tang, a TOD Planner, announced that the City is planning a follow up meeting to the Chinatown Action Summit on Tuesday, December 1, 2015 at 6:00 p.m. at the Aloha Tower HPU Room 3. Tang noted that they have taken the feedback from the last meeting and noted that they have worked the additions into the plan.

Yuen arrived at 7:43 p.m.; Nine (9) members present.

Questions, comments and concerns followed:

1. Aloha Tower Tour – Smyth noted that most of Aloha Tower is still closed to the public. Smyth noted that he is trying to get his condo association to take the tour of the new layout.
2. Graffiti – Tom noted that he has been noticing many walls with graffiti drawn on it and asked what the requirements were for the community to paint over the graffiti. Wright will follow up.
3. Robberies – Shubert-Kwock noted that there has been a recent wave of teenagers terrorizing and robbing people and small convenient stores. Shubert-Kwock also raised a concern about the amount of fights and drug activity on North King Street and Maunakea Street.
4. Sidewalks – Mollring noted that the City sidewalks are in bad condition because some of the sidewalks are cracked or uneven. Chair Au noted that DFM is in charge of the sidewalks and asked for the hotline number. Wright will follow up with the number.
5. Vineyard Boulevard – Resident, Annie Peterson, raised a concern about an alley way and asked if the City can sweep the alley because it is hard and uneasy for the residents of the nearby building. Chair Au noted that there is a hotline that contacts HPD or DFM to make a report.
6. Honolulu 311 App – Reid commended the City on their Honolulu 311 App because it has really helped and noted that the City even fixed the broken sprinklers. Wright noted that the pothole hotline number is 768-7777.
7. Funds – Mollring raised a concern about the Mayor releasing the funds for non profits. Specifically Weed and Seed Funding. Wright will follow up.
8. Foot Patrol – Tom raised a concern about the number of foot patrol officers in the Downtown/Chinatown area and noted that he does not see any and asked for more officers on the streets.

Councilmember Carol Fukunaga – No representative was present; A report was provided.

Governor David Ige's Representative – Laurel Johnston reported the following:

- Absence – Johnston announced that the reason for the Governor's representative's absence is because Governor Ige was concerned about other islands not getting the same amount of information to the other islands. Johnston noted that Governor Ige will work through the Community Colleges to give any information needed.
- Budget – Budget hearings will start soon and noted that Governor Ige has been working on many different projects.
- Turtle Bay – Land Conservation history has been made as Turtle Bay Resort and a collaboration of entities led by the State of Hawaii completed an agreement to preserve in perpetuity nearly 630 acres of open space along Oahu's North Shore. Governor Ige signed into law Senate Bill 284 on Friday, June 12, 2015, following the initiative of the Legislature. The details of the agreement were approved by the State Board of Land and Natural Resources (DLNR) on Friday, September 25, 2015.

Questions, comments, and concerns that followed:

1. Thanks – Chair Au thanked Johnston for attending and noted that the community is really involved and will be asking for help.
2. Homeless – Shubert-Kwock welcomed Johnston to the meeting and asked for State reports on the homeless and asked how the State can move the homeless and how to get more shelters. Johnston will follow up. Yuen commented that he appreciates Governor Ige for making homeless an emergency issue.

Senator Suzanne Chun Oakland – No representative was present. A report was not available.

Representative Scott Saiki – No representative was present; A report was provided.

Representative Karl Rhoads – Representative Rhoads reported the following:

- Chaplain Lane – A Board member asked if Chaplain Lane is a private lane. According to DFM, division of road maintenance, Chaplain Lane is City owned.
- Central Middle School – Governor Ige released $310,000 in Capital Improvement Project funds for the design and construction to repave the parking lots (Kukui, Administrative, Queen Emma) at Central Middle School. The estimated completion date for the project is November 2016.
- McKinley High School – Governor Ige released $10,000,000 in Capital Improvement Project funds for the construction and works of art to renovate Building W at McKinley High School. The estimated completion date for the project is June 2018.
- 2016 Legislative Session – The 2016 Legislative Session is coming up in January 2016. If anyone has any ideas for bills, please contact Representative Rhoads.

Questions, comments, and concerns that followed:

1. Steward Ship Bill – Shubert-Kwock raised a concern and asked if the Steward Ship Bill will be re-written or amended. Representative Rhoads responded that Act 221 has worked in a few cases but many petitioners did not follow through and noted that they are waiting to see the 2015 results and commented that he will stay on top of the issue.
2. Bills – Howard asked when and where Representative Rhoads will meet with Governor Ige and how the community can draft a bill. Representative Rhoads responded that there will be a Community Meeting on Thursday, November 19, 2015 at the Honolulu Community College, the meeting will begin at 6:30 p.m. To draft a bill, the first thing would be to be a part of the legislation and noted that if anyone is interested in drafting a bill, to contact his office at 586-6180.

Hearing no objections, Chair Au took the agenda out of order to Honolulu Rail Transit Project – Pat Lee.

Honolulu Rail Transit Project – Pat Lee reported the following:

- Business Outreach Programs – The Holidays are coming, and it's an important time for shoppers as well as businesses. HART is undertaking several initiatives to support and assist local businesses along the rail alignment during construction. HART has in place a Business Outreach Program designed to keep businesses informed and updated on construction activities, and to provide business-oriented outreach to assist those who are affected by the work. HART's Business Outreach Program includes insuring proper access, signage and collateral for businesses. The alliance program, which includes over 400 businesses in the construction corridor, provides tailored construction briefings, free business development workshops and regular contact with HART to jointly develop additional programs to assist businesses during construction. HART plans to expand the outreach program to the Airport and City Center sections of the project as construction activity progresses into urban Honolulu.
- Shop and Dine On The Line – The HART Business Outreach Program includes:
    - HART's Business Alliance Program with meetings and weekly construction alerts
    - Business sign program with directional access and "Open for Business" signs
    - Detailed information for customers about area construction activity and access
    - Additional business resources in partnership with the Mayor's Office of Economic Development, U.S. Small Business Administration, the Hawaii Small Business Development Center, and the Mink Center for Business and Leadership
    - Electronic online offer program for additional customer outreach, social media and marketing workshops
- Shop and Dine Online Application – One (1) of these programs is Shop and Dine on the Line which partners with nearly 100 businesses in the Aiea, Pearl City and Waipahu area. The program is designed to assist businesses along the rail alignment during construction. Mention the Shop and Dine on the Line program, or print out the online brochure, to receive discounts on dining, shopping and services. With the Holidays approaching, we urge the public to patronize these stores and restaurants and use the discounts and other promotions these businesses are offering which help our local businesses during construction. Please visit: www.shopanddineontheline.com for more details to help our local businesses during construction. You can also visit the website using your phone or mobile device, and show the Shop and Dine logo on your phone.
- General Information – For general project information, traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – Shubert-Kwock reported the following:

- Chinatown Heroes Banquet – CBCA Celebrated its 6th Annual Chinatown Heroes Banquet attended by 200 people. The following were honored:
    1. Council Member Carol Fukunaga
    2. Sifu Ernie Loo
    3. DTS Director Mike Formby
    4. Little Village Noodle House owner, David Chang
    5. Hawaii 5-0 Eye Productions
    6. KHON2 News
- Homeless – Homelessness in Chinatown is again a pressing problem as more are migrating back. CBCA will continue to work with IHS and Safe Haven and begin a collaborative work with Safe Haven to find rental housing for the Housing First program. CBCA is pleased that Mayor Caldwell and the City Council as well as Governor Ige are working hard pushing for housing for our homeless and ramping up placements and services.

- Crime Statistics – Crime Stats - we are plagued by drug dealings and fights in various parts of Chinatown. Bank of Hawaii has reported some grave problems by North King Street and Maunakea Street.
- Youth Gangs – Youth Gangs again are plaguing our merchants, they range in ages from 10 to 15 in groups of eight (8) to 10. They carry backpacks, steal and run off while others block the view of the shop owners.
- Duc's Bistro – Bottom part of Maunakea street liquor store across from Duc's Bistro has a bigger gathering of people hanging out the liquor store where they are dealing drugs and drinking alcohol.
- Graffiti – We are pleased to report that the Ket On building no the one across Duc's Bistro is now graffiti free.
- Next CBCA Meeting – CBCA is working with other community groups on the Senior affordable housing on River. The next CBCA Dim Sum meeting is Tuesday, November 10, 2015 at 8:30 a.m. to 10:00 a.m. at Empress Restaurant in the Chinese Cultural Plaza, second floor. All welcome to join us to make Chinatown a better place for all.

NEW BUSINESS

3rd Annual Make-A-Wish Jingle Bell Rock Run – James Donnelly and Todd Locovelli announced that the 3rd annual Jingle Bell Rock Run will go from Iolani Palace to Ward Avenue, through Beretania Street and then down King Street. The 5K will be on Sunday, December 20, 2015. The keiki run will begin at 5:30 p.m. and the Adult 5K will begin at 6:00 p.m. There will be limited/rolling road closures. Locovelli noted that King Street and Beretania Street will only have a few lanes closed but will be reopened once the last runner passes.

American Savings Bank (ASB) – Michelle Bartell presented the plans for a new corporate campus on Aala Street and Beretania Street. Bartell noted that ASB prides their work on their work culture and teamwork. ASB has received many awards being voted that it is the best place to work at five (5) different locations. The new corporate campus would be the start of something new. The corporate campus will have parking, offices, and a branch on the bottom level. There is currently no rendering of the interior, but Bartell noted that it is a great way to collaborate not only within the five (5) different teams within ASB but with also the community. Bartell noted that she will send more information regarding the groundbreaking and the opening to the Board. Bartell also noted that ASB has been working with Farrington High School students to help with grants and other forms of aid.

Questions, comments, and concerns that followed:

1. Building Cost – Chair Au noted that the Neighborhood Board boundaries stop at the stream and thanked Bartell for her report and asked what the cost of the building will be. Bartell responded that it was $12 million for the land and ASB is still working on the total project costs. Bartell noted that the current ASB headquarters is still at Fort Street Mall.
2. Community – Smyth asked if ASB will close its current headquarters on Fort Street. Bartell responded that the building will remain but the teammates will all be transferred to the new building. Shubert-Kwock asked if there will be community rooms to help the community. Bartell responded that ASB does offer its seeds of service programs.
3. Security – Saupe noted that he is excited about the project but raised a concern about the security because across the street is a rough area. Bartell responded that ASB has their own security and will be sure to secure all areas inside and outside of the building.
4. Employees – Tom raised a concern about the number of employees and asked if all the employees would leave around the same time. Bartell responded that there will be around 600 employees and noted that they will have separate schedules where employees could be leaving all hours of the day. Bartell noted that there will be paid parking for the public and there will be designated spots for the employees.
5. Retail – Yuen asked if ASB has envisioned any retail stores or restaurants being in the building. Bartell responded No, only ASB will be in the building but the employees will be buying food from all over the community. A resident raised a concern and asked if ASB will be closing any branches. Bartell responded that they sold the Kalihi Service Center and will potentially be moving the site to the Kamehameha Shopping Center.

Community Update on the Proposed City Affordable Senior Rental Housing – Sandy Pfund, Rochelle Nagata-Wu, Monika Mordasin, and Karen Seddon updated the community on the proposed City affordable senior rental housing issue and noted that they have concluded their negotiations with Michaels Development Co. and are waiting to hear back from Full Council to see if their proposal will go into the Committee hearing. If all goes well and Council passes the proposal, the contract will be awarded to Michaels Development Co. The lease will be for 65 years and it was noted that the City as well as the contractors, have gone over the communities issues that were raised at the community meeting and have made adjustments and is working on their due diligence. Nagata-Wu noted that the main issues were height, mass, energy, and cultural references. The height was reduced from 260 feet to 230 feet.

The mass was reduced by 1000 square feet, for more space between the building and temple. The height of the separating wall was shortened to 40 feet. The City and the architects have done many things to address the community's issues for the temple and the rest of the community. The City is trying to give the community the best building they can to improve the well-being of the community. Mordasin noted that they have reduced all of the units from 650 square feet to 570 square feet. The community center was not sacrificed and noted that the community will be able to use the community center for programs such as the Community Advisory Committee and other community programs. For more information call 691-9446 or email Riverstreetcommunitycenter@gmail.com. Wesley Fong noted that this is a seven (7) year endeavor and commented that they have prepared a position letter and asked the Board to support the project. Fong noted that the position paper has already supported and adopted.

Questions, comments, and concerns that followed:

1. Recommendations – Mancos asked what was in the packet that was distributed by Lum. Lum responded that included in the packet are letters that have already been supported by the Board. Mancos raised a concern about the list and noted that there is no way to accurately monitor someone with mental health issues. Fong responded that the list is only for recommendations. Shubert-Kwock noted that the list could be breaking Federal Laws or a law that deals with Civil Rights. Yuen commented that the devil is in the detail and noted that the guidelines set are good and hopes that the advisory committee works well.
2. Parking Situation – Shubert-Kwock raised a concern about the room's colors and asked if the color can change to something other than white. Shubert-Kwock asked how many dedicated parking stalls and how many public stalls there will be. Mordasin responded that the issue was brought up so the change was made to the draft changing the parking lot to a 10,000 square feet lot. Chair Au noted that he was flattered by the presentation because he was expecting the project to turn out like Kuhio Park Terrace (KPT). Chair Au noted that more details are needed for the proposal and commented that it is a great first step.

Shubert-Kwock moved and Mollring seconded that the Downtown Neighborhood Board No. 13 support items 1-7 from the Chinatown Community Center Association Position Paper that was dated July 14, 2015.

Discussion – Saupe noted that the seven (7) items listed are too broad to support. Tom noted that he admires CCCA and asked if anything had been adverse. Mordasin responded that each unit will have a kitchen, bathroom, and all must go through the advisory group. Fong noted that in general everyone is on the same general page. Pfund commented that some of the comments were legal issues. Chair Au called for the vote. Yuen noted that he must recuse himself because it is a conflict of interest.

Shubert-Kwock moved and Mollring seconded that the Downtown Neighborhood Board No. 13 support items 1-7 from the Chinatown Community Center Association Position Paper that was dated July 14, 2015. The motion was ADOPTED, 5-3-0. (**AYE**: Au, Mollring, Shubert-Kwock, Smyth, and Tom.)(**NAY**: Chang, Mancos, and Saupe.)

Yuen moved and Shubert-Kwock seconded that the Downtown Neighborhood Board No. 13 endorse the conceptual design that was put forth by Michaels Development Company and The City and County of Honolulu. The motion was UNANIMOUSLY ADOPTED, 9-0-0. (**AYE**: Au, Chang, Mancos, Mollring, Saupe, Shubert-Kwock, Smyth, Tom, and Yuen.)

City Sewer Rehabilitation Project – Paul Mallory distributed the draft map and plan and reported that sewer construction is progressing and the pipe installation was held up by permits because of different noise variances. The construction manager should have notified the nearby public and neighbors. The construction will begin on Monday, November 16, 2015 work will be from Monday to Thursday, 6:00 p.m. to 6:00 a.m. Mallory noted that he will be working in the area for the next three (3) months and asked to be a part of the December agenda.

Questions, comments, and concerns that followed: Manhole Covers – Mollring raised a concern about the team working near Kukui Plaza and noted that after the construction the workers did not properly replace the manhole cover correctly. Mallory noted that his card was attached to his map, and to call if there are any questions or concerns pertaining to the project.

Honolulu Christmas Lights Parade – Chair Au noted that the parade will be on Saturday, December 5, 2015 and will start at 6:00 p.m. on King Street and will move from River Street to Kawaiahao Street where the parade will end at Honolulu Hale.

APPROVAL OF OCTOBER 1, 2015 MEETING MINUTES – Shubert-Kwock moved and Mancos seconded that the Downtown Neighborhood Board No. 13 approves the October 1, 2015 meeting minutes. The motion was UNANIMOUSLY ADOPTED, 9-0-0. (**AYE**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Saupe, Smyth, Tom, and Yuen.)

BOARD BUSINESS AND REPORTS

Chair's Report – No report.

Other Liquor License Applications or Street Closure Events – No report.

Future Agenda Item Requests – Chair Au noted that DTS and HBL would like to come and discuss the new bike path. Chair Au asked if the Board would like an after event report from the Hallowbaloo event. Shubert-Kwock responded that she would like to hear the after event report because the event was an experiment with new techniques.

Neighborhood Commission Updates – No report.

Treasurer's Report – Treasurer Mollring reported a remaining balance of $245.53. The report was filed.

City and County Affairs – No report.

Oahu Metropolitan Planning Organization (OahuMPO) – No report.

ANNOUNCEMENTS:

Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, November 5, 2015, Pauahi Community Center at 7:00 p.m.

Neighborhood Citizen's Patrol (NCP) – The NCP meets each Tuesday on the Diamondhead side of Kukui Plaza at 8:00 p.m. Please consider joining the patrol and supporting its efforts as they express their service and pride in our Downtown/Chinatown community.

Broadcasts – Videotape of Board meetings are scheduled to be shown on the third Thursday, and on the second and fourth Saturday on `Olelo Channel 49.

ADJOURNMENT: The meeting adjourned at 9:40 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant
Reviewed by: K. Russell Ho, Neighborhood Assistant
Final Review: Chair Alvin Au, Secretary Robert Tom

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, FEBRUARY 4, 2016
PAUAHI COMMUNITY CENTER

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:02 p.m., **with a quorum of seven (7) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang (departed at 9:38 p.m.), Jasmine Mancos (arrived at 7:14 p.m., departed at 8:53 p.m.), Dolores Mollring, Jonathan Saupe (arrived at 7:14 p.m.), Chu Lan Shubert-Kwock, Tom Smyth, Robert Tom, and Stanford Yuen.

Board Members Absent – None.

Guests – Firefighter Recruit Travis Takahashi, Firefighter Aubrey Burris, Firefighter Chris Takayama, and Firefighter III Mark Bates (Honolulu Fire Department); Captain Ben Mahi, Major Roy Sugimoto, Lieutenant Stephen Silva, Sergeant Mark Suaglar, Corporal Steven Matsuda, and Officer Alan Ibrao (Honolulu Police Department); Greg Payton (Safe Haven); Pat Lee (Honolulu Rail Transit Project); Sam Moku, Kristylee Rabaino, Taylor Silva, Daniel Valencia, and Nathanael Howard (Hawaii Pacific University); Allen Stack Jr. (Chinatown Improvement District); Nicole Reid (Arts District Merchants Association); Howard Lum and Kehaulani Lum (Chinatown Community Center Association); Elizabeth O'Brien (Hawaii Theater); Director George Atta (Mayor Kirk Caldwell's representative); Councilmember Carol Fukunaga; Laurel Johnston (Governor David Ige's representative); Senator Suzanne Chun Oakland; April Bautista (Representative Karl Rhoads representative); Liz Char, Sandy Pfund, Irene Banao, Milton Kikuchi, and Ty Fukumitsu (City and County of Honolulu); Donna Blanchard (Kumu Kahua Theatre); Lawrence Friedman, Rebecca Friedman, Ronald Higa, Mike Peacock, Kalawai'a Goo, Ena Aulan, Willis Moore, Gwen Abella, Willard Brown, Matt Bleder, Tyler Dos-Santos, Brooke Wilson, Sean Newcamp, and Jocelyn Belden. Eric Cristobal (Videographer); Executive Secretary Shawn Hamamoto, Uyen Vong, and Neil Baarde (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Chair Au and the Board members introduced themselves and wished the community a "Happy Chinese New Year!" at this time.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Firefighter I Aubrey Burris reported the following:

- January 2016 Statistics – There were 1 structure, 1 wildland, 1 nuisance, 3 cooking fires, with 5 activated alarms. There were 163 medical emergencies, 4 motor vehicle collision with pedestrians, 3 motor vehicle collisions, and 1 hazardous materials incident.
- Hiking Safety Tip – HFD often responds to hikers who are lost or injured. The Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife, list the following safety tips:
    - Inform others about the plan to hike and to notify others with the name and location of the trail and the expected time to return from the hike. This information will give rescuers accurate information on where to start the search.
    - Plan the hike to include sufficient daylight.
    - Take a fully charged cell phone when going on a hike as HFD relies on phone contact when trying to locate a lost hiker or obtain any information regarding an injured hiker. If capable, HFD will use the phone's global positioning system (GPS) to obtain a general location.
    - When hiking, stay on the trail. Most accidents happen when hikers leave the established trail and disregard warning signs. Staying on the trail greatly reduces the chances of having a serious fall or getting lost. For more information, visit www.dlnr.hawaii.gov/recreation.

Honolulu Police Department (HPD) – Lieutenant (Lt.) Stephen Silva reported the following:

- January 2016 Crime Statistics – There were 4 motor vehicle thefts, 8 burglaries, 89 thefts, 22 unauthorized entries into a motor vehicle (UEMV), 17 assaults, 4 sex assaults, 2 graffiti and 4 drug offenses, for a total of 2,577 calls for service.

- Pedestrian Safety Tips – Be safe and be seen. Wear bright/light colored clothing and reflective materials. Be smart and alert. Avoid dangerous behaviors. Always walk on the sidewalk. If there is no sidewalk, walk facing traffic. Do not assume vehicles will stop. Make eye contact with drivers. Do not rely solely on pedestrian signals. Look left, right, and left again before crossing a street. Obey traffic signals. Do not wear headphones or talk on a cell phone while crossing.

Mancos and Saupe arrived at 7:14 p.m.; Nine (9) members present.

Questions, comments and concerns followed:

1. Statistics – Tom noted that there was a dramatic decrease in the statistics and asked what the cause was. Lt. Silva responded that it is the typical pattern because the holiday season brings crime. Tom asked if there were any changes in foot patrol officers. Lt. Silva introduced Major Roy Sugimoto and it was noted that there has been an increase in foot patrols and commented that after the new recruits graduate they will be 4th watch. Major Sugimoto noted that there will be full coverage depending on the community with the most needs.
2. Chinatown Substation – Shubert-Kwock noted she has three (3) concerns and asked: 1) update on the cameras in the Downtown/Chinatown area, 2) the language access at the HPD substation, suggested having a Chinese interpreter or Chinese interpretation signs, and 3) asked if videos of drug activity can work in arresting a suspect. Major Sugimoto responded that videos are taken case by case, but if the videos are usable, it could be used. Sometimes it is hard to use videos but if needed, HPD can clear the picture with the help of the Crime Analysis Unit. Major Sugimoto introduced Captain Ben Mahi and noted that only 911 can assign an interpreter and commented that there are 26 cameras total, four (4) are out. Captain Mahi commented that there are at least three (3) officers at the substation on each shift and noted that one (1) of the Chinese speaking officers had addressed a sidewalk issue and noted that he will return to the substation with the concerns. Shubert-Kwock thanked HPD and noted she will spread the word.
3. Refrigerator – Mollring noted that cashiers have come up to her and noted that people at Sun Yat Sen Park have put a refrigerator there and have been seeing people pull electrical wires to operate the refrigerator. Captain Mahi asked if it was in the pavilion area. Mollring responded that it is next to an encampment. Captain Mahi will follow up.
4. Homeless Camps – Tom raised a concern about homeless people camping near his building and asked what he can do. Captain Mahi responded that being homeless is not a crime but if there is suspicious activity occurring call HPD. Also call HPD if the camp seems to be getting bigger and HPD will enforce the law with DPR and they will go through the process after the assessment is done. Tom also noted that on Kukui Street there is a methadone clinic across from St. Andrew's Priory and asked if HPD is aware that the clinic is near schools. Captain Mahi noted that HPD is aware of the clinic but commented that the concerns need to go through the City or the State. Saupe raised a concern about restaurants complaining about homeless people in front of the restaurant and near the police substation and asked if anything is being done. Saupe also asked about the homeless camping at the parks and noted that DPR said the park extends to the sidewalks. Captain Mahi responded that all efforts are being done to reduce fear and the perception of crime in the area and noted that HPD needs the community's help by reporting any suspicious activity. Captain Mahi noted that he has sat down with Corp. Counsel, DFM, DPR, and commented that they have done studies and noted that if they see homeless during the sweeps, they will try to get them into an outreach program.
5. Smith/Beretania Park – Chair Au noted that he remembers the opening of Smith/Beretania Park and commented that the Neighborhood Board asked DPR to close the park from 10:00 p.m. to 5:00 a.m., DFM accommodated the Board but ownership switched to DFM. Chair Au asked Captain Mahi to ask DFM and DPR to please enforce the rules again. Captain Mahi responded that he has been working with DPR and noted that they have been using all types of methods but at Smith/Beretania Park the park is closed from 7:00 p.m. to 7:00 a.m., the signage is still getting fixed and Captain Mahi noted that HPD is doing as much as they can to reduce the fear in the area. Yuen noted that HPD is good at moving the homeless but when they move, they move to sidewalks and Yuen commented that he does not know how to address the issue because they are still breaking the law. Yuen commented that he has a photo of two (2) homeless camps in the area hiding behind a car. Captain Mahi responded that HPD officers have to make tough decisions and noted that the main question is the dirt part of the park because many homeless have been known to move to the dirt parts of the park.

Hearing no objections, Chair Au took the agenda out of order to Discussion on Crime and Safety Concerns.

Discussion on Small Business and Neighborhood Crime and Safety Concerns – Chair Au noted that he has asked HPD to stay to answer the communities concerns and commented that as a group the entire community can solve all the problems.

- Funding – Mike Peacock noted that he is planning to open an office on King Street and Maunakea Street and commented that he had been homeless for five (5) years and during his recovery he was working with the Hawaii Information Consortium (HIC). Peacock commented that opportunity comes through funding and noted that the question is how come the homeless is the big issue that no one took the responsibility to get a correct count of the homeless to get funding for the issue. Peacock commented that the City needs to put the homeless where they feel safe. Mancos thanked Peacock for his comments and noted the Neighborhood Board is an advisory council and is trying to help. Chair Au commented that homelessness is a big systematic issue and everybody needs to work together.
- Environment – Don Murphy noted that he has been in the Downtown/Chinatown area for 29 years and commented that the environment is getting just as bad as before. No one wants to visit the area and agreed with Chair Au and commented that the Community needs to work together for a solution, because the real challenge is needing to move forward.
- Bike Lanes – Ron Higa raised a concern about a wheelchair using the bike lane on King Street when there was nobody on the sidewalk and asked if that is legal or not. Captain Mahi responded that Higa should have reported the incident and noted that HPD will address the issue because vehicles do not belong in the bike lane. Captain Mahi noted that HPD will come when called.
- Kumu Kahua Theatre – Donna Blanchard, Managing Director of Kumu Kahua Theatre reported that they are on the corner of Bethel Street and Merchant Street and noted that they exist to encourage local play writers to tell the stories of people here in Hawaii. Blanchard noted that they are a part of a new group with other merchants and commented that they are excited to be a part of the community and their ohana.
- Power Washing – Gwen Abella raised a concern about the City needing to power wash the bus stop across Winston Hale because it is filthy and would like it power washed.
- Sit/Lie Law Enforcement – Matt Bleder raised a concern about the homeless at Smith/Beretania Park and asked how HPD enforces the Sit/Lie laws. Captain Mahi responded that there are generally always stragglers when the park closes and commented that there are many suspicious activities and noted that the best way to help HPD is to make a report. Captain Mahi noted that HPD has been working with many City agencies and noted that if there are homeless on sidewalks it is illegal. Gifford Chang commented that he has worked closely with HPD at the Night in Chinatown Event and noted that he has no complaints regarding HPD.
- Filing A Police Report – Chair Au noted that the community has their own perceptions on how to properly file a police report and commented that people are afraid because of the number of steps that need to be taken and asked what the steps are to file a police report. Captain Mahi will follow up. Chair Au noted that everyone should be compassionate to each other.
- Systematic Approach – Kalawai'a Goo noted that she has seen many issues and noted that she was inspired by Mother Theresa's Peace Rally Speech and commented that she is disturbed by the Sit/Lie Laws because it targets a certain group of people. The purpose for the laws was to approach the issue from a supported view for better sustainable results.
- Safe Haven – Chair Au noted that Safe Haven has a hygiene center and commented that it has been accosted by those trying to help. Safe Haven needs the community's help and asked the Citizen's Patrols or HPD to check in from time to time.
- Smith/Beretania Park Clean Up – Lee Stack announced that the Chinatown Improvement District (CID) will be hosting a park clean up at Smith/Beretania Park on Saturday, February 20, 2016 and noted that CID has been working on a project for the park. Bob asked what time the clean up is and if anything is needed. Stack responded 8:30 a.m. and CID provides snacks and noted that those willing to help can bring their own gloves, paint rollers, and brushes.
- Thanks – Major Sugimoto thanked the Neighborhood Board for inviting them to the meeting to hear the good and the bad concerns. Major Sugimoto noted that he is excited to be moving forward and commented that he has noticed the merchants group is growing which is fantastic because the community and HPD are one (1) big organization. Major Sugimoto noted that HPD will stand with the group to help move forward and find a solution. Peacock thanked HPD and noted that he understands the Neighborhood Board is an advisory board, but if the people push the homeless, the homeless will push back and commented that the solution is a systematic approach. Mancos noted that she appreciates everyone's comments and explained that the Board Members are all volunteers that represent the community.
- Homeless – Nicole Reid noted that the homeless issue has been discussed a lot of times because the homeless population is growing and noted that a group of researchers and merchants have been meeting with City and State Officials and all are enthusiastic about moving forward. The group has been looking for a new meeting site and noted that a consistent way of communication is needed. Reid noted that there is always room for improvement and appreciates HPDs help.

Hearing no objections, Chair Au brought the order of the agenda back to Neighborhood Citizen's Patrol.

Neighborhood Citizen's Patrol (NCP) – Mollring reported that her group has been active but the neighborhood has been quiet. If anyone is interested in joining the NCP, the NCP meets on the Diamond Head side of Kukui Plaza at 8:00 p.m. every Tuesday night.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No representative was present.; No report was provided.

Safe Haven – Greg Payton reported the following:

- Residents – Safe Haven discharged 11 residents, admitted one (1), and returned one (1) homeless individual to Portland. It was noted that 60 people were helped get off the streets last year and noted that this year Safe Haven is trying to help 75 people.
- Grants and Aids – Safe Haven currently has two (2) grants and aids. One (1) with the Institute for Human Services (IHS) and Councilmember Carol Fukunaga. With the help of the grants and aids, Safe Haven was able to hire two (2) new staff members and helped place five (5) residents.
- Hygiene Center – The hygiene center with public toilets are open and it was noted that the center serves over 60 people a day and there has been no vandalism or graffiti damages. Payton noted that 20 out of the 60 people who use the hygiene center are people who are working but live in their cars.
- Housing and Urban Development (HUD) Funding – HUD funding is needed for renovations, Payton is hoping to speed up the process and hopes the project can be completed by October 2016. Payton noted that Safe Haven is responsible for counting the homeless in the Chinatown area and commented that Safe Haven has many volunteers that help serve over 200 people a year.
- Calling to Action – Payton announced that if anyone is willing to house the homeless in the Kaimuki, Kalihi, or Aiea areas, please call 529-4554 for information. Payton noted that Mental Health Kokua will take care of any damages occurred by the homeless residents.

Questions, comments, and concerns that followed: Renovations – Mollring thanked Payton and his volunteers for helping with the parade. Shubert-Kwock noted that the community needs more people like Payton and suggested that during the renovations to place the toilets in the front, the sink in the middle, and the showers in the back of the hygiene center. Payton responded that they will be going through major renovations which will require Safe Haven to raise money.

Honolulu Authority on Rapid Trasit (HART) – Pat Lee reported the following:

- Honolulu Rail System – The first set of train vehicles are expected to arrive in Honolulu soon. Ansaldo Honolulu (now Hitachi Rail USA) was awarded the $1.4 billion Core Systems Contract for the Honolulu Rail Transit Project to design, build, operate and maintain the train vehicles in addition to the operations and control center. Honolulu's rail system will be the first fully automated driverless urban rail transit system in the United States. The train cars are manufactured at the Hitachi Rail factory in Reggio Calabria, Italy and shipped to Pittsburg, California, for final assembly, then on to HART's Rail Operations Center in Waipahu.
- Rail Cars – HART's trains will consist of four (4) cars. Each four (4) car train can carry about 800 people. The car shell structure is 100% aluminum. There are two (2) types of car shells, one (1) type for the ends of the train and the other for the middle cars. The middle car shells have an opening at both ends to permit passengers to move between the four (4) car trains. There are three (3) doorways on each side of both types of rail cars. Each rail car is 59–1/2 feet long, 14 feet high and 10 feet wide. The car shell structure consists of a combination of over 40 different aluminum extrusion profiles. The aluminum extrusions are welded together. The weight of the aluminum car shell without doors, interior linings, seats or other equipment is approximately 14,000 pounds. HART's four (4) car trains will include Closed-circuit security cameras, Air conditioning, Free WiFi, Seating for 188 riders, and Space for surfboards, coolers, luggage, strollers, bicycles and wheelchairs.
- Construction Highlights – The latest construction highlights are more than 400 foundation shafts have been placed, more than 300 columns erected, more than 4,000 segments casted, and about six (6) miles of guideway completed to date.
- General Information – For general project information, traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Hearing no objections, Chair Au brought the agenda out or order to Hawaii Pacific University.

Hawaii Pacific University (HPU) – Sam Moku reported the following:

- New President – The new President of HPU is the former Dean at Villanova University, John Rotunda. Moku noted that everyone at HPU is excited to have him and commented that he is currently trying to settle into his new position and looking for a residence. Moku noted that Rotunda will visit the Neighborhood Board when he can.
- Western Association of Schools and Colleges (WASC) Accreditation – HPU has been going through the process of achieving accreditation through WASC. Moku noted that HPU should receive their score soon.
- New Year's Eve Event Report – There were roughly 7,000 youngsters at the event and noted that the event was a trial run to see if similar events can be scheduled. Moku noted that all aspects of the event passed the test and commented that the Harbor Division had positive feedback. Moku noted that everyone enjoyed the fireworks and Moku introduced some of the students who were in attendance because they are interested in civic engagement.

Questions, comments, and concerns that followed:

1. Meetings at Aloha Tower – Mollring asked the community if anyone objects to having the meetings at Aloha Tower. Moku noted that parking should be the only concern and commented that he will double check the boat days with the Harbor Division. Smyth noted that he lives across the street and is very happy. Smyth commented that Aloha Tower offers great facilities.
2. Ground Floor Updates – Saupe asked for an update on the retail shops on the ground floor of Aloha Tower. Moku responded that currently there is a Barnes & Noble Bookstore, Nashville's Bar, and Moku noted that HPU is slowly bringing in other retail shops. Moku noted that 90% of the dorms have been filled and there are still 12 retail spaces open. Shubert-Kwock commented that she is thankful for Moku offering the meeting room to the Neighborhood Board and noted that she is pleased with the building and asked Moku to double check the schedule.

Hearing no objections, Chair Au took the agenda out of order to Discussion of holding the Neighborhood Board Meetings at Aloha Tower.

Shubert-Kwock moved and Tom seconded that the Downtown Neighborhood Board hold their monthly meetings at Aloha Tower.

Discussion – Yuen noted that parking is an issue and the Board should wait to vote until Moku answers all the Boards questions. Chang agreed with Yuen and suggested tabling the issue until the Board has more information. Shubert-Kwock withdrew her motion.

Chair Au resumed the order of the agenda.

Chinatown Business and Community Association (CBCA) – Shubert-Kwock reported the following:

- Monthly Meetings – CBCA held it's monthly Chinatown Dim Sum Breakfast Meeting at Empress Restaurant. The topic of discussion was focused on crimes affecting businesses and residents. There are two (2) new events 1) St. Patrick's Day Festival with street closures, and 2) a new bar license for 2 Hotel Street.
- Noise Issues – A Bill that was introduced by Representative Rhoads has been supported by CBCA, Chinatown Gateway Tenants Association, Lynne Matusow, Lee Stack, and others.
- Honolulu Liquor Commission – CBCA would like the Honolulu Liquor Commission to remove the music license of repeated offenders and levy stiffer fines, limit continuation of hearings by the repeated offenders, and to add soundproofing to establishments wanting music and restrict low amp music with protection for the public.
- Chinatown Events – Last month, CBCA participated in the huge Chinatown Parade and supported the Night in Chinatown block party. The block party was the largest and best run block party in Chinatown. The event brought people of all ages together to celebrate Chinese New Year and the booths included City and non-profit groups to promote their missions. Shubert-Kwock noted that extending the block party to River Street was a smart and appropriate idea. CBCA will continue to address the crimes and drug issues in the Chinatown area. Recent police meetings with stockholders may provide added police support.
- Hale Waiolu – The community is disappointed that the City is not leading the Hale Waiolu project, allowing delays caused by politics and politicians, and to allow them to bully the community and granting special favors for only a few.

- Chinatown Open House – This Friday, February 5, 2016 will be Chinatown's Open House where lions will bless all the shops and society halls between 6:00 p.m. to 9:00 p.m. King Street, River Street to Nuuanu Avenue will be shut down. Shubert-Kwock suggested the community get there early to park in the Chinatown garages for only $3 from 5:30 p.m. until midnight.
- Next Meeting – The next CBCA Dim Sum Meeting is at Empress Restaurant on Tuesday, February 9, 2016 from 8:30 a.m. to 10:00 a.m.

Questions, comments, and concerns that followed: Noise Complaints – Saupe asked what noise complaints Shubert-Kwock was regarding. Shubert-Kwock responded that on Hotel Street there are repeat offenders that the Honolulu Liquor Commission is having issues with. The fines are not enough and the Liquor Commission should pull their permits or try to sound proof the area. Saupe noted that he does not see much support on the issue and commented that the Night in Chinatown Event was a really noisy event. Shubert-Kwock responded that she appreciates his opinions but noted the issue is that repeat offenders do not listen to the law.

Chinatown Improvement District (CID) – Lee Stack reported the following:

- Smith/Beretania Park Clean-Up – CID will be hosting a park clean up at Smith/Beretania Park on Saturday, February 20, 2016 at 8:30 a.m.
- Chinatown Directory – The complete Chinatown Directory is available at cidchinatownhawaii.org.
- Roaming Patrol Program – CID will continue to have signups for the roaming patrol program.

Arts District Merchants Association (ADMA) – Nicole Reid reported the following:

- Arts Culture Merchants Etcetera (ACME) – As ADMA is going under a few changes, they have decided to rename themselves to ACME. Reid noted that all are welcome to attend and commented that their focus is more business friendly.
- Chinatownnow.com – Chinatownnow.com has a list of merchants, restaurants, and event calendars.
- Coordinated Merchant Patrols – A patrol has started where the group walks through the business areas and it was noted that they are similar to the Waikiki Ambassadors.
- Noise Levels – The community needs an understanding of what measurement tools are being used because in the report it said "felt" the noise. Reid commented that the bar owners need metrics.

Chinatown Community Center Association (CCCA) – Howard Lum deferred his report at this time.

Michel's Pipe Services City Sewer Rehabilitation Project – Paul Mallory reported that 90% of Phase 1 has been completed. There are seven (7) lines left on River Street near North Beretania Street and Hotel Street. The part of the project that is Nimitz Highway will be finished by the end of March 2016. The Chinatown Phase 2 project should be completed by the end of April 2016. Phase 2 is 50% completed. Mallory noted that all the yellow areas on the map are incomplete.

Questions, comments, and concerns that followed:

1. Day Work – Chair Au noted that he assumes Michel's Pipe Services are only doing way work. Mallory responded that they did have a night variance at one (1) point but the residents from the Honolulu Tower had complaints and when they tried to renew the permit they could not work at night. Mallory noted that they are still in the process of renewing their permit. Chair Au asked what the areas are that still have work to be done. Mallory responded North Beretania Street, River Street, North Pauahi Street, Nimitz Highway, Maunakea Street, Merchant Street, Fort Street Mall, and North Hotel Street near Smith Street are all that is left to be done for Chinatown Phase 1. Chair Au asked about Phase 2. Mallory responded that they need the variance for Phase 2 and noted that he will need Board comments because with the project in place without Board comments is unfair. Mallory noted that contractually it is illegal and commented that he did not mean to disrespect anyone and noted that they were trying their best to blanket the area by foot. Mallory commented that he was guided to work at night to mitigate the issue.
2. Parking Concerns – Shubert-Kwock noted that she watched some of the workers and commented that they took up three (3) lanes. Shubert-Kwock noted that the vehicles parked on River Street and commented that it is causing concerns and asked Mallory to confine their space. Mallory responded that is why they need the variance to work at night and noted that they will try harder.

Mancos departed the meeting at 8:53 p.m.; Eight (8) members present.

Public Concerns

- New Mandarin Academy – Shubert-Kwock announced that there is a new Mandarin Academy that will teach Mandarin to all ages.
- Veterans Treatment Corporation – Mike Peacock announced that there will be a march to connect the Veterans with first circuit court to try and reduce the negative impact on the homeless. Peacock noted that he is trying to find a solution to be a positive part of the community.

ELECTED OFFICIALS

Mayor Kirk Caldwell's Representative – Director George Atta of the Department of Planning and Permitting (DPP) reported the following:

- Bus Pad Repairs – The Department of Design and Construction (DDC) has indicated that King Street between Bethel Street and Alapai Street is programmed for contract resurfacing under Rehabilitation of Streets, Unit 67 that will address the bus pad at King Street and Nuuanu Avenue. The bid advertisement is scheduled for October 2016. DFM will check to see if interim repairs are needed and will consult with DDC as appropriate.
- Indentation on the Corner of Hotel Street and Maunakea Street – DDC has indicated that Maunakea Street from Nimitz Highway to Vineyard Boulevard has been identified for contract resurfacing under Rehabilitation of Localized Streets, Phase 12D. Hotel Street from River Street to Richards Street has been identified for concrete resurfacing under Rehabilitation of Streets, Unit 65. Both projects will be subject to utility clearances and availability of funds so no construction date has been set at this time. DFM will check to see if interim repairs are needed.
- Hole on Corner of Beretania Street and Nuuanu Avenue – DDC has indicated that Beretania Street will be resurfaced under Rehabilitation of Beretania Street, Unit 64-R project. The project is targeted to restart construction in February 2016. Potholes will be patched by DFM until construction project resumes.

Questions, comments and concerns followed:

1. Construction – Chair Au asked if the construction on Maunakea Street will be occurring throughout the day or night. Director Atta will follow up.
2. Power Washing Schedule – Shubert-Kwock noted that the sidewalks have a strong smell of urine and asked the City to power wash the areas once a month and noted it is important to increase the power washing in the area. Director Atta responded that he has received the message and noted that Director Sasamura noted it has been a funding issue, but Director Atta will follow up.

Councilmember Carol Fukunaga – Councilmember Carol Fukunaga reported the following:

- Tackling Crime in Chinatown – Retailers and businesses in the Nuuanu/Bethel Street area have called for additional police presence in Chinatown to combat assaults and drug related incidents near Hawaii Theatre and along Nuuanu Avenue and Bethel Street, as well as break ins and vandalism near many small businesses.
- Public Health and Safety Updates – DFM reported on the cracks in the Nuuanu Stream wall. An Emergency Procurement Request was approved by the DDC on October 6, 2015, and transmitted to the Department of Budget and Fiscal Services (BFS) on October 12, 2015. A notice to proceed was issued on December 10, 2015 and the design phase for the repairs will be underway pending approval from the Army Corps of Engineers and the Department of Health (DOH).

Governor David Ige's Representative – Laurel Johnston reported that the Governor's Newsletter is in the back and noted that in the newsletter are excerpts from his State of the State Address. Johnston commented that the Department of Education (DOE) and Governor Ige have been working on cooling at least 1,000 classrooms.

Questions, comments, and concerns that followed: Funding – Shubert-Kwock noted that she likes the Governor's initiatives and commented that she is only disappointed because he did not ask for funds for early education. Shubert Kwock asked if Governor Ige can bring the Super Ferry back. Johnston responded that there are two (2) pieces, 1) a preschool open doors program through private contracts and commented that she hopes the Legislation can take a better look at the situation, and 2) more funding is needed for the early education programs. Johnston commented that there has not been any proposal for the Super Ferry and noted that the issue will take a while but will follow up with more information.

Senator Suzanne Chun Oakland – No representative was present.; a report was provided.

Representative Scott Saiki – No representative was present.; a report was provided.

Representative Karl Rhoads – April Bautista reported the following:

- Motorcycle Noise – Received a complaint regarding the noise from motorcycles along Hotel Street and Nuuanu Avenue. The law requires all motorcycles to be equipped with a muffler to prevent excessive noise. It is illegal to modify an exhaust system that will amplify or increase the noise. For these reasons, it is encouraged the community calls HPD if one sees he motorcycles license plate at the next time a disruption occurs.
- Hole Fronting Downbeat Diner – Received a complaint that there is a deep hole in front of Downbeat Diner where a tree should be planted. Representative Rhoads has contacted the City about the issue. Division of Urban Forestry (DUF) stated vandalism of the trees do occur. The empty tree well was recently replanted and is still intact.
- Smith/Beretania Park – Received a complaint regarding the homeless people occupying Smith/Beretania Park, specifically the area of grass between the park fence and sidewalk on Pauahi Street. Representative Rhoads has contacted HPD about the issue.
- Power Washing Schedule – Received an inquiry about the power washing schedule for Chinatown and power washing of bus stops. Representative Rhoads has contacted DFM regarding the schedule and DFM stated that it is on a rotational schedule with only one (1) crew between Saturdays and Wednesdays. Also, power washing of bus stops is not part of their job duty but will do so if particularly dirty. Representative Rhoads wrote a letter to the Mayor to increase the frequency of sidewalk power washing and to consider power washing bus stops again.
- Early Morning Wal-Mart Noise – Received a complaint regarding early morning noise from Wal-Mart delivery and rubbish trucks at the Downtown location. Representative Rhoads wrote a letter to the store manager of the Downtown location regarding the issue.
- Bills of Interest
    - House Bill 2249 – Relating to noise. The Bill establishes enhanced penalties for multiple noise violations or more during a single calendar year. The Committee on Consumer Protection and Commerce deferred the measure until Monday, February 8, 2016 at 2:00 p.m. in Conference Room 325.
    - House Bill 2248 – Relating to condominium governing instruments. The current law states that two thirds (2/3) of the voting interest is needed to pass an amendment. This Bill changes the voting requirements to allow the amendment of bylaws of a condominium association to 6% of owners who return a ballot, indicating a vote of either “yes” or “no”. When counting the ballots and 67% of the people voting “yes” at the end, then the proposed amendment is adopted at the end of the year. Note that this bill does not change the one (1) year period. The committee on Consumer Protection and Commerce deferred the measure until Monday, February 8, 2016 at 2:00 p.m. in Conference Room 325.
    - House Bill 1542 – Relating to Harbors. The Bill authorizes the director of transportation to adopt rules that regulate and limit noise at harbors, ports, roadsteads, docks, wharves, piers, quays, bulkheads, and landings of the State. Currently, no one has authority to regulate harbor noise.

NEW BUSINESS

Parking Rules and Street Usage Permit Presentation – Ty Fukumitsu presented the following:

- Contact Information – It was noted that Fukumitsu’s office is on the 2nd floor of the Frank Fasi Municipal Building and they are open Monday through Friday from 8:00 a.m. to 4:00 p.m. their telephone number is 768-8387 and noted that the Frequently Asked Questions (FAQ) regarding the permitting process can be found online.
- Permit Application Process – A permit is needed when performing work or when closing streets or sidewalks. Fukumitsu showed the permit application and the requirements for the application process.
- Typical Permits – The typical permits that are given are usually street usage, temporary loading zones, staging, lane or sidewalk closures, and road closures. The City looks for safety concerns, location, and the working hours and dates of the application of the permit.
- Review Process – The review process is a tiered process that looks into the parking situations, lanes/sidewalk/or road closures before the permit can be accepted.
- Fees – Fees are given when the application takes up parking meters. The metered space that is taken will cost $12 times the number of meters taken. Fukumitsu noted that only cash and checks are accepted and noted that checks are preferred. Fukumitsu noted that anyone wishing for a permit should apply early, because the average permitting process takes 10 – 20 minutes and the applicant should bring a drawing of the area and a copy of their traffic control plan.

Questions, comments, and concerns that followed:

1. Nuuanu Avenue – Saupe raised a concern about Nuuanu Avenue on the weekends because there are cars parked on both sides of the street and noted that it is detrimental to the businesses because the stalls are always taken and asked if the City could span out the number of permits given and commented that the movie trucks are not utilizing the better parking areas. Fukumitsu responded they are trying to limit the stalls that are being taken, but there are street closures that ban parking. Fukumitsu noted that there needs to be at least one (1) lane open for traffic flow and commented that some situations are tough. Saupe noted that eight (8) permits were given during the Christmas/Holiday Season and commented that people were always asking and looking for parking stalls. Saupe noted that he understands if someone is filming in the area and the street needs to be clear, but the stalls usually open up after 4:00 p.m.
2. Internal Audit – A resident noted that she had called HPD on Hawaii Theatre for taking two (2) spaces when their permit only allowed for them to take the stalls at the end of the day, but Hawaii Theatre did give half back. The resident noted that her point is that DPP is over permitting, and asked for an internal audit.
3. Fort Street – Mollring noted that someone is not using their permits on Fort Street and commented that the stalls are important but are vacant because they are not using the permits correctly. Fukumitsu responded that sometimes on Fort Street the permits are not legal and suggested calling the office the next time someone notices the signs because parking in the Chinatown require notices of at least 24 hours.

Chang departed the meeting at 9:38 p.m.; Seven (7) members present.

4. Loading Zones – Reid asked and Fukumitsu responded that they try not to give loading zone permits but by statute the City can only charge for the meters that are being used. Reid asked what information is required for signs. Fukumitsu responded that the sign needs to be readable, the dates, times, and the plan of the event. The permits are good for 30 days and needs to be renewed after if still continuing. Fukumitsu noted that there are no set rules for permitted loading zones and metered stalls but everything goes under review.

Community Update on the Proposed City Affordable Senior Rental Housing – Yuen noted that the discussion is the same as six (6) months ago and noted that he is concerned about the projects progress. Sandy Pfund noted that the process needed is for Council to pass a Resolution of the agreement to Michael's Project agreement. The rights were given but the EIS or EA is the issue. Funding is another issue because the developers need to apply for loans or funding. Pfund commented that City Council is still discussing the options and suggested holding meetings with the neighbors, but "neighbors" are being debated to whether it is only abutting neighbors. The agreement needs to move forward because the funding is due Tuesday, June 14, 2016. Many documents are still needed, the developer will not spend money until City Council is finished debating. Yuen asked for deadlines and asked for reports when they reach milestones because the Board has been uninformed and been receiving second hand information and asked to be sent the important deadlines and milestones to the Board. Pfund responded that the deadline is in June 2016, and many steps are involved and many more steps have been achieved and noted that there is no time to waste. The next step is with City Council but there are lingering complaints and concerns. Yuen noted that one (1) person overseeing the project is a concern because there has yet to be input from the community and asked if the Board can be a part of the meeting. Pfund responded yes. Councilmember Fukunaga noted that same issues were presented at the first hearing and noted that she had no control over the Resolution introduction but the concern is talking to the administration. What will be done is something that everyone can be a part of and suggested transparency findings at all meeting dates of the progress made and if there are complaints they can be addressed to the administration. Yuen asked to please keep Mayor Caldwell informed and asked if Executive Secretary of NCO Shawn Hamamoto to be in favor of the project and the neighbors meeting.

Due to time constraints the rest of the agenda was deferred to March 2016 meeting.

ANNOUNCEMENTS

Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, March 3, 2016, at the Pauahi Community Center at 7:00 p.m.

ADJOURNMENT – The meeting adjourned at 10:00 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant II
Reviewed by: Sharon Baillie, Neighborhood Assistant
Final Review by: Chair Alvin Au

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, March 3, 2016
PAUAHI COMMUNITY CENTER

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:03 p.m., **with a quorum of eight (8) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang, Jasmine Mancos, Dolores Mollring, Jonathan Saupe, Thomas Smyth, Robert Tom, and Stanford Yuen.

Board Members Absent – Chu Lan Shubert-Kwock.

Guests – Laurel Johnston (Governor Ige's representative); George Atta (Mayor Caldwell's representative); Councilmember Carol Fukinaga; Lieutenant Baron Lee and Sergeant Lyle Fleck (Honolulu Police Department); Firefighter Captain Corey Silva and Firefighter I Jonathan Waltz (Honolulu Fire Department); Pat Lee (Honolulu Authority for Rapid Transit); Sam Moku (Hawaii Pacific University); April Bautista (Representative Karl Rhoads representative); Paul Mallory (Michels Corporation); Allen Stack Jr. (Chinatown Improvement District); Bill Hanrahan (Mental Health Kokua), Rick Taniguchi (Honolulu Marathon); Don Murphy and Joe Felix (St Patrick's Day Block Party); Wanda Akers, Chuck Bussler, Robynne Maii, Sandy Ma, Gwen Abella, Ronald Higa, Julian Ng, Fred White, Gavin Masaki, Iris Oda; and Sharon Baillie (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Chair Au and the Board members introduced themselves at this time.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Firefighter I Jonathan Waltz reported the following:

- February 2016 Statistics – There was 1 structure, 0 wildland/brush, 2 nuisance, and 1 cooking fire, with 7 activated alarms. There were 161 medical emergencies, 2 motor vehicle collisions with pedestrians, 1 motor vehicle crash/collision, 0 mountain rescues, 2 ocean rescues, and 3 hazardous materials incidents.
- Fire Safety Tip – Escape Planning:
    - Plan ahead and be prepared- Make a home escape plan.
    - Know at least two (2) ways out of every room.
    - Have an outside meeting place.
    - Practice your home fire drill twice a year during the day and night with everyone in your home and use two (2) ways out.
    - Teach children how to escape on their own in case you cannot assist them.
    - Close doors behind you as you leave.
    - If the alarm sounds- Get out and stay out. Never go back inside for people or pets.
    - If you have to escape through smoke, get low and crawl under the smoke.
    - Call the fire department from outside of your home.

Honolulu Police Department (HPD) – Lieutenant Baron Lee reported the following:

- January 2016 Crime Statistics – There were 12 motor vehicle thefts, 6 burglaries, 79 thefts, 16 unauthorized entries into a motor vehicle (UEMV), 26 assaults, 2 sex assaults, 2 graffiti and 6 drug offenses. A total of 2,577 calls were placed for service.
- Safety Tips – Automated Teller Machines
    - Whenever possible utilize Automated Teller Machines inside of businesses.
    - Avoid using street ATMs when it is dark.
    - Be aware of suspicious persons or vehicles in the area, trust your gut feelings.
    - Have your card out of your wallet or purse before approaching an ATM.
    - Do not write your personal identification number (PIN) on your card and do not keep it in wallet.
    - When entering your PIN, keep the numbers away from view of others
    - Do not withdraw huge amounts of cash, secure money as soon as it comes out of machine, and take your receipt

- If someone demands your money, do not fight, just give up the money to the suspect and get away.
- Report all incidents to the police as soon as possible.

- Community Policing – If anyone is interested in starting a neighborhood business security watch or a community citizen's patrol please contact Sergeant Deric Valoroso at 529-3695.

Questions, comments and concerns that followed:

1. Status – Au asked what the status was from the meeting last week on policing around the area and Lee answered that there is a lot more added foot patrol in the area, and effort to keep the homeless in compliance with the sit-lie protocol.
2. Assaults – Tom mentions that the statistics from last month are going down, except for assaults and wants to know what classifies an assault. Lee states that assault is when someone knowingly and intentionally injures another person, such as hitting that person.
3. Foot Patrols – Saupe understands that these extra foot patrols are temporary and would like to know if there is an end date. Lee states that it is hard to say, that these extra foot patrols will continue in the Downtown business district/Chinatown area and the only reason why they may get pulled away is if there is something else going on in the district where they are needed, such as in the Keeaumoku area.
4. Smith Street Park – A resident wants to know if the homeless are following the park closure rules, since he notices their belongs are still in the park. Lee says usually the homeless will take their belonging with them when they leave, however sometimes they will stash them in the bushes.
5. Stealing – Resident Akers says that she needs help going to the store and other places, and that the same man always steals from her. She does not believe she has any rights and she is afraid to say anything since he might attacks her. Lee advises that if this happens to please call 911 and to provide as many details as possible, such as what the person looks like, what they are wearing, if they know their name. They both go to the back in order to get more information on helping Akers situation.

Neighborhood Citizen's Patrol (NCP) – Mollring states that the group has been walking regularly, and it has been quiet lately. The NCP group is doing sign waving this Saturday, March 5, 2016 at Kekaulike Mall on King Street and everyone invited to join. Sign waving will start at 8:30 a.m. and there will be a pot luck afterwards provided by Weed and Seed.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No report was provided.

Safe Haven – Program Director Bill Hanrahan reported the following:

- What it is – Safe Haven is a 25 bed residence for the severely mentally ill homeless, and they also serve 40 people through a day program, for as many as 65 clients.
- Last month – Safe Haven was able to place one (1) person from their residence into permanent housing, along with two (2) people from their day program. One (1) resident had their parole revoked and was sent back to prison. They also facilitated one (1) persons return back to their family on the mainland.
- Hygiene center – There are public restrooms and showers at Pauahi Hale that serve around 60 people a day. The men's showers were down for a time last month, therefore they were only able to serve around 40 people a day during this time.

Honolulu Authority on Rapid Transit (HART) – Pat Lee reported the following:

- Completion –The Honolulu Rail Transit Project is moving forward with about seven miles of guideway construction completed.
- East Kapolei and Waipahu – Foundation and column work has been completed from Kualakai Parkway to Farrington Highway near Waipahu High School. Crews are continuing with guideway structure, track installation and raised median work.
- Kiewit – HART's contractor, Kiewit, has started installing new curbs and gutters along Farrington Highway for its roadway restoration work and this should be completed by end of summer.
- Operation center – The Rail Operations Center is almost completed and should be finished in April. The first four rail cars are arriving this month. Work on the stations in Waipahu and East Kapolei is starting.
- Pearl City/Aiea – Utility relocations, drilled shafts and foundation and column work are underway along Kamehameha Highway. The second "balanced cantilever" which will cross over H-1 is underway near the Waiau Power Plant and Sears Distribution Center. The H2R2 ramp preconstruction work is underway. The KHG station group construction contract (Pearl Highlands, Pearl Ridge and Aloha Stadium) is pending. Guideway work on the KHG segment should be completed by end of next year.

- Airport – Utility relocations are continuing on the Airport section. The guideway and stations contract is out for bid.
- Kalihi –Crews are preparing for the temporary relocation of utilities on Dillingham to widen the roadway on the makai side of the boulevard in preparation for guideway work down the center of the boulevard.
- Contact – For general project information, traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – Mollring reported the following:

- Chinese New Year – Monday, February 8, 2016 was the year of the Monkey. On Friday, January 29, 2016 there was a Chinatown block party, with a Chinatown Parade where over 85 groups participated.
- Continued Celebrations – For the following two (2) weekends there was lots of celebrating taking place at the Chinese Cultural Plaza.
- Meetings – On Tuesday, February 9, 2016 the monthly CBCA meeting was held. Next month's meeting will be at Empress Restaurant and is scheduled for Wednesday, March 09, 2016 from 8:30 a.m. to 10:00 a.m. and is open to all who would like to attend.

Chinatown Improvement District (CID) – Allen Stack Jr. reported the following:

- Park clean-up – There was a park clean-up at Smith Street Park which was very successful. The park is maintained more now, making the clean-up easier. There was one (1) needle found on top of a building. The people that came out for the clean-up helped paint, clean up graffiti, rack, and pick up trash. Please come to a park clean-up if you ever have time.

Arts Culture Merchants Etcetera (ACME) – Jonathan Saupe reported the following:

- Reorganization – ACME is still in the midst of reorganizing the group formally known as ADMA.
- Meet and greet – There will be a mixer held on Friday, April 15, 2016 at 5:30 p.m. at the Rock Center on Hotel Street and Nuuanu Street. If you would like to attend or need more information please email jsaupe82@gmail.com
- Advertisement – There should be new flyers, maps, and brochures coming out into the community very soon highlighting the new and old merchants in the community.

Chinatown Community Center Association (CCCA) – No representative was present; no report was provided.

City Sewer Rehabilitation Project, Michels Pipe Services – Paul Mallory reported the following:

- Phase 1 – Chinatown area one (1) project is 100% installed. Three (3) lines need to be television inspected. This will take place during the day on Hotel Street between Fort Street and Smith Street and take one (1) to two (2) hours.
- Phase 2 – Chinatown area two (2) phase is mainly on North Beretania Street to the H1 freeway between Queen Street and River Street. This phase is scheduled to be complete by Sunday, March 27, 2016.
- Setbacks – There have been a few minor setbacks with night work and utilities. Some of the ownership of the utilities were in question so, they had to wait to figure out who was going to fix what. Bars were calling to ask if they could move around their work time because it was at night during their peak business.

Questions, comments, and concerns that followed: Thanks – Au thanks Mallory for being such great partners in working on this project. Mallory thanks him and says that the company tries not to let complaints escalate, and that they like to mitigate any situations before it gets worse.

Public Concerns

- Nashville Waikiki – Resident Ma states that she and her family have recently moved to the downtown area into Harbour Court across from Aloha Tower. Every Thursday, Nashville Waikiki, which is in Aloha Towers has a motorcycle promotion, where different motorcycle clubs come and they will ride their motorcycles revving the engines loudly down the road sometimes until 1:00 a.m. in the morning. This noise keeps people up and would like something to be done about it. She has contacted the police, liquor commission, and the offices at aloha towers. It was suggested she come to the neighborhood board to present her situation. Ma supports local businesses but wishes that this event would not be so late and loud. Ma will get in touch with Moku from HPU to exchange information on this situation.
- Fete – Married couple, Chuck Bussler and Robin Maii introduced themselves to the board and let everyone know that they will be opening a restaurant on Nuuanu Street and Hotel Street called Fete slated to open

either Friday March 18, 2016 or Saturday, March 19, 2016. They will be applying for a liquor license, however it is strictly for the food menu, there will be no loud music or entertainment to go along with that.

ELECTED OFFICIALS

Mayor Kirk Caldwell's Representative – Director George Atta of the Department of Planning and Permitting (DPP) reported the following:

- Halewai'Olu – The administration held meetings on Monday, February 29, 2016, Tuesday, March 1, 2016, and Wednesday, March 2, 2016 with representatives from different community organizations. Representative Karl Rhoads and Representative Suzanne Chun Oakland sent representatives to the meetings, as well as Councilmember Carol Fukunaga attended. There was great discussion about different idea that could be done/changed with project.
- Meetings – There will be two (2) public meetings at the Mayor's Conference room if anyone would like to hear more about the project and put their ideas in. The first one will be Tuesday, March 8, 2016 at 4:30 p.m. and the second one will be Monday, March 10, 2016 at 4:30 p.m.
- Title VI – The 2016 Title VI program report public hearing will be held on Friday, April 8, 2016 at 9:30 a.m. at the Mission Memorial meeting room. The Department of Transportation Services Public Transit Division (DTS-PTD) receives federal grant money every year for public transit services, and therefore is required to give a report every three (3) years on how they are improving their transit services to all citizens on Oahu.

Questions, comments and concerns followed:

1. Senior housing – Yuen would like to know if anyone from the City will be at the meeting to present and give updates on the Senior Rental Housing project. He believes that there should be a timeline on what is happening to show progress, because if there is nothing then no progress has been made. Au suggests that a representative from the board be present as the Senior Housing project meetings. Atta will take concerns back to the Mayor and Managing Director.
2. Traffic signals – Mollring said at Hotel and Maunakea and at Hotel and Smith that the buttons on the traffic signals have been removed, the round circular thing that holds the button is no longer there so people cannot press the buttons to cross the street.
3. Sufficient – Yuen expressed his satisfaction with the Feng Shui report prepared by Michaels Development Company, which had flyers and updates for the board members. He states that back in November 2015 the board had voted to support this project.

Councilmember Carol Fukunaga – Councilmember Carol Fukunaga reported the following:

- Downtown TOD plan – Resolution 15-252 which includes the Final Downtown Transit-Oriented Development (TOD) plan will be heard by the Council's Zoning and Planning Committee at the end of March 2016.
- Aggressiveness – There is a need to have a much more aggressive plan in updating the water, sewer, and road infrastructure. We should take advantage of the transit development to build more permanent supportive housing as well as affordable housing on city and state lands which are in the TOD areas.
- Iwilei – The area between ORNL and the Senior Development project is a potential area where there can be urban rest stops and permanent supportive housing. The goal would be to have these types of facilities in areas where people would be able to thrive and take advantage of the transit systems.

Questions, comments and concerns followed:

1. Hilo Hattie – Tom asked if there was consideration in using Hilo Hattie as a potential place for these services, in which Fukunaga replied that land was owned by the Weinberg Trust and that they were not interested at that time in using that area as a city or state program site. They need to use their revenue producing areas in order to help sustain all the good work and programs they have elsewhere.
2. Sidewalks – A resident mentioned that he was walking in Iwailei by Kmart next to the Salvation Army and said that there were tents set up all along the sidewalk, Fukunaga states that the Department of Facilities and Maintenance (DFM) had previously come through and cleaned up the area. She will report the latest finding.
3. Methadone clinic – Tom asked if there was any variance in the methadone clinic next to his building at Capital Place, being so close to schools. Fukunaga is unaware but will work close with Representative Rhoades and Representative Aseki to find a safe place for such services to be provided.

Governor David Ige's Representative – Laurel Johnston reported the following:

- Taxes – The state is behind about one (1) week right now in processing tax forms, trying to mitigate any tax fraud. Please do taxes sooner than later so process time is not delayed.

- Homelessness – The Governor is aware of the homeless problem and will probably issue another Emergency Proclamation, this is the only way to streamline processes and get through procurement with moving money around.

Senator Suzanne Chun Oakland – No representative was present; a report was provided.

Representative Karl Rhoads – April Bautista reported the following:

- Leaking pipe – Rhodes noticed there was a leaking pipe at Smith-Beretania Park and forwarded the issue to the City. The latest update is that a work order has been places to repair the leaking pipe.
- Signage – Rhodes requested that there be signs placed throughout Chinatown directing people to the public restrooms at Pauahi Hale.
- Parking meter – There is a broken parking ticket machine at Propark Inc. parking lot at the corner of Beretania Street and Nuuanu Avenue. The machine has run out of paper, and customers were unable to get ahold of office to report this issue. Rhoads office has forwarded the complaints they have received about this to the company.
- Art of the Capital – Art of the Capital will be on Friday, April 1, 2016 from 5:00 p.m. to 7:00 p.m. and Representative Karl Rhoads office will be providing light refreshments.
- Bills of interest – HB 1516 would clarify that the internet against children fee which is used to investigate child pornography is to be assessed against every defendant who is convicted of a misdemeanor or felony regardless of the nature of the offense. HB 2121 would appropriate moneys from the general fund for civil legal services for low- and moderate-income persons to be purchased by the judiciary.

NEW BUSINESS

Community Update on the Proposed City Affordable Senior Rental Housing – No report was provided.

Questions, comments and concerns followed: Sufficient – Yuen finds the building rendering attractive that was provided to Au in an email and he moves for the board to support the plan.

Yuen moved and Saupe seconded that the Downtown Neighborhood Board No. 13 support the Michaels Development Fung Shui rendering concept. The motion was adopted by UNANIMOUS CONSENT, 8-0-0. (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

Board of Water Supply Honolulu Water System Improvements in the Downtown Neighborhood Board Area – Iris Oda reported the following:

- Main replacements – Main upsize replacements of 24 inches would be from River Street all the way down to Kalakaua Avenue along Ala Moana Boulevard.
- Other mains – There are a few 16 inch and 20 inch main upgrades planned for along Cooke Street, Pensacola Street, and Piikoi Street.
- Downtown – The downtown neighborhood boundaries are between River Street and Cooke Street. They are looking to upgrade to a 24 inch main which would connect from King Street and run through Nuuanu Stream. If there are difficulties, the alternative alignments could be down River Street that connects to another main that crosses Nuuanu Stream. As well as if this does not work another alternative would be along Nuuanu Avenue. Aloha Tower Drive would be the next alternative, then along Nimitz Highway would be an alternative as well for the main replacement routes.
- Potential start – Potentially the project would start in the year 2020 to replace the aging water mains. The draftee is outside of the six (6) year CIP, the design and construction would come later.

Questions, comments and concerns followed:

1. Night work – Au stated that night construction could potentially disrupt the over 10,000 resident's livelihood, as well as the businesses during the day and would like to see a number provided so that these people can call about their concerns. Oda stated that with every project they do, they inform the residents and provided a number to call. Resident now can call the Board of Water Supply (BWS) and someone would pick up day or night.
2. Shutdown – Saupe wants to know how much of a traffic shutdown effort would take place, Oda says there are no plans right now, but they will have traffic plans in the future and usually when there are projects like this there is one lane traffic, allowing ingress and egress to places.
3. Rail – Tom mentions that the rail is coming in 2020 as well and this would be a perfect storm with the two different projects going on Oda says that they try to facilitate and coordinate with different projects that are going on.

4. Necessary – Yuen notes that replacing aging pipelines is a necessary evil and that he appreciates being informed, and would like the BWS to come back and give updates. Oda states that she would be happy to come back to give updates as plans progress on the project and gets further along.

St. Patrick's Day Block Party – Don Murphy (Owner of Murphy's) and Joe Felix (General Manager, O'Toole's Irish Pub) reported the following:

- Celebration – There will be a St. Patrick's Day Block Party, Thursday, March 17, 2016, starting at 11:00 a.m. outside/near Murphy's Bar and Grill.
- Street closures – King Street to Nimitz Highway will be closed, as well as Marin Lane, and Merchant Street between Nuuanu Avenue and Bethel Street. Closures will start around 5:30 p.m. lasting until 10:00 p.m.
- Music and food – Live music will stop playing at 10:00 p.m. The parking lot at Murphy's will have a lot of different food to eat, there will also be a Keiki tent from noon to 6:00 p.m. with crafts for the children.

Questions, comments and concerns followed: Conscientious – Yuen thanks Murphy's and O'Toole's for making a great effort to mitigate any foreseeable issues when they put on these events. Yuen has been to some of these block parties and there is always a great time to be had.

Yuen moved and Mancos seconded that the Downtown Neighborhood Board No. 13 support the St. Patrick Day Block Party. The motion was adopted by UNANIMOUS CONSENT, 8-0-0. (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

Annual 2016 Honolulu Marathon Half Marathon (Hapalua) – Rick Tanaguchi reported the following:

- Half marathon – On Sunday, April 10, 2016
- Participants – There are 6,300 people signed up for the event thus far, and of that 5,000 are local participants.
- Street closures – Nimitz Highway will be closed from 4:30 a.m. to 7:30 a.m., a special traffic lane will be made from Smith Street to Aloha Tower to accommodate Aloha Tower requirements as well as HPU housing requirements allowing ingress during those times. Marin Towers has access throughout the event on King Street, and during the event they are only able to exit through Maunakea Street. Some residents at Harbour Court and Harbour Square will be locked in from 5:30 a.m. to 7:15 a.m.

Questions, comments and concerns followed:

1. Notifications – Au wants to know if the resident manager of Harbour Court knows about these closures and if he is communicating this to the residents, in which Tanaguchi states that the resident manager knows and has sent notices to the residents in the past about these closures.
2. Fireworks – Saupe asks if this year there will be a firework start, and Tanaguchi says there will be no firework start, that is only for the Honolulu Marathon which takes place the second Sunday in December.

Discussion to Schedule the Downtown Neighborhood Board meeting at the Hawaii Pacific Aloha Tower – Sam Moku reported the following:

- Right space – People from the board should come down to Aloha Towers to check out the spaces to see if it is the right place to be in. There will be a one (1) year test run with no fees, and would be on the first Thursday of each month.
- Space – The space where the board meetings would take place would be in multi-purpose room #2, which is right next to two (2) 24/7 security office located in the tower itself. The restroom is right next door as well for easy access.
- Parking – Parking would not be free. There would be a $5 dollar fee after 4:0 p.m., however they can set aside some spots for Olelo and some stalls for handicap as well.
- Boat days – There is a boat day on Thursday, October 6, 2016, where all of the parking is closed off and homeland security takes over, therefore parking may be an issue for that meeting day.

Questions, comments and concerns followed: Subcommittee – Au wants to form a subcommittee to check out the space at Aloha Tower. Mancos, Saupe, and Smyth volunteer to go check out the space. Au would like to be at the new meeting space by June, so long as the Neighborhood Commission Office approves the facilities contract once the neighborhood board approves the move.

Mancos moved and Mollring seconded that the Downtown Neighborhood Board No. 13 support the forming of a subcommittee to check out the Aloha Towers meeting space. The motion was adopted by UNANIMOUS

CONSENT, 8-0-0. (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

Discussion to amend the name of the Downtown Neighborhood Board as the Downtown Chinatown Neighborhood Board

- Signatures – Au notes receiving rules and regulations from the Neighborhood Commission Office in order to change the board's name. One (1) stipulation needed, is a petition with 100 signature on it. Mancos states we should table the discussion until the next month's meeting when board member Shubert-Kwock is back, since she is the one who really spearheaded the effort.

APPROVAL OF January 7, 2016 and February 4, 2016 REGULAR MEETING MINUTES – **The Board approved the January 7, 2016 and February 4, 2016 meeting minutes by UNANIMOUS CONSENT as amended, 8-0-0.** (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

February, Page 2: "Mollring noted that cashiers have come up to her and noted that people at Sun Yat Sen Park have put a refrigerator there and have been seeing people pull electrical wires to operate the refrigerator." **Should read**, "Mollring noted that cashier has come up to her and noted that people at the park by the YMCA and across from Royal School have put a refrigerator there and saw people pull electrical wires to operate the refrigerator."

February, Page 4: "Safe Haven currently has two (2) grants and aids. One (1) with the Institute for Human Services (IHS) and Councilmember Carol Fukunaga. With the help of the grants and aids…" **Should read**, "Safe Haven currently has two (2) grants-in-aids. One (1) is with the Institute for Human Services (IHS) through funding from Councilmember Carol Fukunaga. With the help of the grants-in-aid…"

February, Page 9: "Yuen asked to please keep Mayor Caldwell informed and asked if Executive Secretary of NCO Shawn Hamamoto to be in favor of the project and the neighbors meeting." **Should read**, "Yuen asked to please keep Mayor Caldwell informed and asked if Executive Secretary of NCO Shawn Hamamoto could take this message back to mayor and managing director."

February, Page 9: Should read, "… Councilmember Fukunaga asked to respond to NB Member Yuen's comments as they pertained to City Council action. She noted that she had no control over the introduction of the resolution (authorizing the Mayor or his designee to enter into a development agreement between the City and Halewai'olu Senior Development LLC), as specified in Department Communication 758 (City Council Docushare listing); however, she was aware that the City Council Chair wanted community concerns addressed by the developer.

BOARD BUISNESS AND REPORTS

Chair's Report – Au stated he received an email from the Downbeat Diner and Lounge owner about making a presentation at April's meeting on an even titled, "Sailor Jerry Festival" on Saturday, June 11, 2016. HART will have a presentation at April's meeting about the segment work that will be going on in the neighborhood.

Neighborhood Commission Updates –Tom shares that there are discussions pertaining to City's neighborhood boards. There may be some major structure changes to neighborhood boards, who votes, who is on the board, and how big the boards are. These are ongoing between City Council and Administration, nothing has been confirmed, but there may be some major changes in the neighborhood board structure within the next six (6) months.

Treasurer's Report – Treasurer Mollring reported a remaining balance of $154.95. The report was filed.

ANNOUNCEMENTS

Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, April 7, 2016, at the Pauahi Community Center at 7:00 p.m.

ADJOURNMENT – The meeting adjourned at 8:55 p.m.

Submitted by: Sharon Baillie, Neighborhood Assistant I
Reviewed by: Neil Baarde, Neighborhood Assistant II
Final Review by: Chair Alvin Au

DOWNTOWN-CHINATOWN NEIGHBORHOOD BOARD NO. 13

NEIGHBORHOOD COMMISSION • 925 DILLINGHAM BOULEVARD, SUITE 160 • HONOLULU, HAWAII, 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET http:///www.honolulu.gov/nco

REGULAR MEETING MINUTES
THURSDAY, JUNE 1, 2017
ONE ALOHA TOWER, MULTI PURPOSE ROOM 2

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:03 p.m**., with nine (9) members present, establishing quorum**. Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang, Dolores Mollring, Bob Tom, Stanford Yuen, Kevin Lye, Lori McCarney, Chu Lan Shubert-Kwock, and John Donaldson-Selby.

Guests – Captain Kenneth Kahahawai (Honolulu Fire Department); Sergeant Harold Chi (Honolulu Police Department); Laurel Johnston (Governor Ige's Representative); Councilmember Carol Fukunaga; Megan Muramatsu (Mayor Caldwell's Representative); Pat Lee (Honolulu Authority for Rapid Transportation); Glen Young (Senator Karl Rhoads' Representative); Representative Daniel Holt; Honglong Li (Department of Transportation Services); Director Sandy Pfund (Department of Land Management); Executive Director Marti Townsend (Sierra Club); Lee Stack (Chinatown Improvement District); Karen Seddon and Stuart Kritzen (Michaels Development Corporation); Amy Lum and Michelle Bartell (American Savings Bank); Bill Hanrahan (Mental Health Kokua); John Shead, Randy Chu, Peter Lloyd, Kathleen Lee, Raul Torres De Si, Rick Keene, Ronald Higa, Anthony Marlin, David Amodo (videographer); and Sultan White (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Chair Au and the Board members introduced themselves. Chair Au reminded the individuals present to speak into the microphone when wishing to speak.

PUBLIC SAFETY REPORTS
Honolulu Fire Department (HFD) – Captain Kenneth Kahahawai reported the following:

- May 2017 Fire Statistics – There were 6 nuisance fires, 1 cooking fire, and 1 activated alarm (no fire). There were 172 medical emergencies, 2 motor vehicle collisions with pedestrians, 1 hazardous materials incident, and 3 motor vehicle crashes/collisions.
- Fire Safety Tip – Smoke Alarms: Working smoke alarms save lives by decreasing the risk of dying in a home fire in half. Smoke alarms should be installed and maintained in every home. Test smoke alarms at least once a month using the test button. If the smoke alarm has a nine-volt battery, change it annually. The entire smoke alarm should be replaced every ten years. The HFD will conduct its Smoke Alarms for Everyone or SAFE program on Tuesday, June 6, 2017. If you are interested in in receiving a free SAFE smoke alarm installation, please call 723-7168 for more information.

Honolulu Police Department (HPD) – Sergeant Harold Chi reported the following:

- May 2017 Crime Statistics – There were 3 motor vehicle thefts, 15 burglaries, 68 thefts, 17 unauthorized entries into a motor vehicle (UEMV's), 15 assaults, 5 sexual assaults, 5 graffiti incidents and 6 drug offenses. A total of 2,367 calls were placed for service.
- Safety Tip – Hurricane Season: Hurricane Season has started and will last through November. Families should prepare a Go Kit (if forced to leave the home to a shelter) and a Stay Kit (essentials for staying at home). Have plenty of water, medicine and flashlights. Have a rain catcher if possible. Listen to the radio for State safety broadcasts and have extra batteries.

Questions, comments and concerns that followed:

1. Comment on Statistics: Shubert-Kwock thanked HPD for their high number of drug arrests in April 2017, but mentioned that there seemed to be a lot of thefts and burglaries still. Sergeant Chi said that there are many hidden places in Chinatown that makes it easy for burglars to hide. The best thing to do is have good neighbors and secure your home as best as possible.
2. Arrests or Calls: Lye asked if the sheet represented arrests or calls. Sargeant Chi said that the arrests statistics are usually higher.
3. Purse Snatch: Mollring thanked HPD for the Kamali'i park cleaning. She said that she witnessed a purse snatching. Sergeant Chi said to be careful at night, and walk in lit areas. Make sure not to leave your purse

unattended, in a shopping cart for example. Be aware. If a purse snatching does occur, be sure to get a good description and report it to the police.

4. Homelessness: Tom asked if the expansion of the sit-lie ban would drive more homeless people back into Chinatown. Sergeant Chi said that his officers address homelessness daily. He said that homeless people drift to where HPD takes no action.

Neighborhood Citizen's Patrol (NCP) – Dolores Mollring reported that they have not seen any prostitution or drug dealing during their walks.

Public Concerns

- 2017 Best of Honolulu Festival: Raul Torres reported that on Saturday, August 5, 2017 from 10:00 a.m. to 5:00 p.m. at the Honolulu Hale Civic Grounds, American Savings Bank will present the 2017 Best of Honolulu Festival. It is a free, family-friendly event featuring 'ono food, keiki zone, entertainment and a marketplace. There will also be a fun run for the adults and kids. They estimate 500 to 1,000 people will attend. Find free parking at the Frank Faci Municipal Building parking garage.
- Chinatown Improvements: Honglong Li reported that the Department of Transportation Services (DTS) plans to make the district more pedestrian/bike friendly. They will install 14 wayfinding signs. The signs will direct pedestrians to popular attractions in Chinatown. They will begin the additions on Wednesday, June 7, 2017 and end mid-July 2017. Construction hours are 8:30 a.m. to 3:30 p.m. Monday to Friday. They will never close more than one (1) traffic lane. If you have further questions call 768-5472.
- River of Life: Yuen commented that the River of Life is outgrowing their current space and need a new location. He suggested the City help River of Life move with grants or a land exchange. He commented that moving River of Life would also move homeless people out of Chinatown.
- American Savings Bank: Yuen suggested that the City invest in the restaurants and small businesses in Chinatown to prepare for the opening of American Savings Bank, which will be the neighborhood's biggest business entity. American Savings Bank will bring in 600 new employees and potential customers to Chinatown.
- Chinatown Functions: Peter Pao, the owner of a new sandwich shop in Chinatown, raised concerns about not being notified when functions open. He said that promoters should notify shop owners before hosting block parties in Chinatown.

NEW BUSINESS

Information Update on Halewai'olu Senior Residence Development – Karen Seddon reported that they are completing due diligence. They need to complete HRS Chapter 6E and the National Historic Preservation Act in order to move forward. She mentioned that the cost of construction has gone up, so they are working on securing funding. There will be 150 units. 120 will be single bed units. 30 will be double bed units. There are planning to have 19 floors with 10 units per floor. Right now they are working on the concept, efficiency and costs. The first funding round will be in the first quarter of 2018 with construction beginning late 2019.

Questions, comments, and concerns followed:

1. National Prehistoric Preservation Act: Shubert-Kwock asked what the National Historic Preservation Act entails. Seddon responded that it is a federal architectural survey process. They must fill out paperwork and hold public meetings.
2. Community Center: Shubert-Kwock mentioned that the public does not want to lose the community center. Seddon answered that they are still going strong, and that they may add more affordable units to secure more funding.
3. Fence: Lye asked and Seddon pointed out where the fence was on the diagram.
4. Sense of Place: Lye asked if the architecture of the building would blend into Chinatown's aesthetic. Seddon answered that it would, and that the concept drawing is not completely finished.
5. Approval: Yuen reminded the Board and the public that two (2) years ago the Board endorsed the conceptual plan.

Director Sandy Pfund reported that the Department of Land Management is supporting and strongly encouraging Michaels Development Corporation to complete Halewai'olu. There are delays, but they are working through them. They will share details with the community as updates occur. An Environmental Assessment (EA) will be conducted, which will be open to community input. The EA will be shared with the Board.
Questions, comments, and concerns followed: Zoning: Shubert-Kwock asked if the height limit could change for the building. Director Pfund said that they were trying to get as many units as possible. They have not yet reached the

height limit, but until due diligence is completed they are not sure how much taller they can make the building.

Noise Variance Application for American Savings Bank Construction – Director of Communications & Community Advancement Michelle Bartell reported that they have a noise variance on 300 North Beretania Street on Friday, June 9, 2017 from 6:00 p.m. to 9:00 a.m. They are pouring 600 cubic yards of concrete. They must do it at night since there are a lot of trucks. Even though they have a long block of time for the noise variance, they only expect the pour to last six (6) to eight (8) hours. They sent letters to immediate residents.

Questions, comments, and concerns followed:

1. Fair Notice: Chair Au said that it is important to give fair notice to all of the residents in the affected area. Director Bartell gave notice to residents in the immediate impact area, but acknowledged they could have expanded the radius of who they contacted.
2. Time: Shubert-Kwock asked if the pour would last 15 hours. Director Bartell answered that even though they have 15 hours allotted, they will only use six (6) to eight (8) hours.
3. Finish Earlier: Shubert-Kwock asked if they can finish the pour by 10:00 p.m. by starting earlier. Director Bartell said that if they moved it up earlier it would affect rush-hour traffic. They will be done between 1:00 a.m. and 3:00 a.m. It will not affect businesses, but unfortunately will affect residents.
4. One Night: Yuen asked and Director Bartell answered that the pour would only last one (1) night. Yuen stressed it is important to be transparent and open with the community.
5. Mauna Kea Street: Chair Au asked and Director Bartell answered that the trucks will not park on Mauna Kea Street.

Resolution to Protect Oahu Groundwater Resources from Red Hill Bulk Fuel Storage Tanks – Executive Director of Sierra Club Marti Townsend reported on water security at Red Hill. The Board of Water Supply (BWS) has informed Sierra Club that in the event of a catastrophic fuel release at Red Hill, the neighborhoods that get water from the Halawa Shaft and Moanalua Wells would be affected (metropolitan Honolulu area spanning Moanalua to Hawaii Kai, which has approximately 40,000 residents and visitors). Passing the following resolution would demonstrate solidarity and support for protecting our precious groundwater and drinking water resources from potential fuel contamination at Red Hill:

Resolution to Protect Oahu's Groundwater Resources from the Red Hill Bulk Fuel Storage Tanks

WHEREAS, clean, unpolluted drinking water is a basic human right and held in trust and to be protected for the benefit of the people pursuant to Article XI, Sections 1 and 7 of the Hawai'i State Constitution; and

WHEREAS, the Red Hill Facility contains twenty tanks, each able to hold 12.5 million gallons of fuel that are located 100 feet above a sole source aquifer designated by the U.S. Environmental Protection Agency in 1987 as a major source of drinking water for O'ahu residents and visitors; and

WHEREAS, on January 13, 2014, the U.S. Navy reported a 27,000 gallon leak of jet fuel from its Red Hill Bulk Fuel Storage Facility; and

WHEREAS, since its construction in the 1940s, the U.S. Navy's Red Hill Bulk Fuel Storage Facility has leaked more than thirty times, releasing at least 155,000 gallons of fuel into the environment; and

WHEREAS, water samples from the groundwater near the tanks show traces of petroleum contaminants that are hazardous to human health; and

WHEREAS, the U.S. Navy, the Defense Logistics Agency, the U.S. Environmental Protection Agency, and Hawai'i State Department of Health agreed to an Administrative Order on Consent that is expected to take at least twenty-two years to complete; and

WHEREAS, the Administrative Order on Consent does not guarantee that the tanks will not leak in the future or that future leaks can be cleaned up; and

WHEREAS, the Downtown-Chinatown Neighborhood Board No. 13 would be directly affected if the sole source aquifer beneath the Red Hill Facility were contaminated with fuel; now, therefore
BE IT RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 is very concerned about where these tanks are located in relation to a sole source aquifer on O'ahu; and

BE IT FURTHER RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 supports precautionary measures to be taken to ensure there is no additional leaks or contamination of our groundwater resources now and into the future; and

BE IT FURTHER RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 deems the twenty-two year timeline of the Administrative Order on Consent to be too long to ensure the safety of our groundwater and drinking water resources; and

BE IT FURTHER RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 urges the Navy, the Defense Logistics Agency, the Department of Health, and the Environmental Protection Agency to take urgent action to protect O'ahu's groundwater resources and find a solution to upgrade, retrofit, or decommission the Red Hill Bulk Fuel Storage Facility; and be it

ORDERED, that copies of this resolution be transmitted to the Governor, the Director of the Department of Health, the members of the Honolulu City Council, the members of the Hawai'i State Legislature, and the Hawai'i Congressional delegation.

Questions, comments, and concerns followed:

1. Other Boards: Chair Au asked which Boards have passed the resolution so far. Executive Director Townsend said that the Manoa Board has passed the resolution. The Downtown-Chinatown Board is the second to hear the resolution.
2. Lawsuit: Chair Au asked if Sierra Club is filing a lawsuit. Executive Director Townsend said that they have only initiated the lawsuit process. They have asked the Department of Health (DOH) to rewrite regulations for water tanks.
3. Public Pressure: Shubert-Kwock asked if the resolution would only add pressure. Executive Director Townsend answered that it would add public pressure, which worked beneficially for other cities who dealt with similar problems.
4. Timeline: Shubert-Kwock asked the timeline on their plan. Executive Director Townsend answered that they would get all the Neighborhood Board resolutions by the end of summer 2017 and continue community outreach to 100,000 people.
5. Construction: Tom mentioned that there are trace elements in the water already, so if construction started immediately how long would it take for the tanks to be fixed. Executive Director Townsend said that was a question for the Navy. He said that the Navy could do more to be faster and more protective, but that would cost more money. By the end of 2017 they will know when it will be completely finished.
6. Priority List: McCarney asked if anyone was resisting or if they are trying to push the issue up the priority list. Executive Director Townsend replied that they are trying to move it up the priority list.
7. Decommissioned: Lye asked if it was likely that the tanks would be decommissioned. Executive Director Townsend said that would only happen if the tanks are not repaired.
8. Congressional Delegation: Yuen asked if they have contacted the Congressional delegation. Executive Director Townsend said he has, and that they have all been supportive.
9. Congressional Delegation: Chair Au and Yuen suggested that when Sierra Club meets with the Navy to have members of the Congressional delegation present.

Shubert-Kwock moved and McCarney seconded that the Downtown-Chinatown Neighborhood Board No. 13 support the Resolution to Protect Oahu's Groundwater Resources from the Red Hill Bulk Fuel Storage Tanks as drafted. Discussion followed:

1. Common Sense: Shubert-Kwock said that it was common sense to protect the water supply.
2. Cost: Lye asked the cost of the repairs. Executive Director Townsend said they do not yet know the costs, but they are ramping up to that step. Studies show that it will be expensive, but protecting water is worth it.
3. Money Source: Lye asked the source of the money for the repairs. Executive Director Townsend said it would be the Navy.

The motion was APPROVED by UNANIMOUS CONSENT, 9-0-0; (**AYE**: Au, Chang, Mollring, Lye, Tom, Donaldson-Selby, McCarney, Shubert-Kwock and Yuen; **NAY**: None; **ABSTAIN**: None).

Bikeshare Hawaii – CEO Lori McCarney passed out information on Biki. She reassured the community that there would be no advertising at the stations. The stations in each neighborhood would have a different sense of identity. Chinatown has been assigned the color red. The program opens on Thursday, June 28, 2017. Installation

begins on Thursday, June 8, 2017. Each station will finish being constructed within two (2) hours.

Change of Park Closure Hours for Kamalii Mini Park – Chair Au announced that even though the Board approved the change on park closure hours for Kamalii Mini Park from 10:00 p.m. to 5:00 a.m. to 7:00 p.m. to 7:00 a.m. during the May 2017 meeting, since it was not on the agenda there needs to be an opportunity for opposition to speak.

Questions, comments, and concerns followed:

1. Constituents: Councilmember Carol Fukunaga said that the request came from constituents who were concerned about illegal activity in the park.
2. Fence: Shubert-Kwock mentioned that changing the hours will not keep people out of the park. There should be a fence. Councilmember Fukunaga said that changing the hours would bring the issue to attention. She circulated a handout with alternative uses for the park, such as moped and bike parking.
3. Parks Board: Megan Muramatsu said that the request is already on its way to the Department of Parks and Recreation Board.

Shubert-Kwock and Lye seconded that the Downtown-Chinatown Neighborhood Board No. 13 support the change of park closure hours for Kamalii Mini Park from 10:00 p.m. to 5:00 a.m. to 7:00 p.m. to 7:00 a.m. The motion was APPROVED by UNANIMOUS CONSENT, 9-0-0 (**AYE**: Au, Chang, Mollring, Lye, Tom, Donaldson-Selby, McCarney, Shubert-Kwock and Yuen; **NAY**: None; **ABSTAIN**: None).

Cinco De Mayo Festival After Action Review – The Board engaged in the following discussion:

- Issues: Shubert-Kwock said that the block party was not well organized. She said that there should be tougher regulation on the Block Parties in Chinatown. She was disappointed with the Cinco De Mayo party and stated more trash cans and portable toilets were needed. She said that ambulances were called four (4) times for drunk people. The party was too loud. There needs to be a change in policy by the Department of Transportation Services (DTS). One visit to a Neighborhood Board meeting is not sufficient notice.
- DTS response: Chair Au said he spoke to Ty Fukumitsu of DTS on Friday, May 5, 2017. Chair Au said that Fukumitsu said DTS did not receive any verbal complaints from HPD or users. Chair Au said that Fukumitsu said the party was okay, and that the street closures were smaller than what was requested. Chair Au said that Fukumitsu said street closures can be given without Board approval.
- Complaint: Shubert-Kwock said that she sent a video and an email complaint to HPD and DTS.
- Complaint: Donaldson-Selby also sent a complaint about security being too aggressive.
- Beer Garden: A resident suggested that beer gardens would be a better option to contain the drinking to one area. The resident also suggested that the party could be in an indoor space on private property.
- Board Power: A resident said that the Board does have the power to make change, even though it is an advisory board. Shubert-Kwock responded that it was difficult because DTS has the power to do whatever they want, so the policy itself must change.
- Standards: McCarney suggested a guideline and standards for promoters who want to hold block parties in Chinatown be created.
- Post-Event Report: Councilmember Fukunaga said that the area legislature has requested post-event reports from the promoter. They should be obtained quickly. The community can file complaints to the liquor commission.
- Letter: Shubert-Kwock suggested the Board write a letter and Chair Au asked for her to write it.

Gordon Biersch Brewery Restaurant Liquor License – Chair Au announced that there is a temporary extension of liquor license premise permit for Gordon Biersch Brewery Restaurant on Friday, June 2, 2017 from 6:00 p.m. to 10:00 p.m. for a special event.

101st Annual King Kamehameha Celebration – Chair Au announced that there was a traffic advisory for the parade on Saturday, June 10, 2017 from 9:00 a.m. to 11:00 a.m.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No representative was present. No report was given.

Safe Haven – No representative was present. No report was given.

Honolulu Rail Transit (HART) – HART Representative Pat Lee announced that HART would like to notify area

residents and businesses that it will be conducting Subsurface Utility Engineering (SUE) work along Nimitz Highway near Iwilei Road, and continuing east to Halekauwila Street. Work will continue on Halekauwila Street to Ward Avenue. The work will then move to a portion of Queen Street between Cummins Street and Waimanu Street. Work will take place weekdays beginning on Monday, June 12, 2017 and is planned to run through Monday, July 17, 2017. Work is scheduled to take place 8:30 a.m. to 3:30 p.m., although some weekend and night work may be required. There may be some light noise from construction, and HART apologizes for any inconvenience. If you have any questions or comments, please call 808-566-2299 or visit www.honolulutransit.org.

Questions, comments, and concerns followed:

1. X-Ray: Tom asked what they are investigating. Lee responded that they are using a ground penetrating radar to take x-ray pictures under the soil to locate utilities.
2. Red Cross: Chang asked what would happen to the Red Cross building. Lee responded that they would be doing construction within 11 feet of the building. Red Cross wants HART to purchase the entire building so that they could move elsewhere. They are still in discussions.

Chinatown Business & Community Association – Shubert-Kwock reported that in May 2017 the community experienced some issues with violent assaults by criminal elements preying on lone individuals at bus stops or parks. Stores were robbed when owners left to go bathrooms, cash from registers was taken, and goods were stolen. One liquor retailer was struck over the head with a steel pipe when only $20.00 was in the cash register. The retailer was an older lady in her 70s. The robbers were three (3) males. Another elderly lady was waiting for the bus outside Walmart in Downtown. She was kicked in the head by a large male, then taken in critical condition to Queens Medical Hospital. Across from Pacific Club three (3) young men attacked a male with a machete. He suffered slash wounds to his face and neck. It is advised to be careful when waiting for a bus or a ride. We must be aware and alert. Do not travel in the dark alone and do not be careless about leaving the shop unwatched. Continue to call 911 when illegal activity is witnessed. Our HPD Commander has deployed more resources recently. There were more HPD patrols and more drug arrests in April 2017. There were 18 drug arrests which is the highest in six (6) years on a per month data count. Chinatown and Waikiki need HPD resources and presence more than elsewhere. The community needs Community Police back as HPD will be doubly effective with cooperation and trust from the community.

Chinatown Improvement District (CID) – Lee Stack reported the following:

- Seminars: CID will have their second series of Historic Preservation Seminars, cosponsored by Historic Hawaii Foundation. They will be held at the Hawaii National Bank Building on the 5th Floor from 12:00 p.m. to 1:00 p.m. on the second Wednesday of each month. They are free and open to the public.
- Taste of Chinatown: The festival will be held on Saturday, August 26, 2017. It will be at the Smith Beretania Park. They may close part of Smith Street to add more booths, vendors and crafts. If they decide to do a street closure, they will come to the Board for a presentation.

Questions, comments, and concerns followed: Tables and Tents: Shubert-Kwock suggested that tables and tents be provided since it was hot last year. Stack responded that grant funding was cut, so it would be difficult to provide tables and tents for everyone.

Arts, Culture, Merchants, Etc. (ACME) – No representative was present. No report was given.

ELECTED OFFICIALS

Mayor Kirk Caldwell's Representative – Megan Muramatsu from the City Managing Director's Office provided updates on questions from the last meeting.

- Noise Complaint: Corporal Steven Matsuda of the District 1 (Central Honolulu) Community Policing Team met with Joshua Mandelstam, manager of the Ong King Arts Center, located at 184 North King Street. Mr. Mandelstam is aware of the noise complaint and wants to be a responsible and good neighbor. It appears that the loud noise is from an open rear door from the establishment to a patio area where the partying continues. The patio has an internal stairwell that leads to an area that is adjacent to the Chinatown Manor building. Mr. Mandelstam said he will limit or not allow his patrons to socialize in the patio area during the late evening hours, or possibly keep the door closed. He also will try to end the live music earlier in the evening. In addition, according to Lee Stack of the Chinatown Improvement District, Ong King's lease will not be renewed when it expires in June 2017.
- Cyclist Signs: The Department of Transportation Services (DTS) has confirmed that according to the State of Hawaii Traffic Laws Section 291C-148, "Unless otherwise prohibited, a bicycle may be driven at a speed

of ten miles per hour or less on a sidewalk or sidewalk area; provided that the driver of the bicycle shall yield the right of way to any pedestrian and that bicycle riding shall be prohibited on sidewalks in business districts." A "business district" is defined as "The territory contiguous to and including a highway when within any six hundred feet along such highway there are buildings in use for businesses or industrial purposes, including but not limited to hotels, banks, or office buildings, and public buildings which occupy at least three hundred feet of frontage on one side or three hundred feet collectively on both sides of the highway." Therefore, bicyclists adhering to this section should not be riding a bicycle on the sidewalk in the Downtown/Chinatown area. This is an enforcement concern and the Honolulu Police Department (HPD) is aware of this ordinance relating to bicycling on sidewalks and can site violators without the presence of signs. As such, by copy of this response, we will be informing the HPD of this concern for their action. The DTS also recommends that the HPD be notified whenever violations are observed. As such, "No Bicycling on Sidewalk" signs do not appear to be necessary at this time.

- 1270 Queen Emma Street: The Department of Community Services is confirming that 1270 Queen Emma Street is not a City project and the City is not involved with the project.
- Potholes: Fort Street between Kukui Street and Beretania Street is identified as in need of resurfacing and is part of the Department of Design and Construction's (DDC) Rehabilitation of Localized Streets, Phase 12D construction project. Potholes were patched on Saturday, May 13, 2017. The Phase 12D project is still in the design phase and projected date for repaving has not been scheduled yet.
- Cost Impact: The establishment of an Office of Climate Change, Sustainability and Resiliency (CCSR) was mandated by City and County of Honolulu voters in November 2016 when 54.5% of Oahu residents voted in the affirmative to create the Office. There is no current cost to the City and County in the current FY-2018 budget for the CCSR. This is due to the fact that the current Executive Director of the CCSR also serves as the City's Chief Resilience Officer, a position that is supported entirely by a 2017-2018 grant from 100 Resilient Cities (100 RC), a project of the Rockefeller Foundation. The grant also provides approximately $1 million in other in-kind and technical support at no cost to taxpayers of the City and County of Honolulu, as well as free services from "platform partners" such as Microsoft and others that could bring millions of dollars in additional assistance to the city over the next three (3) years. While the 100 RC grant provides support for the Office's resilience work, the city is committed to honoring the mandate of Oahu voters to ensure long-term sustainability for our communities and prepare for the impacts of climate change—which will have profound (negative) infrastructure and fiscal implications to the city. The Mayor has requested $269,000 in the FY-2018 budget for the CCSR to pursue programs that reduce the city's energy costs, increase water efficiency, prepare the city for climate change-related sea level rise, and other sustainability initiatives. These programs are expected to conserve taxpayer dollars over both the short and long-term. Beyond the two (2)-year grant agreement with 100 RC, grant funds will no longer be available to support the Chief Resilience Officer position, but free services from platform partners will remain available and provide significant financial support to city projects and programs.
- Sun Yat Sen Park Light: Street light was repaired on Wednesday, April 26, 2017 as requested.
- Power Cleaning: DFM power washed River Street on an emergency feces/urine call on Thursday, May 4, 2017 and returned to power wash the Nuuanu Street to River Street area about Wednesday, May 10, 2017. DFM is tentatively scheduled to power wash the Nuuanu Street to River Street area on or about June 6 pending available resources. Unfortunately it is difficult to provide schedules due to emergency situations that arise such as power washing of bus stops or areas where defecation/urination have occurred.

Questions, comments, and concerns followed:

1. Pothole: Mollring said that a pothole was not filled on Fort Street between South Kukui Street and Beretania Street. She said it is by the second parking meter where the Hawaii Pacific University vans park, so it might have been hidden at the time.
2. Street Cleaning: Schubert-Kwock would like a regular street cleaning schedule for the neglected streets in Chinatown. She said that there used to be two (2) street cleaning machines, but there is one (1) now. She wants two (2) again.
3. Ong King: A resident thanked the City for helping with the noise issue at Ong King.

Councilmember Carol Fukunaga –Councilmember Fukunaga reported the following:

- Kamalii Park: Community stakeholders are pursuing new uses for Kamalii Mini Park to curb illegal activities. Some uses include a Bikeshare Hawaii station and moped parking.
- Sun Yat Sen Park: The appropriation for park improvements has been increased to $561,000, based on updated Department of Design and Construction (DDC) estimates for installation of a smaller electrical facility and removal of the existing bench seating area.
- Parking Fees: Bill 12 will double the parking fees in Downtown, Chinatown and Waikiki.

- Reception: There will be a reception to honor the Board members at the Plaza Waikiki on Tuesday, June 13, 2017 at 3:00 p.m.

Questions, comments, and concerns followed:
1. Parking Fees: Shubert-Kwock asked not to increase the parking fees. Councilmember Fukunaga responded that these areas were selected because they have not been increased for a while. Yuen asked the rationale for picking Chinatown for increasing the parking fees. Councilmember Fukunaga answered that Downtown, Chinatown and Waikiki were all identified as having the specific hours for having the fees imposed.
2. Bill 44: Shubert-Kwock said the Bill 44 should be modified to include a special amendment to exclude Chinatown. Councilmember Fukunaga said that Bill 44 was deferred due to many disagreements, so there is time to work on it.
3. Kamalii Park: Lye mentioned that increasing moped parking at Kamalii Park could disturb the residents due to increase in noise. Councilmember Fukunaga said that moped activity usually stops in the afternoon, and that she hopes Bikeshare Hawaii becomes a much more robust part of the community.

Governor David Ige's Representative – Laurel Johnston, Deputy Director of the Department of Budget and Finance highlighted some points on the monthly newsletter:
- Priorities: Deputy Director Johnston said that Governor Ige is pleased to have passed some of his top priorities in the 2017 legislative session, which are written in the newsletter.
- Japan-Hawaii Economic Summit: This is the first time Kailua-Kona has hosted a summit. Hawaii's relationship with Japan continues to thrive because it is rooted in historical, cultural and business connections. The State wants to find new ways to build on that solid foundation with increased tourism, trade, student exchanges and clean energy projects for mutual benefit.
- Special Session: The Director of Finance is working with the Legislative leadership to get a special session to vote on the Rail.

Questions, comments and concerns that followed:
1. Immigration Ban: Shubert-Kwock is proud of Hawaii for suing on the immigration ban.
2. Education: Shubert-Kwock raised concerns about the new selection of the Education Chief coming from out-of-state. She said they would not be familiar with how education in Hawaii works.
3. Airport: Lye asked when Uber and Lyft would be allowed at the airport. Deputy Director Johnston said that she will check and believes it is an issue for the Public Utilities Commission (PUC). Shubert-Kwock said to upgrade the airport.

Representative Daniel Holt – Representative Holt distributed a newsletter and reported that in the past session he worked diligently to secure the funds necessary for a wide array of projects that will benefit the most individuals, including monies dedicated to the arts, homelessness, Kupuna, schools, transportation needs and highway safety. He introduced legislation to increase police presence in Chinatown, but it did not go through. He gave his praise to Bikeshare Hawaii. He agrees that Chinatown could use an upgrade before American Savings Bank arrives.

Questions, comments and concerns that followed:
1. Graffiti: Shubert-Kwock raised concerns about graffiti in the area. Representative Holt said that they are working hard to provide funding for cover ups. Mollring suggested that if the graffiti is not removed within 48 hours than the building owner be fined, which is done in other cities. Representative Holt said there are positives and negatives to that proposal. There should be discussion to figure out how to address the graffiti problem.
2. Bidding: A resident asked if there was an update on the bidding to manage most of the Downtown properties. The Mayor's Office will bring an answer for that.

Senator Karl Rhoads' Representative – Glen Young said that Senator Rhoads' office is open for any ideas for new legislature.

APPROVAL OF MAY 4, 2017 REGULAR MEETING MINUTES – **McCarney motioned and Mollring seconded to approve the May 4, 2017 regular meeting minutes as written.**

BOARD BUISNESS AND REPORTS

Chair's Report – Chair Au thanked Stanford Yuen and Anthony Chang for being dutiful Downtown-Chinatown

Neighborhood Board Members. The community and the neighborhood are appreciative. He also recognized Tom Smyth for his service. He announced that the Installation Ceremony would be on Saturday, June 24, 2017 from 8:30 a.m. to 1:00 p.m. He reminded that new Members need to respond by Tuesday, June 13, 2017. He reminded that if any Member does not attend the event then they must take the online Sunshine Law Certification.

Neighborhood Commission Updates – No report was given.

Office of Information Practices Report – No report was given.

Treasurer's Report – Treasurer Mollring reported a remaining balance of $74.26 for April 2017. The report was filed.

City and County Affairs – No report was given.

Oahu Metropolitan Planning Organization (OMPO) – Mollring volunteered to be on the Water Committee. Chair Au will contact Mollring via email to appoint Mollring as the representative for the Water Committee.

ANNOUNCEMENTS

Next Meeting – The next Downtown-Chinatown Neighborhood Board No 13 meeting is scheduled for Thursday, July 6, 2017 at the Hawaii Pacific University, One Aloha Tower Drive, Multi-Purpose Room 2 at 7:00 p.m.

ADJOURNMENT – The meeting adjourned at 9:39 p.m.

Submitted by: Sultan White, Neighborhood Assistant I
Reviewed by: Dylan Whitsell, Neighborhood Assistant I

REGULAR MEETING MINUTES
THURSDAY 4 APRIL 2019
ONE ALOHA TOWER, MULTI PURPOSE ROOM 2

CALL TO ORDER – Chair Shubert-Kwock called the meeting to order at 6:00 p.m. **Quorum was established with eight members present**. Note: This nine-member Board requires five members to establish a quorum and to take official Board action.

Board Members Present – Ernest Caravalho, James Logue, Kevin Lye, Kevin McDonald, Dolores Mollring, Willis Moore, Chu Lan Shubert-Kwock, Laura Struges (appointed).

Board Members Absent – Bob Tom

Guests – Lieutenant Taniguchi (Honolulu Police Department); Captain Russell Youth (Honolulu Fire Department); Raelynn Nakabayashi (Mayor Kirk Caldwell's representative); Marc Alexander (Office of Housing); Councilmember Fukunaga; Glen Young (Senator Karl Rhoads' office); Damien Elefante (Governor David Ige's representative); Pat Lee (Honolulu Authority for Rapid Transportation); Greg Payton (Safe Haven); Lee Stack (Chinatown Improvement District); Fran Butera (Chinatown Watch); Nancy Ortiz (Cinco De Mayo); Susan Wolf, Diane Kraus, Verne Nichols, James Tennant, Kainoa Adolpho, Ronald Higa, Questor Lau, Keith Kurahashi, Rik Papa, Eric Wong, and Bob Armstrong (community members); Harry Cho and Casey Ishitani (Neighborhood Commission Office).

PUBLIC SAFETY REPORTS

Honolulu Fire Department (HFD) – HFD departed due to an emergency. A report was provided to the Board that stated the following:

- March 2019 Statistics: There were 5 nuisance fires, 5 activated alarms with no fire, 141 medical emergencies, 3 motor vehicle collisions with a pedestrian, 5 motor vehicle crash/collisions, and 1 ocean rescue.
- Safety Tip: Fire sprinklers respond quickly and effectively to a fire, often extinguishing the fire prior to the fire department's arrival. Fire sprinklers can save lives and property from fire. The National Fire Association reported fire sprinklers reduced fire deaths by 83% and property loss in homes by 69%.

Honolulu Police Department (HPD) – Lieutenant Taniguchi reported the following:

- March 2019 Statistics: There were 7 motor vehicle thefts, 6 burglaries, 50 thefts, 30 unauthorized entries into motor vehicles (UEMV), 29 assaults, 3 sex assaults, 1 graffiti incident, 3 drug offenses, and 2,545 total calls for service.
- Safety Tip: Due to the recent increase in UEMVs, HPD would like to remind the public to lock your doors, do not leave valuables in your vehicle, keep your vehicle clean, stash before you park, park in a visible area, use car alarms, and report suspicious activity.

Questions, comments, and concerns followed:

1. Arrests: Moore asked what type of action has been taken on those arrested as listed in the monthly statistics. Lieutenant Taniguchi stated that there is an ongoing cycle where people who get arrested end up back on the street.
2. Patrol: Lye requested an increase in patrol at Kamalii Mini Park. Shubert-Kwock thanked Major Nishibun for his efforts to increasing patrol and working with the community policing teams.
3. Reserve Officers: Logue asked if HPD can increase the number of reserve officers to help with patrolling of Chinatown.
4. Legislation: McDonald asked if more legislation would help HPD reduce homelessness.
5. Enforcement: A community member raised concerns that the sit/lie law is not being enforced.

Neighborhood Citizen Patrol (NCP) – Mollring reported that the NCP has been patrolling every Tuesday night. Eric Wong of the Kekaulike Mall Citizens Patrol stated that their group has been walking every Thursday.

ELECTED OFFICIALS

Mayor Kirk Caldwell's representative – Raelynn Nakabayashi reported the following:

- Follow-Up on Concerns:
  - Dr. Sun Yet-sen Park Memorial Park: Department of Design and Construction (DDC) stated that there is no public comment period scheduled for the renovation project.
  - Sidewalk Ramps: Department of Facility (DFM) stated that they are allowed to patch damaged Americans with Disabilities Act (ADA) ramps, but modifications to improve the ADA ramps utilized by wheelchairs to meet current standards would need to be assessed and implemented by DDC, due to the complex nature of ADA ramp construction. Questions regarding maintenance patching of ADA ramps can be directed to the Division of Road Maintenance at 768-3600.

Questions, comments, and concerns followed:

1. Crosswalk: Shubert-Kwock raised concerns that the crosswalks on North Beretania Street and Maunakea Street are rough and faded. Suggested using scramble crosswalks due to multiple intersections.
2. Public Phone: Caravalho raised concerns regarding a public phone that has been vandalized and trashed.
3. Repaving: Moore asked what are City's plans are to repave the rest of King Street, rather than only in front of City Hall.
4. Events: McDonald asked if the Liquor Commission has the authority to cancel an event due to liquor violations even though permits have been approved by other City departments.
5. Dr. Sun Yat-sen Park Memorial Park: A community member raised concerns with funds being used for renovations to a park, when there is currently a homeless crisis. The community was not receptive to this project by DDC.
6. Homeless: Community members and business owners raised concerns that homeless are urinating and defecating on the sidewalks. They requested that the City clean/wash the sidewalks.
7. Sidewalks: A community member stated that the sidewalk on Bishop Street/Adam Lane in front of Pauline Bookstore is very slippery when wet.

Senator Karl Rhoads – Senator Rhoads reported the following:

- Capital Improvement Funds: $100,000 in Capital Improvement funds were released for improvements to the Chinese Chamber of Commerce Foundation's Downtown Honolulu building to provide access to seniors and individuals with disabilities. This request for funds was one of Senator Rhoads' top priorities and is extremely pleased to see that funds are now being released.
- Capital Improvement Funds: $1,567,570 in Capital Improvement funds were released to fund seawater air-conditioning energy transfer facilities for designated state buildings Downtown. Construction on the long-awaited Honolulu Seawater Air Conditioning Project in Kakaako is projected to break ground in 2020. Construction itself is set to take another 20 to 22 months. When completed, this district cooling system will reduce Hawaii's dependency on oil by about 178,000 barrels annually, will minimize greenhouse gas emissions, will decrease potable water usage by more than 260 million gallons per year, and will cut down on sewage discharge by up to 84 million gallons per year.
- Strode Montesssori Preschool: Senator Rhoads received a response from HPD on his communication to them concerning the criminal activity taking place on the sidewalks fronting the Strode Montessori Preschool at 925 Bethel Street. Chief Susan Ballard stated that while police officers did not witness any criminal activity when they patrolled the area, HPD officers will make it a point to conduct more frequent checks in that vicinity.

Questions, comments, and concerns followed – Legislative Update: Logue requested a legislative update next month regarding Senator Rhoads' current Bills.

House Representative Daniel Holt – Representative Holt reported the following:

- Bills: House Bill (HB) 159 relating to crime, increases penalties for anyone who knowingly keeps or maintains any structure or place for the purpose of suing controlled substances or which is used for keeping or selling them in violation of controlled substance laws, also increases criminal penalties for those who knowingly profit from, advance, or participate in gambling.
- A'ala Dog Park: A'ala Dog Park recently opened. This was made possible through a public-private partnership between the State, City, community groups, and a non-profit.

- Capital Improvement Funds: $100,000 in Capital Improvement funds were released for improvements to the Chinese Chamber of Commerce Foundation's Downtown Honolulu building to provide access to seniors and individuals with disabilities.
- Recent Events: Representative Holt recently attended the Walk on the Wild Side event in Chinatown hosted by the Kidney Foundation.

Questions, comments, and concerns followed:
1. Chinatown Parade: Shubert-Kwock requested to continue funding for the Chinatown Parade.
2. Gaming Rooms: Logue asked about the enforcement of illegal game rooms.
3. Tobacco Tax: Lye asked for an update regarding the increase on tobacco taxes.

Councilmember Carol Fukunaga – Councilmember Fukunaga reported the following:
- City Budget: Mahalo to the Neighborhood Board No. 13 members and Downtown-Chinatown business leaders for supporting the first round of CD1 amendments to Bill 10, the City's fiscal year 2020 Executive Operating Budget. Bill 10, CD1 was adopted by the Council's Budget Committee during an all-day committee meeting on Wednesday, April 3, 2019 and will be scheduled for a Council review on Wednesday, April 17, 2109. The CD1 amendments included a $200,000 appropriation for private security services to Department of Land Management, which manages the City's affordable housing and city properties in the Downtown-Chinatown area.
- Fire Safety Legislation: Bill 96, relating to fire safety, was the subject of two (2) PITS committee meetings in March. HFD continues to oppose any time extensions proposed in the Bill 96, CD1 drafts, and additional amendments are pending.

Questions, comments, and concerns followed:
1. Security: Caravalho raised concerns that the security will not have authority to enforce laws or make arrests. Lye asked how many security positions there will be and to whom the contract will be awarded to. Councilmember Fukunaga stated that there are no details on that yet and this is a starting point. A community member suggested having security for privately owned buildings as well.
2. Homeless: Logue asked if declaring a homeless emergency has done by other cities before.
3. Events: McDonald asked if the Liquor Commission has the authority to cancel an event due to liquor violations even though permits have been approved by other City departments.

Governor David Ige's Representative – Damien Elefante reported the following:
- Homeless: A response was received from the State Homeless Coordinator stating that $30 million was appropriated by the legislature homeless service centers and shelters across Hawaii.

Community Concerns – Homeless: A community member raised concerns with homeless sleeping and urinating in front of her business. She stated that his has been driving customers away and negatively impacting her business.

NEW BUSINESS

Filling of Vacancy – There is one (1) at-large vacancy. Shubert-Kwock asked all volunteers to introduce themselves.

Caravalho nominated Laura Sturges. Hearing no other nominations, Sturges was voted on the Downtown/Chinatown Neighborhood Board No. 13 by majority vote. (**Aye**: Caravalho, Lye, Logue, Mollring, Shubert-Kwock).

Sturges was appointed to the Board. Eight (8) members present.

Office of Housing – Director Marc Alexander gave a brief presentation and provided handouts regarding the 2019 homeless point-in-time count results and the City and County of Honolulu's Housing First. Director Alexander was available to answer questions and was cut short due to time constraints.

Questions, comments, and concerns followed:
1. Housing First: Logue asked about Housing First units and the voucher system. Alexander stated that data on the number of Housing First clients are not given out due to privacy and that there are no dedicated units for housing first. Vouchers are provided after an evaluation through the Coordinated Entry System.

2. Housing: Caravalho raised concerns that providing housing for drug abusers takes away from those who are economically houseless. He suggested sending drug abusers and the mentally ill to assessment programs prior to providing housing.

Halewai'olu River Street Senior Affordable Rental Project – Questor Lau gave a brief presentation on the project. There will be 156 affordable senior rentals units with the majority targeted at 60% area median income (AMI) or below. There will be 130 one (1) bedroom units and 26 two (2) bedroom units on 17 floors.

Questions, comments, and concerns followed – Senior Citizens: McDonald stated that seniors should be aware that Chinatown can get loud because it is a college/business/residential community.

Domestic Violence Action Center – Nanci Kriedman reported that the Domestic Violence Action Center is the only agency of its kind in Hawaii, offering unduplicated specialized services to survivors of relationship and family violence. Information was provided on the agency's services.

Department of Environmental Services (ENV) – Michael O'Keefe gave a presentation on the City's new bulky item pilot program to reduce the amount of illegal dumping. The City currently provides bulky item pick-up once a month all over Oahu. The new system will require those who want a pick up to schedule an appointment

Questions, comments, and concerns followed:

1. Outreach: McDonald asked what they of outreach will be done to notify the public. O'Keefe stated that ENV will be presenting to the Neighborhood Boards, individual mailers will be sent to 80,000 residents in the Honolulu Collection District, a press release will be sent, and a new conference as well.
2. Illegal Dumping: A community member raised concerns with illegal dumping of trash at bulky item pick-up sites. O'Keefe suggested calling HPD if you notice anyone illegally dumping their trash. A community member raised concerns that people rummage through trash that is illegally dumped on the side of the road.

Cinco de Mayo – Nancy Ortiz reported that the event will take place on Sunday, May 5, 2019 from 2: 00 p.m. to 10:00 p.m. A floor plan/map of the event was provided to the Board and public. The event will be held on Nuuanu Street between Pauahi Street and King Street. Buses will be diverted from Hotel Street. Special duty HPD officers will be hired to secure the entire footprint. The security and staff are all experienced with these types of events and will have a zero tolerance policy in effect. A security/medical headquarters tent will be established for any emergency needs. Guests over 21 and over will have a distinct color wristband and alcohol will only be served to guests with the wristband on. All volunteer staff serving alcohol will have taken the bartender/manager class with the Liquor Commission and have at least two (2) years' experience with these type of events. There is an emergency evacuation plan in place and will be handed out to the security supervisors.

Questions, comments, and concerns followed – Alcohol: A community member asked if alcohol would be served from 2:00 p.m. to 10:00 p.m. concurrently with the keiki activities and if the drink with be just beer and wine or mixed drinks as well. Ortiz responded yes and there will be mixed drinks.

McDonald moved and Caravalho seconded to support the Cinco de Mayo event. The motion was adopted by majority vote, 7-0-1. (**Aye**: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Sturges; **Nay**: None; **Abstain**: Shubert-Kwock).

Kekaulike Mall – Shubert-Kwock gave an update on Kekaulike Mall.

Handicapped Sidewalks in Chinatown – This item was not discussed.

City Council Bill 10 CD1:
The Downtown-Chinatown Neighborhood Board No. 13 supports City Council Bill 10 CD1 introduced by Councilmember Carol Fukunaga to ask the City to release $200,000 for private security for sidewalk safety in Downtown and Chinatown due to escalating violence on the sidewalks and street.

Logue moved and Caravalho seconded the Board support the resolution with the amendments made by Lye. The motion was adopted by unanimous consent, 8-0-0. (**Aye**: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Shubert-Kwock, Sturges; **Nay**: None; **Abstain**: None).

Chinatown Liquor Stores:
The Downtown-Chinatown Neighborhood Board No. 13 requests that the City remove liquor stores overserving patrons in Chinatown, which causes violence and unrest on our streets and endangering citizens' lives.

The Neighborhood Assistant departed at 9:00 p.m.

Hearing no objections, the motion to amend was adopted by unanimous consent, 8-0-0. (Aye: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Shubert-Kwock, Sturges**; Nay**: None**; Abstain**: None**).**
The duly amended main motion was adopted by majority vote 6-1-1. (Aye: Caravalho, Lye, Logue, Mollring, Shubert-Kwock, Sturges**; Nay**: McDonald**; Abstain**: Moore**).**

COMMUNITY REPORTS

Safe Haven – Greg Payton reported that there was one Safe Haven discharges/intakes, one return to the mainland, two Mental Health Kokua Oahu Case Management Housing placement, and 4 permanent housing placements. The grand total for 2019 is 42 placements through March 2019.

Honolulu Authority for Rapid Transportation (HART) – Pat Lee reported that the rail system will be a fully automated, driverless system, utilizing a fleet of 20 four (4) car trains. Each train car is 64 feet long, 14 feet high and 10 feet wide. There are three (3) doorways on each side of a rail car, for a total of 12 doors for each four car train. A 6th four-car train has just been delivered to the Rail Operations Center, which means a quarter of the 80-rail car fleet is already here on island. The system will have 17 trains in operation during peak times and eight (8) trains during non-peak hours. Trains will operate between 4:00 a.m. and 12:00 a.m., and arrive at stations every five minutes during peak, and about 11 minutes during off peak times. The trains will be air conditioned and equipped with WIFI, audio and visual announcement boards, closed circuit TV security cameras and call boxes, and space for strollers, bicycles, luggage and even surfboards. The four car trains have a maximum capacity of 800 passengers, which is equivalent to about 10 city buses. The trains will be fully Americans with Disabilities Act (ADA) compliant, with 188 seats, priority seating for seniors and disabled as well as designated areas for wheelchairs. The Automatic Train Control System testing between the Rail Operations Center and the stations in Waipahu is ongoing in preparation for the interim opening of rail service from Halawa station at Aloha Stadium to the Kualaka'i station at east Kapolei by the end of next year, which will be a limited passenger service. The public will be hearing more details in the coming months. Revenue passenger service for the full 20-mile, 21 station rail system is planned for the end of 2025. Once completed, rail will become an integral part of Honolulu's public transit system connecting seamlessly with the bus and Handivan, using a smart card system called the Holo Card, where riders can transfer easily between the different transportation modes. The public may view the train cars at the upcoming Train Community Day on Saturday 22 June 2019, 10:00 a.m. to 2:00 p.m. at the Rail Operations Center next to Leeward Community College. The event is open to the public. Starting next week, Wednesday 10 April 2019, NAN, who's HART's contractor doing the utility work, will be relocating a waterline which requires closing both left and right turn exits out of Aloha Tower at the Bishop Street/Nimitz intersection across from Bishop Street. The duration of the work is approximately two to three weeks and work will be during the day time from 8:30 a.m. to 3:00 p.m., Monday through Friday. This will not affect makai bound traffic into Aloha Tower from Bishop Street. To exit the Aloha Tower complex, you can use the driveway on the Kalihi side and turn right or left on Nimitz at the traffic signal. For more information on the rail project, please visit the HART website at www.honolulutransit.org, call the project hotline at 566-2299, or email a question to info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – Shubert-Kwock reported that the CBCA has worked almost a whole month on Kekaulike Mall, Oahu Market and Chun Market to ensure sidewalk safety, is working with HPD and others in the community to move homeless camps throughout Chinatown, is educating merchants on sanitation and trash, met with stake holders on the homeless and drug crisis in Chinatown and trying our new ways to reduce crime. The next meeting is Golden Palace at 10:00 a.m. on Tuesday 9 April 2019. Deputy Director of Environmental Services will be talking about city's plans. A green demarcation was drawn so merchants do no cross the line with merchandise into public space. Also a request for the city to re-do dangerous sidewalks and re-paint crosswalks.

Chinatown Improvement District (CID) – Lee Stack reported that the community security patrol project has been rolled over into a new term due to popular request. The general consensus is that the project is having a positive impact in the area and people are pleased with the outcome. The report for the graffiti coating study has been completed and, after a few final edits, will be published on the CID website (www.cidchinatown.org) and by email. After some trial and error, two (2) coatings were identified that work well with citrus based graffiti removal products

allowing for safer and easier removal of graffiti in public areas with less caustic products. The results and products recommended in the study have already proved useful as a solution to a graffiti issue on the wall surrounding Kawaihao Church. CID is also currently working on a beautification project along River Street. The CID decided to adopt the River Street sidewalk under Department of Facilities Maintenance's Malama o ka Aina program. Working with a panel of cultural and community advisors as well as others we plan to place some planters in the area planted with native plants and also to devise a call for artists to submit artwork arranged around various historical and cultural themes pertaining to Nuuanu stream and the Chinatown area. CID plans to have the planters and the sidewalks painted. CID is very excited about this project which has the capacity to transform a much underutilized area of Chinatown with no costly redevelopment or installations. This project has received the support of Department of Facility Maintenance and, recently, the Mayor's Commission on Culture and the Arts.

Chinatown Watch – Fran Butera reported the following:

- Acknowledgments: Sincerest thanks to Councilmember Carol Fukunaga for her Proposed Amendment to the City's budget, which provides for the City to fund private security around City-owned buildings. This is a welcome, badly-needed emergency measure. Several City-owned properties in Chinatown are serious trouble spots, including the entire Hale Pauahi block and the Pauahi Recreation Center. Board Chair Chu Ian Shubert Kwock spearheaded the push to rein in illegal peddling on Kekaulike Mall. She worked with City DFM and Department of Parks and Recreation personnel to paint demarcation lines on the pavement to clearly outline the space for legally selling goods. She was out in her wheelchair at 5:30 a.m. each day of the project. She continues to visit the mall almost daily, on her own time, to monitor this and other issues. Chinatown Watch members report that the Green Line is an improvement and works as intended. Mental Health Kokua (Greg Payton) hired a security guard last week to monitor activity in front of the Safe Haven/Hygiene Center building. This is a welcome change and long overdue. Mahalo, Greg. We look forward to a sharp reduction in aberrant behavior around your facility.
- Continuing Problems Call For Security Presence: River of Life Mission, the City Hygiene Center and the seemingly unregulated liquor stores continue to draw homeless / mentally ill / substance abusers and criminals to our neighborhood where they roam freely around Chinatown among residents, shopkeepers, visitors and workers. From this toxic mix come the countless daily assaults on our community's health and safety: public drinking, drug use, drug sales, fights, psychotic outbursts, f-bomb barrages, shouting matches, urination and defecation in public spaces and on private property, sitting, lying, camping, littering on public sidewalks and in city parks, vandalism, theft, and purse snatchings and assaults by gangs on kupuna and other vulnerable people. These things go on throughout the day, putting the highest number of people at risk. As currently funded and staffed, HPD cannot control this volatile situation. Daily disruptions by homeless, mentally ill, and substance abusers steal HPD's time, resources, and attention away from its core mission of fighting crime and protecting the public. City-funded security will put more eyes and uniforms out in the public spaces. The guards are a middle layer between the merchants/residents/pedestrians and the HPD. They will help reinforce the message that "you have to obey the law here." For public safety, it is crucial that the guards patrol outdoors in the public spaces (sidewalk, streets, etc.) Around the city-owned buildings, not just inside or within the footprint of the buildings. Based on on-going citizen reports and our own daily reality, we believe that security patrols are needed immediately for all public property in the entire Downtown-Chinatown district. However, Councilmember Fukunaga's proposed amendment is a 1st step to change the course of this unfolding public safety nightmare.
- To the City Administration: The community would like that City to begin immediately to fund private security patrols for Chinatown, with special emphasis on the known crime zones surrounding the homeless services and liquor stores. Provide all additional funding needed to support HPD in protecting Chinatown's citizens. Close the Pauahi Street hygiene center and relocate Safe Haven out of Chinatown. Fast-track your negotiations with River of Life Mission so they may move their feeding operation to Iwilei this year. Close the liquor stores that sell alcohol and drugs to the homeless and mentally ill substance abusers who congregate in disproportionately high numbers in Chinatown.
- To Chinatown Residents, Merchants, Shoppers, Property Owners, and Visitors: Call 911 to report violations. Don't think you're inconveniencing the police by calling. They want you to call 911. Doing so gets the violations into their database and helps HPD help you. Talk to your neighbors about the problems. Encourage them to call 911, too. Post incidents anonymously to ChinatownWatch.com. Please encourage your neighbors to post, too. It's an unofficial but visible way to build our community's case for more support. Please note that posting to ChinatownWatch.com is not a substitute for calling 911. To order Chinatown Watch window signs for your business, go to ChinatownWatch.com, click the About link, then send a message via the Contact link. Please allow a few days for a response as the site is run by volunteers. Get some neighbors together to meet with the HPD's Community Policing Team (CPT). Call the CPT office at

(808) 732-3927. A strong community partnership with HPD is good for everyone. Merchants and property owners, please join the Chinatown Improvement District's neighborhood security patrol. Call Lee Stack at (808) 589-9927, email chinatownimprovementdistrict@gmail.com, or visit the website: cidchinatownhawaii.org. Support legislation to fund private security patrols for Downtown-Chinatown's public spaces. Contact Councilmember Fukunaga's office for details. Email cafukunaga@honolulu.gov or call 768-5006.

APPROVAL OF THURSDAY 7 MARCH 2019 REGULAR MEETING MINUTES – **Moore moved and Logue seconded to approve the Thursday 7 March 2019 regular meeting minutes. The motion was adopted by unanimous consent, 8-0-0** (**Aye**: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Shubert-Kwock, Sturges; **Nay**: None; **Abstain**: None).

ANNOUNCEMENTS

- Next Meeting – The next meeting of the Downtown–Chinatown Neighborhood Board № 13 is scheduled for Thursday 2 May 2019 at Hawaii Pacific University, One Aloha Tower Drive, Multi-Purpose Room 2 at 6:00 p.m.
- Neighborhood Citizen Patrol – The Neighborhood Citizen Patrol meets each Tuesday on the Diamond Head side of Kukui Plaza at 8:00 p.m. Please join the patrol and support its efforts to express service and pride in our Downtown–Chinatown community.
- ʻŌlelo – Rebroadcasts of Downtown–Chinatown Neighborhood Board № 13 meetings are scheduled on ʻŌlelo channel 49 for every third Thursday at 9:00 p.m., as well as 6:00 a.m. on the second and fourth Saturdays of each month. An archive of past meetings may be found on http://olelo.org/olelonet/ and searching on <Downtown Chinatown>.

ADJOURNMENT – Chair Shubert-Kwock adjourned the meeting at 9:13 p.m.

Submitted by: Harry Cho, Public Relations Assistant
Reviewed by: Chris Naylon, Neighborhood Assistant

DOWNTOWN–CHINATOWN NEIGHBORHOOD BOARD № 13

NEIGHBORHOOD COMMISSION • 925 DILLINGHAM BOULEVARD, SUITE 160 • HONOLULU, HAWAII 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET http:///www.honolulu.gov/nco

REGULAR MEETING MINUTES
THURSDAY 3 OCTOBER 2019
ONE ALOHA TOWER, MULTI PURPOSE ROOM 2

CALL TO ORDER – Secretary Kamoshida called the meeting to order at 6:00 p.m. **Quorum was established with eight members present**. Note: This nine-member Board requires five members to establish a quorum and to take official Board action.

Board Members Present – Robert Armstrong, Roxie-Anne Kamoshida, James Logue, Kevin Lye, Sandy Ma, Kevin McDonald (arrived 6:03 p.m.), Dolores Mollring, Willis Moore, and Chu Lan Shubert-Kwock

Board Members Absent – None

Guests – Major Ryan Nishibun, Captain Glenn Hayashi, and Lieutenant Brian Taniguchi (Honolulu Police Department); Captain Russell Youth (Honolulu Fire Department); Alexander Zannes (Mayor Kirk Caldwell's representative); Damien Elefante (Governor David Ige's representative); Councilmember Carol Fukunaga and Kimberly Ribellia (Councilmember Carol Fukunaga's office); Senator Karl Rhoads; Damien Elefante (Governor David Ige's representative); Randy Chu (Department of Land Management); Lee Stack and Kainoa Adolpho (Chinatown Improvement District); Nicole Reid (Arts, Culture, Merchants, Etc.); Ronald Higa, Steve Lohse, Keith Kurahashi, Theresa Schubert, Mike Galmiche (community members); Harry Cho (Neighborhood Commission Office). **Name not included if not known or if illegible on the sign-in sheet.**

PUBLIC SAFETY REPORTS

Honolulu Police Department (HPD) – Lieutenant Taniguchi reported the following:

- September 2019 Statistics: There were 7 motor vehicle thefts, 9 burglaries, 54 thefts, 23 unauthorized entries into motor vehicles (UEMV), 15 assaults, 1 sex assault, 5 drug offenses, 1 graffiti incident, and 2,435 total calls for service.
- Safety Tip: Safety tips were given on Halloween safety.

McDonald arrived at 6:03 p.m. and assumed the Chair. Nine members present.

Questions, comments, and concerns followed:

1. Fourth Watch: Shubert-Kwock commended HPD's Fourth Watch for patrolling the area.
2. Bicycles: Ma raised concerns with bicyclists riding on the sidewalk.
3. Illegal Parking: Shubert-Kwock raised concerns with vehicles illegally parking and blocking sidewalks.
4. Citing: McDonald raised concerns that HPD cannot issue citations if the violation is not witnessed.

Honolulu Fire Department (HFD) – Captain Youth reported the following:

- September 2019 Statistics: There was 1 structure fire, 4 nuisance fires, 1 cooking fire, 11 activated alarms (no fire), 135 medical emergencies, 1 motor vehicle collision with a pedestrian, and 5 motor vehicle crash/collisions.
- Safety Tip: Safety tips were given on Halloween Safety.

Questions, comments, and concerns followed:

1. Fire Trucks: Shubert-Kwock raised concerns that fire trucks may have difficulties turning at Maunakea and Pauahi Streets.
2. Fire Hydrants: Mollring raised concerns with placing the steel poles in front of fire hydrants.

Neighborhood Citizens Patrol (NCP) – Mollring reported that the NCP had not been walking due to the rain.

Logue moved and Shubert-Kwock seconded to add election of Vice Chair to the agenda. The motion was adopted, 8-0-0 (**Aye**: Armstrong, Kamoshida, Logue, Ma, McDonald, Mollring, Moore, Shubert-Kwock; **Nay**: None; **Abstain**: None).

ELECTION OF VICE CHAIR

Shubert-Kwock nominated Logue and McDonald nominated Lye. Logue was elected Vice Chair, 7-1-0 (**Logue**: Armstrong, Kamoshida, Logue, Ma, Mollring, Moore, Shubert-Kwock; **Lye**: McDonald; **Abstain**: None).

ELECTED OFFICIALS

Governor David Ige's Representative – Damien Elefante reported the following:

- Capitol Connections: This month's *Capitol Connections* highlight Governor Ige's vision for sustainability in Hawaii, affordable housing, and local agriculture.
- Hawaii Annual Code Challenge: Kick-off for the event will take place on Saturday 19 October 2019.
- Aloha Stadium: The public is invited to participate in the comment period of the Aloha Stadium project until Thursday 7 November 2019.

Questions, comments, and concerns followed:

1. Ohana Zones: Logue raised concerns regarding Ohana Zones and their funding. McDonald also raised concerns with homelessness and asked for an update regarding Governor Ige's plans to end homelessness.

Mayor Kirk Caldwell's representative – Alexander Zannes reported the following:

- Follow-Up on Concerns:
    - Street Lights on Chaplain Lane: Department of Facility Maintenance (DFM) stated that the burnt out lights were replaced on Wednesday 11 September 2019.
    - Sidewalks: DFM stated that inspection of the traffic island/median at Pali Highway and South Beretania Street was unable to detect any residual fecal matter. Please call (808) 768-4381 to report such concerns with specific location details so timely investigations can be conducted.
    - Bus Stop Seating: Department of Transportation Services (DTS) stated that they have previously explained to NB 13 the health and safety reasons that prompted the removal of the bus stop benches at Smith and Hotel Streets. DTS may be willing to replace the benches at this location if NB 13 agrees to adopt and maintain the bus stops at which the replacement benches will be installed. Interested Neighborhood Board members may contact Coreen Blanco of DTS at (808) 768-8375 for more information on DTS' Bus Stop Volunteer Program.
    - TheBus Safety: DTS appreciates and shares the Neighborhood Board's interest in promoting safety on TheBus. DTS is working with Oahu Transit Services, Inc., the City bus operations contractor, to develop a rider awareness safety campaign for implementation later this year. Currently, TheBus promotes safety onboard all vehicles through a bus placard that encourages riders to be aware, take action, and report any suspicious activity by calling 911 or notifying the driver. The placard is translated into 18 different languages, and supports Transit Watch, the nationwide safety and security awareness campaign. Additionally, all buses are equipped with interior announcement systems that announce safety messages while a vehicle is in service. Announcements include safety tips, such as: stand clear of doors, keep aisles and seats clear, hold on when standing, hold on when the bus is departing, use caution when exiting, crosswalk safety, and pickpocket warnings.
    - Chinatown Trash: Department of Environmental Services (ENV) stated that they are looking at self-locking carts for businesses in Chinatown. They are not suggesting earlier nighttime collection as there are many businesses open 24–hours and some closing after midnight, which is why they go with a 4 a.m. route.
    - River Street Homeless: HPD stated that District 1 (Central Honolulu) patrol and Fourth Watch officers have been addressing homeless issues along River Street, as well as accompanying the Department of Facility Maintenance (DFM) in conducting their Stored Property Ordinance (SPO)/Sidewalk Nuisance Ordinance (SNO). The District 1 Crime Reduction Unit (CRU) and patrol have been patrolling and surveying the area for illegal activity. Residents in the area, the public, and shop owners are encouraged to call 911 when they see suspicious activities.
    - River of Life Relocation: Office of Housing stated that negotiations between the City and River of Life are progressing well and further details will be provided upon completion. Updates may be available by the next neighborhood board meeting.
    - Sidewalk Repairs: DFM requested to please provide the locations of the sidewalk that is needing repairs. DFM will make temporary repairs and schedule the permanent repairs by contract.
    - Magnum P.I.: Office of Economic Development stated that there are no dates mentioned, but if it involves Dillingham, it may be the shoot that occurred on 14 July 2019. Public notice was provided

in several different ways: notification letters were sent to affected area businesses, signage was posted including variable message boards, *no parking* signage, and a widely disseminated Traffic Advisory sent to the media by the city communication team that was broadcasted on television news outlets. Information would usually be brought to the neighborhood board, but in this instance the show was on hiatus until mid-June and the sequence was developed after that. NB 13 was on recess in July, so there was no option to come to the board.

- o Bulb-outs: DTS stated that the painted planters will be put back after the bulb-out reconstruction; anticipated completion 2020.

Questions, comments, and concerns followed:

1. Magnum P.I.: Shubert-Kwock requested for prior notice of any street closures that will occur in the Downtown–Chinatown area.
2. Trash Pick-Up: Shubert-Kwock raised concerns that trash pick-up is difficult in Chinatown due to the bulb-outs and barricades.
3. Loading Zone: Ma asked why DTS does not recommend a freight-loading zone.
4. Attendance at Neighborhood Board Meetings: Shubert-Kwock asked if a representative from DTS and Honolulu Liquor Commission can attend the Downtown–Chinatown Neighborhood Board meetings every other month to provide updates.
5. Public Bathrooms: Ma stated that she is aware that there are bathrooms at the Safe Haven Hygiene Center, and asked if there are plans to have public restrooms available for visitors and tourists.
6. Homeless: McDonald requested for monthly updates on any solutions to address homelessness in Chinatown.

Senator Karl Rhoads – Senator Rhoads reported the following:

- 26th Annual Children's Day: Hawaii's 26th Annual Children and Youth Day will take place on Sunday 6 October 2019 from 10:00 a.m. to 3:00 p.m. at the State Capitol grounds and surrounding areas. Children and Youth Day honors and celebrates our children and youth in Hawaii. There will be over 300 interactive, educational, fun activities for infants, toddlers, children, youth, and the entire family. Free parking will be available at neighboring State parking lots, Central Middle School, and Central Pacific Bank at the corner of King and Alakea Streets. For more information, please call Kama'aina Kids at (808) 262-3651 or visit www.HawaiiCYD.org.

Questions, comments, and concerns followed:

1. Homelessness: Shubert-Kwock asked for an update regarding the Institute of Human Services (HIS) petitioning the first 10 cases.
2. Senate Bill (SB) 1124: Armstrong commended Senator Rhoads for SB 1124, which requires a licensed psychiatrist or advanced practice registered nurse with prescriptive authority and psychiatric specialization to determine, prior to a person's discharge from a psychiatric facility, whether an assisted community treatment plan is indicated and to make certain arrangements if so indicated and amends the criteria for assisted community treatment.

Councilmember Carol Fukunaga – Kimberly Ribellia reported the following:

- Kamali'i Mini Park Changes: As a follow-up to Councilmember Fukunaga's September 2019 report on complaints about Kamali'i Mini Park, a copy of Resolution 19-250 was provided, requesting adoption of alternative uses for Kamali'i Mini Park and removal of this site from the city parks inventory. A hearing for this resolution is being requested for the Tuesday 22 October 2019 Parks, Community Services and Intergovernmental Agreements (PCSI) Committee meeting. Councilmember Fukunaga welcomes a resolution of support from Downtown–Chinatown NB 13. As reported previously, the Councilmember believes that a change in the designation of uses of the Kamali'i Mini Park would improve public safety and security in the downtown/Pali Highway gateway to Honolulu considerably, and it would save city taxpayers in reduced enforcement or clean-up expenditures. The Councilmember and her staff met with Chief Ballard and her team on Ordinance 18-14 (Bill 52, 2018 sidewalk and public space restrictions island-wide) to address HPD concerns over enforceability, and will be seeking further assistance from Senator Rhoads and Representative Holt as they harmonize state/county legislation involving public sanitation, vagrancy and related criminal activity.
- Nighttime Noise Complaints on Nimitz Highway: On 18 September 2019, HART's public affairs team and its contractors conducted a community forum at the request of Councilmember Fukunaga, to discuss the noise complaints raised about the nighttime pre-transit construction utility and grading work along Nimitz Highway. During September and October 2019, pre-construction utility and grading work resulted in several

noise complaints from Mann Tower and Harbor Court residents. Councilmember Fukunaga was able to work with the NAN Inc. project managers to address some of the Mann Tower complaints. However, with respect to complaints from other properties along Nimitz Highway, the Councilmember is working with the State Department of Health's Noise and Radiation Branch to determine whether alternative daytime work may be a better alternative. HART's noise variance permits authorizing nighttime and weekend work were issued early in the process for a 3-year time frame. As the utility and grading construction work enters urban Honolulu, where multiple high-rise structures are located along the Nimitz Highway/Ala Moana Boulevard corridor, it may be more practical to allow for daytime construction along portions of Nimitz Highway to be shifted to daytime hours to address neighbors' concerns.

- Nighttime Noise Variance Permit Meeting: In addition to nighttime utility and grading pre-transit construction work entering the urban Honolulu area, the City's Department of Design and Construction scheduled a nighttime noise variance permit meeting for its Downtown–Chinatown repaving projects on Thursday 3 October 2019 at 6:30 p.m. in the Central Middle School cafeteria. Councilmember Fukunaga received a notice of this community meeting on Thursday 26 September and immediately notified AECOM of the schedule conflict with tonight's neighborhood board meeting. DDC reported it was unable to reschedule the meeting, and area legislators Holt, Rhoads and Councilmember Fukunaga requested the following corrective actions: Providing two additional weeks for public feedback and comment on the proposed noise variance permit beyond the Thursday 3 October 2019 community meeting date, and providing a list of the addresses to whom the notice of the community variance permit meeting were sent. The Councilmember received complaints that residents of Honolulu Tower, one of the larger condo properties in downtown Honolulu, had not been notified of this meeting. Information about the noise permit request will be shared with constituents for other properties that may not have received notice about tonight's community meeting.

Questions, comments, and concerns followed:

1. Noise Variance Meeting: Ma asked that DDC present to the Neighborhood Board regarding the nighttime noise variance and requested a more legible map of the rehabilitation of streets.
2. Bulb-outs: Shubert-Kwock raised concerns that no community meeting was held by DTS for the permanent bulb-outs.
3. Trash: Shubert-Kwock requested late-night pick-ups and lockable refuse bins.
4. Homeless: McDonald raised concerns with homeless in the area.

Resident and Community Concerns:

- Public Bathrooms: A community member stated that although bathrooms in Chinatown would be good, it would invite more illegal activity from the homeless. A community member suggested private bathrooms for visitors and tourists.

NEW BUSINESS

Halewaiolu Senior Residence – Keith Kurahashi reported that the land owner is the City and County of Honolulu. The height limit for the project is 350 feet and the tower height will be 173 feet. It will be a BMX-4, business mixed use zoning. There will be 155 affordable senior dwelling units.

Questions, comments, and concerns followed:

1. Community Center: Shubert-Kwock asked about the community center and its use. Kurahashi stated that it will be around 4,000 square feet and its use will be determined by the association.
2. Ground Breaking: Armstrong asked when the ground breaking will take place. Kurahashi stated that it will take place in 2020.
3. Parking: Armstrong asked how many parking stalls there will be and Ma asked if there is visitor parking. Kurahashi stated that there will be 51 parking stalls and all stalls will be first come first serve.

Hallowbaloo Music and Arts Festival – Mark Tarone was present.

Shubert-Kwock moved and Logue seconded to defer discussion of this agenda item due to the lack of clarity of street closures on the agenda. The motion was adopted by majority vote, 5-3-0 (**Aye**: Armstrong, Kamoshida, Logue, Mollring, Shubert-Kwock; **Nay**: Ma, McDonald, Moore; **Abstain**: None).

Resolution 2019-006 Urging the City DTS to Prohibit DJ Booths During Non-Construction Street Closures in Chinatown:

Logue moved and Shubert-Kwock seconded to adopt the resolution. After discussion, the motion was not adopted, 0-8-0 (**Aye**: None; **Nay**: Armstrong, Kamoshida, Logue, Ma, McDonald, Mollring, Moore, Shubert-Kwock; **Abstain**: None).

Resolution 2019-007 Urging the City Administration and City Council and the State of Hawaii the Enforce HRS 281-78 to Control Public Liquor Consumption:

Logue moved and Shubert-Kwock seconded to adopt the resolution. After discussion, the motion failed, 4-4-0 (Aye: Kamoshida, Logue, Mollring, Shubert-Kwock; **Nay**: Armstrong, Ma, McDonald, Moore; **Abstain**: None).

Resolution 2019-009 Requesting Rescission of the Yellow Bag Mandate:

Logue moved and Shubert-Kwock seconded to adopt the resolution. After discussion, the motion failed, 2-6-0 (Aye: Logue, McDonald; **Nay**: Armstrong, Kamoshida, Ma, Moore, Mollring, Shubert-Kwock; **Abstain**: None).

COMMUNITY REPORTS

Safe Haven – Greg Payton reported the following from September 2019: 5 Safe Haven discharges/intakes, 2 activity center placements, 2 MHK – Oahu Case Management Housings, and 9 permanent housing placements. The grand total for 2019 is 74 placements through September.

Honolulu Authority for Rapid Transportation (HART) – Pat Lee was not present but provided a traffic update and report to the board. HART's weekly traffic notice for work in the area, which is described by intersections on Nimitz Highway and various streets in Downtown and Chinatown, is available and updated weekly at: http://hartdocs.honolulu.gov/docushare/dsweb/View/Collection-1470. For more information on the rail project, the public may visit the HART website at www.honolulutransit.org, call the project hotline at (808) 566-2299, or email a question to info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – The CBCA met on Tuesday 10 September 2019 at Golden Palace for the monthly dim sum meeting. Agenda items consisted of ongoing issues in Chinatown including illegal trash, sidewalk encroachment by merchants and homeless, burglaries and assaults, Kekaulike Mall, repairs of trip hazards, and liquor issues from open drinking and smoking along sidewalks and Kekaulike Mall. HPD has been cooperative resulting in the arrest and citation of illegal vendors. Mayor Caldwell had a press conference on using yellow bags to reduce illegal trash and breaking into trash by folks looking for valuables to recycle. Harry continues to be a problem, especially when he is high on either alcohol or drugs. He creates trash by turning over trash receptacles and dragging trash to various locations. Department of Opala has increased enforcement of illegal trash dumping, up to $2,500 fine. City continues to work on possible locked bins and night trash pickups for merchants and residents which might resolve these problems. CBCA's next Meeting is Tuesday 8 October 2019 at Golden Palace, 10:00 a.m. All are welcome. CBCA's 10th annual banquet to celebrate Chinatown Heroes is on Saturday 19 October 2019 at Golden Palace, with a ten-course dinner for $34 per person.

Chinatown Improvement District (CID) – Lee Stack reported that with grant funds received in July, CID rolled out a new patrol schedule for the community patrol project. The patrols now cover seven days per week and a have a new daytime walk-around patrol for certain streets in response to concerns and suggestions from small businesses in the area. We are working on setting up a meeting so that we can coordinate community patrol efforts with the City funded guard services on City properties. We have spoken with HPD about a new initiative where an HPD officer will sometimes accompany the daytime patrol guard. Approximately 200 to 300 people attended the Mid-Autumn Lantern Festival on 13 September 2019. At the event, there were moon cakes, lantern viewing, a raffle, and free lantern making activities (very popular with the children and some adults). Students had made a number of lanterns which were displayed and then given away at the end of the evening. We have posted photos from the event on our Facebook page. We have a suggestion regarding Sit-Lie Legislation in Chinatown. Given the concerns raised at various Neighborhood Board meetings about health and safety issues in the Chinatown District, NB members might be interested in talking with our Councilmember Fukunaga or the Administration about extending the hours of the sit–lie law to when nighttime businesses in the area close—around 2:00 a.m. In Waikiki, sit–lie legislation is in effect 24/7 while in Chinatown the sit–lie law is not enforceable between 11:00 p.m. and 5:00 a.m. Yet, there are businesses in Chinatown which close around 2:00 a.m. and whose businesses are blocked and impacted. Perhaps the legislation could be extended to 24/7 in the Chinatown District, similar to the commercial district of Waikiki—or to at least match the hours of nighttime businesses which close at 2:00 a.m. Lastly, we suggest that the heading for this portion of the agenda be changed back to Community Reports from the new title

"Community Concerns" because we participate in this portion of the agenda primarily to report on our projects and activities in the area.

APPROVAL OF MINUTES

The June 2019 meeting minutes, as presented by the Chair for review by the Board and not those originally circulated by the Neighborhood Assistant, were adopted, 6-0-2 (**Aye**: Kamoshida, Logue, McDonald, Mollring, Moore, Shubert-Kwock; **Nay**: None; **Abstain**: Armstrong, Ma).

Armstrong moved and Moore seconded to approve the August 2019 meeting minutes. Kamoshida moved and Logue seconded to amend the minutes on page 2 of 8, as printed, from "Shubert-Kwock then verbally announced her resignation from NB 13, made some inappropriate remarks out of turn and without being recognized by the chair towards several board members, and left the meeting at 6:45 p.m." to "Shubert-Kwock then verbally announced her resignation from NB 13 and immediately left the meeting at 6:45 p.m." The motion to amend the minutes was adopted, 7-1-0 (**Aye**: Armstrong, Kamoshida, Logue, Ma, Mollring, Moore, Shubert-Kwock; **Nay**: McDonald; **Abstain**: None). **The motion to adopt the amended minutes was adopted, 7-1-0** (**Aye**: Armstrong, Kamoshida, Logue, Ma, Mollring, Moore, Shubert-Kwock; **Nay**: McDonald; **Abstain**: None).

Logue moved and Mollring seconded to adopt the September 2019 minutes as amended to replace the extant CBCA report and to add a report from Chinatown Watch. The motion passed, 7-0-1 (**Aye**: Armstrong, Kamoshida, Logue, McDonald, Mollring, Moore, Shubert-Kwock; **Nay**: None; **Abstain**: Ma).

BOARD BUSINESS

Lye spoke through the interactive conference technology to the Board and noted that he had been in attendance of the entirety of the meeting from a remote location, duly noticed to the public as per the 2017 *Oahu's Neighborhood Board System Member Guidebook*, and had attempted to participate in the meeting as specified on page 38 of the *Guidebook* and §2-14-115(a) of the *Neighborhood Plan*, which collectively specify that presence at a Board meeting has been conferred since 1 July 2012 through remote participation using interactive conference technology, and hence voting on actions before the Board by Members participating thusly is permissible. Lye further noted that he was disenfranchised by not being permitted to be heard or vote on matters before the Board during the meeting.

ANNOUNCEMENTS

- Next Meeting – The next meeting of Downtown–Chinatown Neighborhood Board № 13 is scheduled for Thursday 7 November 2019 at Hawaii Pacific University, One Aloha Tower Drive, Multi-Purpose Room 2 at 6:00 p.m.
- Neighborhood Citizen Patrol – The Neighborhood Citizen Patrol meets each Tuesday on the Diamond Head side of Kukui Plaza at 8:00 p.m. Please join the patrol and support its efforts to express service and pride in our Downtown–Chinatown community.
- ʻŌlelo – Rebroadcasts of Downtown–Chinatown Neighborhood Board № 13 meetings are scheduled on ʻŌlelo channel 49 for every third Thursday at 9:00 p.m., as well as 6:00 a.m. on the second and fourth Saturdays of each month. An archive of past meetings may be found on http://olelo.org/olelonet/; select and expand <Community/Informational> from the list of On Demand categories on this page and then manually scroll to find listings for playback of <Downtown Board> meetings.

ADJOURNMENT – McDonald adjourned the meeting at 8:30 p.m.

Initial draft by Harry Cho, Neighborhood Assistant
Edited by NB 13 Secretary Roxie-Anne Kamoshida and Kevin Lye

Appendix P

Memorandum of Agreement
Cultural Surveys Hawai‘i, Inc.
April 2020

MEMORANDUM OF AGREEMENT
BETWEEN
THE CITY AND COUNTY OF HONOLULU
AND
THE HALEWAIʻOLU SENIOR DEVELOPMENT, LLC
AND
THE HAWAIʻI STATE HISTORIC PRESERVATION OFFICER
REGARDING THE
DEMOLITION AND REDEVELOPMENT OF
THE JOHN R. GILLILAND SR. BUILDING AND SURROUNDING PARKING LOT

THIS AGREEMENT ("Agreement") is made this_____ day of _____, 2020 by and among the City and County of Honolulu ("CCH") in its capacity as the Responsible Entity as defined below, the Hawaiʻi State Historic Preservation Office ("SHPO") through the office of the Hawaiʻi State Historic Preservation Division, a division of the Department of Land and Natural Resources of the State of Hawaiʻi ("SHPD") and Halewaiʻolu Senior Development, LLC, ("Developer" or "HSD") (collectively "Signatory Parties") for the purposes herein set forth.

RECITALS

WHEREAS, pursuant to 24 CFR §58, the U.S. Department of Housing and Urban Development ("HUD"), designated CCH as the Responsible Entity, as defined in 24 CFR §58.2(a)(7), for environmental reviews of projects previously assisted with certain HUD funding, and the Mayor of the City and County of Honolulu ("Mayor") as the certifying officer of the Responsible Entity. Pursuant to 24 CFR §§ 58.4 and 58.5, CCH, as the Responsible Entity, must assume responsibilities for environmental review, decision-making and action that would apply to HUD under the National Environmental Policy Act of 1969, as amended (42 U.S.C. §4321 et. seq.) ("NEPA"), Section 106 of the National Historic Preservation Act, as amended (54 U.S.C. §306108, formerly 16 U.S.C. §470f) ("Section 106"), and Section 106 implementing regulations at 36 CFR §800. Accordingly, pursuant to 24 CFR §§ 58.5 and 58.13, as the Responsible Entity's Certifying Officer, the Mayor is the "responsible Federal official" as that term is used in Section 102 of NEPA, and the "Agency Official" as that term is used in Section 106 and 36 CFR §800. The Mayor, as the Certifying Officer of the Responsible Entity and Section 106 Agency Official, hereby delegates authority to CCH to implement and monitor this Agreement; and

WHEREAS, together with its own funds, CCH used funds from HUD's Community Development Block Grant ("CDBG") to acquire the real property and improvements located at 1331 River Street in Honolulu, Hawaii, more particularly described as Tax Map Key ("TMK") number (1) 1-7-006:012 (the "Property"). The Property is therefore currently subject to CDBG restrictions; and

WHEREAS, the 0.6181-acre Property contains a building (the "Building") which was built in 1958 and has been determined eligible for listing in the State and National Registers of Historic Places, at the local level

under Criterion C, as a unique example of mid-twentieth century modern architecture. The historic name of the Building is the John R. Gilliland Sr. Building. The Building has become dilapidated and is currently functionally obsolete. The Building is currently unoccupied and together with the surrounding neighborhood, has become a gathering place for the homeless population; and

WHEREAS, a hazardous materials assessment survey ("Hazmat Survey")for the Building was conducted by Ford & Associates in April 2019 evidenced the presence of hazardous materials including, but not limited to, asbestos-containing materials. Nine of the asbestos-containing materials were found in amounts above regulatory safe levels; and

WHEREAS, HUD originally designated the Property as a blighted area; and

WHEREAS, HUD originally provided federal CDBG funds for the acquisition of the commercial property which met the national objective of removal of blight, however, the City proposes to change the designation of use pursuant to the provisions of 24 Code of Federal Regulations ("CFR") section 570.505. The change in the national objective is to affordable housing. All 100% of the units created will meet the CDBG national objective at 24 CFR 570.208(a)(3) Housing Activities.

WHEREAS, CCH has determined it best to provide low-income housing to Honolulu's senior population by entering into a public-private partnership; and

WHEREAS, through a Request for Proposals (RFP) process, CCH selected HSD to plan, design, construct, operate and manage redevelopment of the Property pursuant to the terms and conditions of that certain Development Agreement ("DA") dated May 17, 2016, as amended from time to time, made by and between CCH and HSD; and

WHEREAS, HSD was selected as the best qualified development proposal for the redevelopment of the Property and upon satisfaction of conditions precedent established in the revised DA, subsequent to 201H approval, the CCH will recommend to the City Council that HSD be approved for a long-term lease, and thus CCH has invited HSD to sign this Agreement as an Invited Signatory; and

WHEREAS, CCH, subject to the terms and certain conditions precedent in the revised DA, subsequent to 201H approval and City Council approval of a long-term lease, will approve HSD to demolish the existing Building located on the property with the intent to redevelop the Property into an affordable housing rental project for seniors aged 62 and over, at 80% Area Median Income (AMI) and below with the vast majority of units available to seniors with incomes at 60% AMI and below. The demolition and redevelopment together shall be referred to herein as the "Project;" and

WHEREAS, HSD both hosted and attended numerous community meetings with Concurring Parties which culminated in several design changes to the Project including, but not limited to, establishing setbacks of the Project from Lum Sai Ho Tong ranging from approximately 13 feet to 23 feet;

WHEREAS, due to the initial acquisition of the Property and Building with a portion of HUD CDBG funds, the Project is an undertaking subject to review under Section 106 and its implementing regulations, 36 CFR §800; and

WHEREAS, CCH has defined the undertaking's area of potential effect ("APE") as the area within the general boundaries of the H-1 Freeway to the northeast, Maunakea Street and Nuuanu Avenue to the southeast, North Beretania Street to the southwest and Aala Street to the northwest in Honolulu, Hawaii (includes the project site and portions of TMK Nos. (1) 1-7-005:019; (1) 1-7-005:021; (1) 1-7-006:003; (1) 1-7-006:008; (1) 1-7-006:010; (1) 1-7-006:012; (1) 1-7-006:013; (1) 1-7-007:001; (1) 1-7-007:002; (1) 1-7-007:021; (1) 1-7-008:001; (1) 1-7-008:002; (1) 1-7-023:033; (1) 1-7-023:034; (1) 1-7-023:036; (1) 1-7-026:004; (1) 1-7-026:010; (1) 1-7-026:011; (1) 1-7-026:012; (1) 1-7-026:013; (1) 1-7-026:015; (1) 1-7-026:016; and (1) 1-7-026:017 (see Exhibit A); and

WHEREAS, CCH has defined the undertaking's archaeological study area, a component of the APE as the 0.6181-acre project footprint, located at 1331 River Street (TMK (1) 1-7-006:012) (see Exhibit B); and

WHEREAS, CCH's historic property identification effort identified the following historic properties within the project's APE that may be affected by the undertaking: (1) *For Architectural Historic Properties***:** Please reference Exhibit C, Historic Architectural Resources Identified within the Halewai'olu Area of Potential Effect, (2) *For Archaeological Historic Properties*: Please reference Exhibit D, Historic Archaeological Resources Identified within the Halewai'olu Area of Potential Effect; and

WHEREAS, Mayor, as the certifying official of the Responsible Entity and Agency Official under Section 106, has determined that the undertaking will have an adverse effect on the following historic properties, which have been determined eligible for listing in the National Register of Historic Places: Lum Sai Ho Tong and the John R. Gilliland Building (Please Reference Exhibit C) and State Inventory of Historic Places (SIHP) 50-80-14-8840 (Please Reference Exhibit D). While the undertaking may have a potential adverse effect on Lum Sai Ho Tong, the potential adverse effects will be mitigated by providing the setbacks as stated above and implementing the mitigation measures as stipulated in this Agreement; and

WHEREAS, CCH consulted with SHPO under 36 CFR §800; and

WHEREAS, SHPO has reviewed and concurred with the evaluations and recommendations in the following referenced materials *Reconnaissance Level Survey for the John R. Gilliland Building* and *Archaeological Inventory Survey for the Halewai'olu Senior Residences Project, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu Island, Hawai'i TMK (1) 1-7-006:012* (Draft January 2019); and

WHEREAS, human skeletal remains were identified on the Property and in compliance with Hawai'i State burial law (HRS §6E-43 and HAR §13-300), CCH, together with HSD, further consulted with SHPO (including the SHPD History and Culture Branch), the O'ahu Island Burial Council ("OIBC"), and OIBC-recognized Native Hawaiian cultural descendants, including without limitation the Mana Caceres 'Ohana, the Keala Norman 'Ohana, the Marin Ohana represented by Donna and Daron Makaiwi, and the Ali'i Pauahi Hawaiian Civic Club; and

WHEREAS, in June 2019, CCH prepared and delivered over 100 letters of invitation ("Invitation") and accompanying background materials describing the proposed undertaking to organizations and individuals with a potential interest in the proposed undertaking and its potential to affect historic properties including all Native Hawaiian Organizations identified on the *Native Hawaiian Organization Notification List* published by the U.S. Department of the Interior, and maintained by the Office of Native Hawaiian Relations, to identify any Native Hawaiian Organizations and/or Native Hawaiian descendants who may have ancestral

lineal or cultural ties, knowledge, or religious attachment or concerns regarding the proposed undertaking (See Exhibit E). Multiple parties responded to the Invitation and, of these, the Historic Hawai'i Foundation (a Hawaii nonprofit corporation), Hawaiian Memorial Life Plan Ltd, dba Borthwick Mortuary, Chinatown Community Center Association, Lum Sai Ho Tong, the Ali'i Pauahi Hawaiian Civic Club, Mr. Mana Caceres and his family, and Mr. & Mrs. Donna and Daron Makaiwi, expressed a desire to participate in consultation as concurring parties ("Concurring Parties"); and

WHEREAS, CCH and HSD have consulted with the Concurring Parties regarding the effects of the undertaking on historic properties and have invited them to sign this Agreement as concurring parties**;** and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), CCH has notified the Advisory Council on Historic Preservation ("ACHP") of the adverse effect determination with specified documentation, and ACHP has chosen not to participate in the consultation pursuant to 36 CFR §800.6(a)(1)(iii) (see Exhibit F); and

NOW, THEREFORE, CCH, SHPO, and HSD agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

CCH, with the assistance of HSD, shall ensure that the following measures are carried out:

I. ADVISORY COMMITTEE COORDINATION

A. Within six (6) months of the execution of the Agreement, an advisory committee ("Advisory Committee") will be established. The purpose of the Advisory Committee is to assist HSR management with the development of the Story Map (see Section III.B. of this Agreement) and any other information needed for scope, content and final product. The Advisory Committee shall also assist HSR management with guidance, review and comment on the use of the Social Activities Center (SAC). HSR management will work with the Advisory Committee in good faith to include recommendations of the Advisory Committee for the use of the SAC so long as any recommendation does not fall within the purview of management.

B. The Advisory Committee will also assist with other provisions as stated in this Agreement.

C. HSD shall recruit representatives to the Advisory Committee from the following organizations:
- Downtown Chinatown Neighborhood Board Number 13;
- United Chinese Society;
- Chinese Chamber of Commerce; and
  Chinatown Community Center Association.

HSD shall also invite other representatives from the community to join the Advisory Community (including, but not limited to, representatives from the following organizations):
- Lum Sai Ho Tong:
- Ali`i Pauahi Hawaiian Civic Club
- Hawaiian Social or Civic Clubs;

- Japanese Social or Civic Clubs;
- Chinese Social or Civic Clubs;
- Filipino Social or Civic Clubs;
- Vietnamese Social or Civic Clubs;
- Adjacent Property Owners; and
- Halewai'olu Senior Residences Resident(s) (after Project is occupied).

The Advisory Committee will also include representatives from:

- Property Manager (Michaels Management);
- Resident Services Director (Better Tomorrows);
- HSD; and
- CCH.

D. The Advisory Committee shall establish Bylaws or Rules of Procedure to govern its operations. Additional representatives may be added from time to time by HSD or by a majority vote of the existing members. Except for HSD, Property Manager and the Resident Services Director (Better Tomorrows), representatives may be removed from the Advisory Committee for cause by majority vote of the existing members.

E. The Committee shall meet at least quarterly during the duration of the Agreement, but may forego a quarterly meeting if no meeting is necessary and by a majority vote. At the completion of the Agreement, the Advisory Committee may disband or decide to continue to meet as needed.

II. MITIGATION OF ARCHAEOLOGICAL HISTORIC PROPERTIES INCLUDING PREVIOUSLY IDENTIFED BURIAL SITES

A. Prior to Project-related ground disturbance that could affect archaeological historic properties including burial sites, HSD shall develop and implement, pursuant to Hawai'i State Rules of Practice and Procedure Relating to Burial Sites and Human Remains (HRS §6E-43 and HAR §13-300), a burial treatment plan ("BTP") for the previously identified Native Hawaiian burial site identified during the Project's archaeological inventory survey. HSD shall comply with the BTP and all applicable Federal, State and Local laws.

B. Prior to Project-related ground disturbance that could affect archaeological historic properties including burial sites, HSD shall develop and implement an archaeological monitoring program pursuant to HAR §13-279. The archaeological monitoring plan ("AMP"), prepared pursuant to HAR §13-279-4, shall include the description of a targeted data collection component to be developed in consultation with the SHPD. This targeted data collection component of the AMP shall be carried out during the interval between current building demolition and the start of project construction. The AMP shall be submitted to the SHPD for review and approval prior to implementation. All ground-disturbing work shall proceed in accordance with the approved AMP. This AMP shall be approved by the SHPD prior to the start of project construction and shall be implemented as project construction continues.

III. EDUCATIONAL AND INTERPRETIVE PROGRAMS

A. Consultation Protocol for Developing Materials

1. Within six (6) months of the formation of the Advisory Committee, HSD shall provide to the Advisory Committee a draft work plan that outlines the scopes of work, timelines and assigned personnel for the Web-Based Geographic Information System Story Map. Any comments received by HSD from Advisory Committee within thirty (30) days of receipt shall be considered by HSD in developing a scope of work.
2. HSD shall provide a response to all written comments received during the comment period, explaining how the comment was included in the scope of work, or, if not included, the rationale for the exclusion.
3. HSD shall prepare a close-out memo for each of the stipulations to document mitigation actions taken with a timeline and outcomes achieved by the action. HSD shall distribute the close-out memo to the Signatories and Concurring Parties.

B. Web-Based Geographic Information System (GIS) Story Map

1. Within six (6) months of finalizing the work plan, HSD shall develop a web-based GIS story map that provides interactive, interpretive, and educational content based on this Project's Reconnaissance Level Survey, Archaeological Inventory Survey, and Cultural Impact Assessment. Story maps are a relatively recent technological innovation that can fill the role of more traditional public interpretation measures, such as physical interpretive signage and self-guided tours with informational placards. Story maps are an application/platform for accessing information and incorporating geographic location data based on GPS and GIS through mobile devices such as smart phones, laptop computers, and tablets.
2. The story map's focus and working title shall be "River Walk through Honolulu's Chinatown—Historical and Cultural Sites Along Nu'uanu Stream."
3. In consultation with the Advisory Committee, Historic Hawai'i Foundation (HHF) and the SHPD, ten locations shall be selected for inclusion in the story map. From inland/*mauka* to seaward/*makai* places along the Nu'uanu Stream Corridor from which the ten story map locations shall be selected may include, but not be limited to, the following:
   a) Foster Botanical Garden
   b) Kuan Yin Temple
   c) Lum Sai Ho Tong Temple
   d) Izumo Taishakyo Temple
   e) The Halewai'olu Senior Residences project area
   f) The Gilliland Building
   g) "The Vineyard" and its ties to the Marin Family
   h) Dr. Sun Yat Sen Memorial Statue
   i) Chinatown Cultural Plaza
   j) Re-channelization of Nu'uanu Stream
   k) A'ala Park
   l) Kuwili and Kawa Fishponds
4. Preparation of the story map shall include the following steps:
   a) Initial consultation meeting with Advisory Committee, HHF, and the SHPD. This meeting will discuss and decide upon the ten locations along Nu'uanu Stream that

will be the subject of the story map. This meeting will offer the Advisory Committee the opportunity to specify the content of the story map.

b) Field inspection of the Nu'uanu Stream story map area to assess current conditions and collect any needed GPS location data and current photos.

c) Preparation of the draft story map text and images with links to other information sources – to include the following:
   i. Historical, archaeological, and cultural background in images and text.
   ii. Links to other Chinatown public interpretation and research, such as HART's HRTP documentation and resources, as well as the CCH's own resources.

d) Second consultation meeting with the Advisory Committee, HHF and the SHPD. Prior to this meeting the draft story map application will be provided to the Advisory Committee for their review and comment at the second consultation meeting.

e) Preparation of the final story map based on comments from the second consultation meeting.

f) HSD shall ensure that the story map is maintained and available for public use over the internet for at least five years following its completion.

IV. CONSTRUCTION PROTECTION PLAN

A. Pursuant to best management practices approved by CCH, HSD, in cooperation with its general contractor, will implement standard monitoring of effects, of the Project's construction, if any, on adjacent historic properties in the vicinity (e.g. Lum Sai Ho Tong and Borthwick Mortuary), in addition to procuring all necessary noise permits. Potential effects which shall be monitored include, but are not limited to, traffic, noise, vibration, dust and other effects associated with construction. Should an effect occur outside of the normal course of construction, HSD will make this information available through a written memo as required by Section VI.A. of this Agreement.

B. HSD shall ensure that any inadvertent damage resulting from the Project to adjacent historic structures shall be repaired in accordance with The Secretary of the Interior's Standards for the Treatment of Historic Properties, 36 CFR §68. HSD shall submit a scope of work or treatment plan to address inadvertent damage to the SHPD for concurrence before initiating repairs.

V. POSTREVIEW DISCOVERIES

B. Should additional human remains or burial sites be identified during project construction, CCH shall ensure that HSD treat them following Hawai'i State burial law governing inadvertent discoveries of human skeletal remains (HRS §6E-43.6, HAR §13-300-40).

C. If additional archaeological historic properties are discovered that may be historically significant or unanticipated effects on historic properties are found, CCH shall ensure that HSD implement a plan to address such discoveries following consultation and the procedures outlined in HAR §13-275-12 and HAR §13-280.

VI. MONITORING AND REPORTING

A. Each year following the execution of this Agreement, until it expires or is terminated, HSD shall provide the Signatory Parties and Concurring Parties a summary written memo detailing work undertaken with respect to the Project or problems encountered including any adverse effect to Eligible Properties.
B. Signatory Parties and Concurring Parties may request a meeting to discuss the summary written memo to facilitate review, comment on the annual report, to resolve questions, or to resolve adverse conditions.

VII. DURATION

A. If the terms of this Agreement have been fully implemented by five (5) years from the date of the execution of this Agreement, this Agreement will terminate and be considered null and void. In the event the terms of this Agreement have not been fully implemented by five (5) years from the date of the execution of this Agreement, CCH shall notify the Signatory Parties and Concurring Parties, and, in its sole discretion, if it chooses to continue with the undertaking, shall re-initiate review of the undertaking in accordance with 36 CFR § 800.

VIII. DISPUTE RESOLUTION

A. Should any Signatory Party to this Agreement object at any time to any actions proposed or the manner in which the terms of this Agreement are implemented, CCH shall consult with such party to resolve the objection. If CCH determines that such objection cannot be resolved, CCH will:

1. Forward all documentation relevant to the dispute, including CCH's proposed resolution, to ACHP. ACHP shall provide CCH with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, CCH shall prepare a written response that takes into account any timely advice or comments regarding the dispute from ACHP, HSD, and Signatory Parties, and provide them with a copy of this written response. CCH will proceed according to its final decision.

2. If ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, CCH may proceed according to its final decision. Signatories and Concurring Parties will be notified in writing.

B. Any terms of this Agreement that are not subject to dispute shall remain unchanged and in full force and effect.

XII. AMENDMENTS

A. This Agreement may be amended when such an amendment is agreed to in writing by each of the Signatory Parties with consultation by the Concurring Parties. Such amendment shall be

effective the date such amendment is executed by the Signatory Parties and delivered electronically to the ACHP.

XIII. TERMINATION

A. If any of the Signatory Parties to this Agreement, determines that its terms will not or cannot be carried out, that party shall immediately consult with the other Signatory Parties to attempt to develop an amendment per Stipulation XII, above. If within thirty (30) days an amendment cannot be reached, any Signatory may terminate the Agreement upon written notification to the other Signatories.

B. Once the Agreement is terminated, and prior to work continuing on the undertaking, CCH must either execute an agreement pursuant to 36 CFR § 800.6 or request, take into account, and respond to comments of ACHP under 36 CFR § 800.7; provided, however, nothing herein shall be construed to require the CCH to halt construction and related activities proceeding in accordance with this Agreement initiated prior to the termination of this Agreement. CCH shall notify the Signatories of action it will pursue. Concurring Parties will be notified in writing. Any new agreement pursuant to 36 CFR § 800.6 or action based under 36 CFR § 800.7 shall apply solely to activities initiated after the termination of this Agreement.

C. Execution of this Agreement by CCH and implementation of its terms evidence CCH has taken into account the effects of the undertaking on historic properties.

XIV. MISCELLANEOUS

A. Formal notices and communication between the Signatory Parties shall be sufficiently given if, and shall not be deemed given unless, dispatched by certified mail, postage prepaid, return receipt required, or sent by express delivery or overnight courier service, to the office of the Signatories shown as follows, or such other address as the Signatory may designate in writing from time to time:

CCH:
City and County of Honolulu
Department of Land Management
558 S. King Street
Honolulu, Hawai‘i 96813
Attention: Ms. Sandra Pfund, Director or her successor
Email:

SHPO:
Dr. Alan Downer, Deputy State Historic Preservation Officer
Hawai‘i Department of Land and Natural Resources
601 Kamokila Boulevard, Suite 555
Kapolei, HI 96707
Attention: Dr. Alan Downer, Deputy State Historic Preservation Officer or his successor
Email:

HSD:
Halewai'olu Senior Development
737 Bishop Street, Ste. 1520
Honolulu, HI 96813
Attention: Ms. Karen Seddon, Regional Vice President
Email:

HHF:
Historic Hawai'i Foundation
680 Iwilei Road, Ste. 690
Honolulu, HI 96817
Attention: Ms. Kiersten Faulkner, Executive Director
Email:

Chinatown Community Center Association
P.O. Box 37572
Honolulu, HI 96837
Attention: Mr. Wesley Fong, President
Email:

Lum Sai Ho Tong
1315 River Street
Honolulu, HI 96817
Attention: Mr. Howard Lum, President
Email:

Ali'i Pauahi Hawaiian Civic Club
99-045 Nalopaka Place
Aiea, HI 96701
Attention: Ms. Kehaulani Lum, Director
Email :

Lam Ohana
(808) 263-7777
Attention: Mr. Gerald N.Y.C. Lam
Email: naalii@aol.com

Ohana Kupono Consulting Inc.
(808)222-2777
Attention: Mr. Mana Caceres
Email: mana@ohanakupono.com

Marin Ohana
(808)381-6315
Attention: Mr. & Mrs. Daron & Donna Makaiwi

Email: Donmak808@yahoo.com

Hawaiian Memorial Life Plan, Ltd.
Dba. Borthwick Mortuary
1330 Maunakea Street
Honolulu, HI 96817
office 808.522.5233
Attention: Mr. Mel Kalahiki, Location Manager
Email:

B. This Agreement may be executed in counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same Agreement.

[signature page follows]

A. SIGNATORIES:

City and County of Honolulu (Responsible Entity)

By: _____
Kirk Caldwell
Mayor, City and County of Honolulu
Certifying Officer of Responsible Entity
Section 106 Agency Official
Date: _____

APPROVED AS TO FORM:

By: _____
Corporation Counsel

Date: _____

Hawaii State Historic Preservation Officer

By: _____
Dr. Alan Downer
Deputy State Historic Preservation Officer
Date: _____

APPROVED AS TO FORM:

By: _____
Deputy Attorney General of the State of Hawaii

Date: _____

B. INVITED SIGNATORY:

Halewaiolu Senior Development, LLC,
a limited liability company

By: _____
Karen Seddon, Regional Vice President
Date: _____

C. CONCURRING PARTIES:

Historic Hawaiʻi Foundation,
a Hawaii non-profit corporation

By: _____
Ms. Kiersten Faulkner, Executive Director
Date: _____

Hawaiian Memorial Life Plan Ltd., dba Borthwick Mortuary

By: _____
Mr. Mel Kalahiki, Location Manager
Date: _____

Chinatown Community Association

By: _____
Mr. Wesley Fong, President
Date: _____

Lum Sai Ho Tong

By: _____
Mr. Howard Lum, President

Date: _____

Aliʻi Pauahi Hawaiian Civic Club

By: _____
Ms. Kehaulani Lum, Director

Date: _____

Native Hawaiian Recognized Descendant

By: _____
Mr. Mana Caceres and Mrs. Kalehua Caceres, Caceres ʻOhana

Date: _____

Native Hawaiian Recognized Descendant

By: _____
Mr. Daron Makaiwi and Mrs. Donna Makaiwi, Marin ‘Ohana

Date: _____

NOTES

This document assumes that the term "Signatory" has been defined in the agreement to include both signatories and invited signatories.

The agency must submit a copy of the executed MOA, along with the documentation specified in Section 800.11(f), to ACHP prior to approving the undertaking in order to meet the requirements of Section 106. 36 CFR § 800.6(b)(1)(iv)

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EXHIBIT A

Area of Potential Effect Boundaries



Tax Map Keys Included within Area of Potential Effect:

1-7-005:019	1-7-006:013	1-7-023:033	1-7-026:012
1-7-005:021	1-7-007:001	1-7-023:034	1-7-026:013
1-7-006:003	1-7-007:002	1-7-023:036	1-7-026:015
1-7-006:008	1-7-007:021	1-7-026:004	1-7-026:016
1-7-006:010	1-7-008:001	1-7-026:010	1-7-026:017
1-7-006:012 (the "Property")	1-7-008:002	1-7-026:011	

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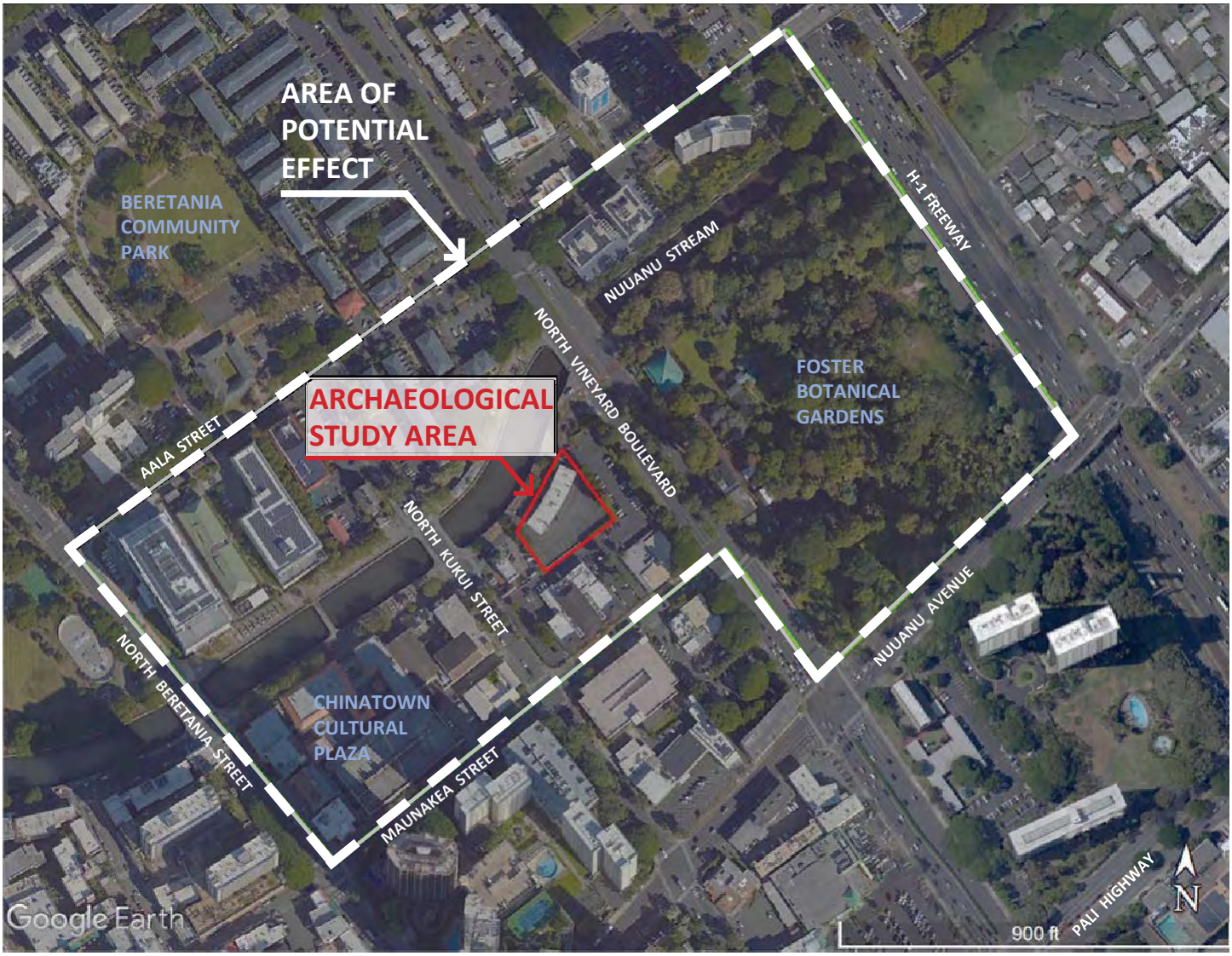
EXHIBIT B

Archaeological Study Area



Archaeological Study Area Limited to the following Tax Map Key within Area of Potential Effect:

1-7-006:012 (the "Property")

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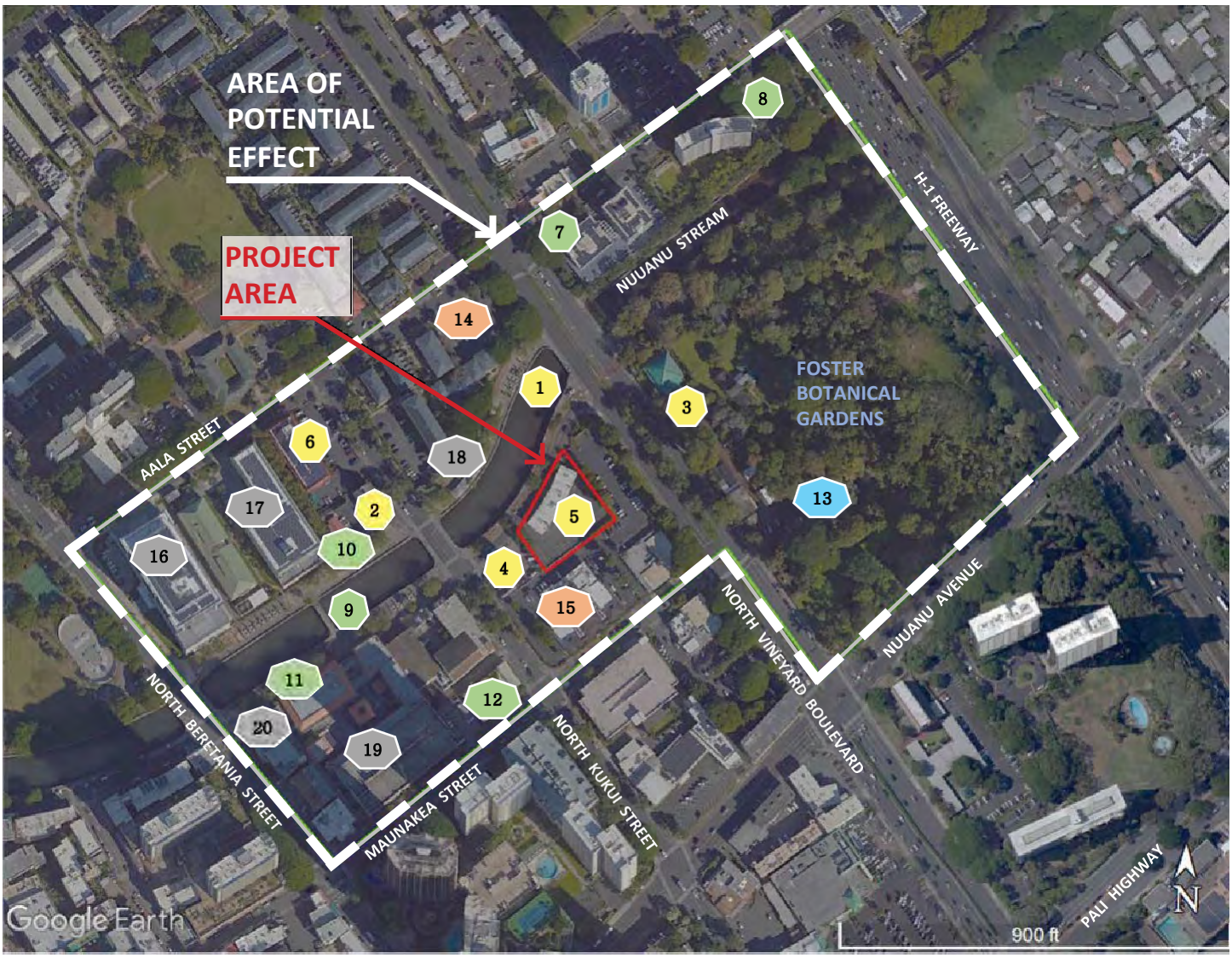
EXHIBIT C

Map: Historic Architectural Resources Identified within the Halewaiolu Area of Potential Effect



KEY

- # ELIGIBLE HISTORIC ARCHITECTURAL RESOURCE
- # POTENTIALLY ELIGIBLE AT A LATER DATE (SEE CORRESPONDING TABLE)
- # LISTED ON THE HAWAII & NATIONAL REGISTER OF HISTORIC PLACES
- # NOT AN ELIGIBLE HISTORIC RESOURCE
- # NOT WITHIN DATE RANGE ESTABLISHED BY PROJECT SCOPE

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EXHIBIT C

Table: Historic Architectural Resources Identified within the Halewaiolu Area of Potential Effect

List of Potential Resources & Evaluation											
	Present Name	*Historic Name*	*Address*	*TMK*	*SIHP Number/NRHP Number*	*Category*	*Date*	*Architect/Builder*	*Eligibility*	*Criterion*	*Condition*
1	Channelization of Nuuanu Stream	-	-	-	-	-	1899	-	Eligible	A	Good
2	Izumo Taishakyo Mission	Izumo Taishakyo Mission	215 North Kukui Street	(1) 1-7-026:012	-	Residential	1923	Hego Fuchino (architect) Ichisaburo Takata (builder)	Eligible	C	Excellent
3	Kuan Yin Temple	Kuan Yin Temple	170 North Vineyard Blvd	(1) 1-7-007:021	-	Religious	1960	Clifford F. Young	Eligible	C	Good
4	Lum Sai Ho Tong	Lum Sai Ho Tong	1315 River Street	(1) 1-7-006:010		Commercial	1953	George Sui	Eligible	C	Good
5	John R. Gilliland Building	John R. Gilliland Building	1331 River Street	(1) 7-0-006:012	-	Commercial	1958	Kenneth Sato	Eligible	C	Fair
6	Harry and Jeanette Weinberg Kukui Center	Harry and Jeanette Weinberg Kukui Center	245 North Kukui Street	(1) 1-7-026:011	-	Commercial	1968	Bradley & Wong	Eligible	C	Excellent
7	Aloha United Way	The Aloha United Fund Building	200 North Vineyard Blvd.	(1) 1-7-023: 034	-	Commercial-Nonprofit	1970	Leo S. Wou & Associates	Eligible in 2020	C	Good
8	Keola-Hoonanea	Keola-Hoonanea	1465 Aala Street	(1) 1-7-023-036	-	Residential	1971	Frank Slavsky	Eligible in 2021	C	Good
9	Chinatown Bridge- Nuuanu Stream	-	-	-	-	-	1971	-	Eligible in 2021	C	Good
10	"Gateway" Sculpture	-	-	-	-	-	1971	Edward Brownlee	Eligible in 2021	C	Good
11	"Ts'ung" Sculpture	"Ts'ung" Sculpture	-	-	-	-	1971	Edward Brownlee	Eligible in 2021	C	Good
12	Mun Lun School	Mun Lun School	1290 Maunakea Street	(1) 1-7-005:021	-	Commercial	1972	-	Eligible in 2022	A	Good
13	Foster Botanical Gardens	Foster Botanic Garden	51 North Vineyard Blvd	(1) 1-7-007-001 : 002	SIHP# 80-14-1389 NRHP # 93000377	Public	1855	-	Listed on the Hawaii & NRHP	A&B	Excellent
14	Waena Apartments	Kukui Gardens	408 North Beretania Street	(1) 1-7-026: 013	-	Residential	1969	Cesar Pelli	Not Eligible	-	Good
15	Borthwick Mortuary	Borthwick Mortuary	1370 & 1330 Maunakea Street	(1) 1-7-006:008	-	Commercial	1963	-	Not Eligible	-	-
16	American Savings Bank	-	1332 & 1221 Aala Street	(1) 1-7-026:004, 016	-	Commercial	2019	Leo F. Daly and ZGF Architect	Not within date range	-	-
17	Hawaii Federal Credit Union	-	1226 College Walk	(1) 1-7-026:010	-	Commercial	1994	-	Not within date range	-	-
18	Clean Team Maintenance - City and County of Honolulu	-	-	-	-	Public Service	1999	-	Not within date range	C	Good
19	Chinatown Cultural Plaza	Chinatown Cultural Plaza	100 North Beretania Street	(1) 1-7-005:019	-	Commercial	1973-1975	Daniel, Mann, Johnson and Mendenhall	Not within date range	C	Good
20	Dr. Sun Yat Sen Memorial Statue	Dr. Sun Yat Sen Memorial Statue	100 North Beretania Street	-	-	-	1984	-	Not within date range	-	-

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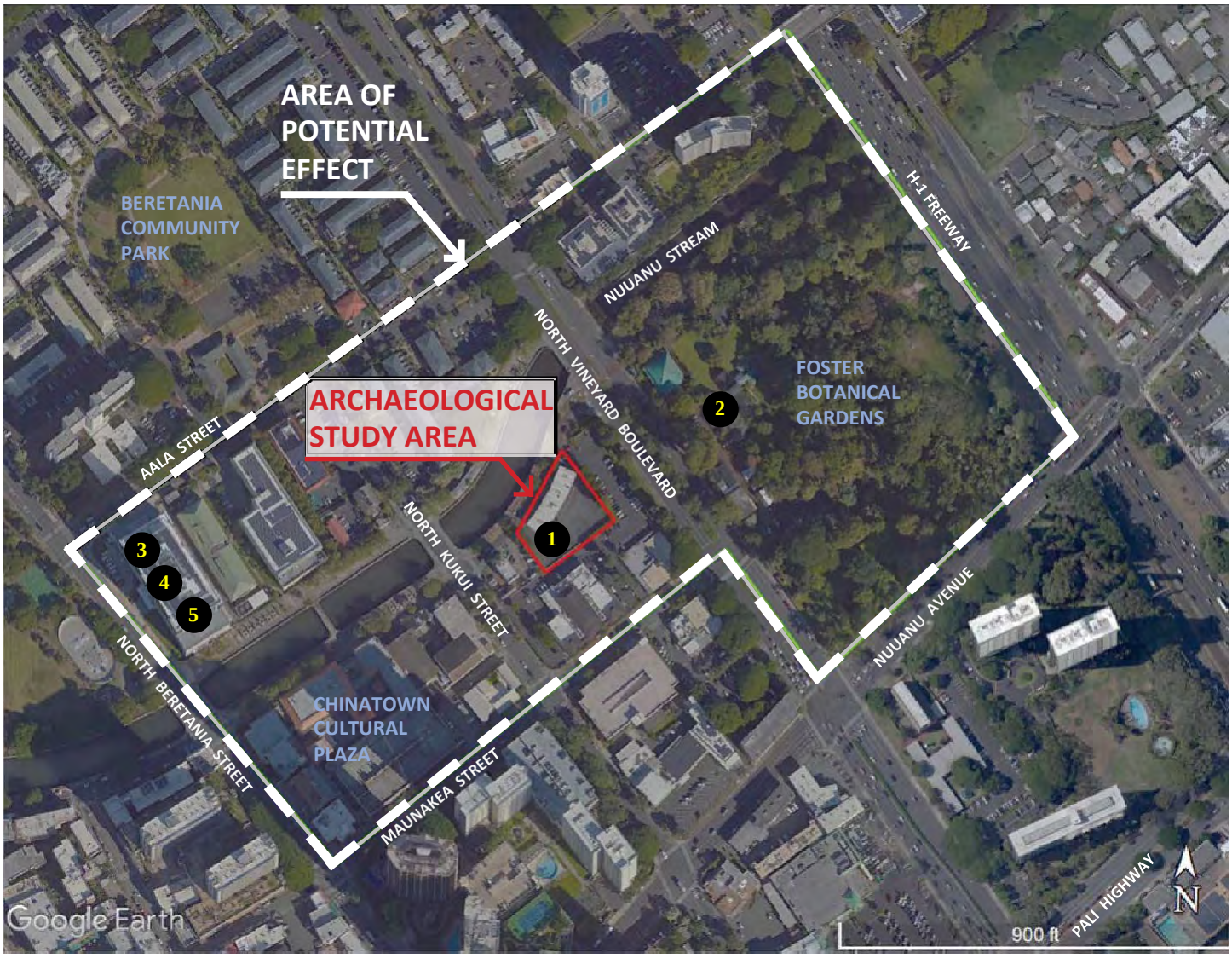
EXHIBIT D

Map: Historic Archaeological Resources Identified within the Halewaiolu Area of Potential Effect



Archaeological Study Area Limited to the following Tax Map Key within Area of Potential Effect:

1-7-006:012 (the "Property")

KEY

1. = State Inventory of Historic Places (SIHP) # 50-80-14-8840
2. = Inadvertent Discovery of Human Remains, 10 August 2004, no SIHP # assigned
3. = SIHP # 50-80-14-7933
4. = SIHP # 50-80-14-7935
5. = SIHP # 50-80-14-7934

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EXHIBIT D

Table: Historic Archaeological Resources Identified within the Halewaiolu Area of Potential Effect

# On Map Exhibit D	SIHP # 50-80-14-	Formal Type/Name	Function	Age	Hawai'i State Significance Criteria	National Register Eligibility Criteria
					HAR § 13-275-6	36 CFR 60.4
1	8840	Subsurface cultural deposits	Agriculture, habitation, human interment, commercial and residential infrastructure	Pre-Contact to mid-twentieth century	d and e	D
2	NA, not assign-ed	Subsurface burial site, inadvertent discovery of previously disturbed remains	Burial interment	Undetermined	d and e	ineligible
3	7933	Subsurface burial site, interments and associated features	Burial interment	Early post-Contact to mid-nineteenth century	d and e	D
4	7935	Subsurface wall remnants	Boundary	Nineteenth century	d	D
5	7934	Subsurface building remnants	Foundation, paving	Twentieth century	d	D

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EXHIBIT E

Native Hawaiian Organization Notification List

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
Aha Moku Advisory Committee Department of Land and Natural Resources (DLNR)	Leimana DaMate	Executive Director	Agency/Govt
Chamber of Commerce Hawaii	Sherry Menor-McNamara		Agency/Govt
City and County of Honolulu	Roy K. Amemiya, Jr.	Managing Director	Agency/Govt
City and County of Honolulu City Council	Ann Kobayashi	Councilmember	Agency/Govt
City and County of Honolulu City Council	Carol Fukunaga	Councilmember	Agency/Govt
City and County of Honolulu City Council	Joey Manahan	Councilmember	Agency/Govt
City and County of Honolulu Department of Community Services	John Chang		Agency/Govt
City and County of Honolulu Department of Planning and Permitting			Agency/Govt
Honolulu Police Department	Major Roy Sugimoto	District 1 Commander	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Alvin Au	Chair	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Chu Lan Shubert-Kwock		Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Ernest Caravalho		Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Tom Smyth		Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Anthony Chang	Member	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Jasmine Mancos	Member	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Robert Tom	Member	Agency/Govt
O‘ahu Island Burial Council (OIBC)	Mana Caceres	‘Ewa Moku Representative	Agency/Govt
Office of Hawaiian Affairs	Kamana‘opono Crabbe CEO	Ka Pouhana	Agency/Govt
OIBC Kona Rep./Chairperson	HinaleimoanaWong-Kalu (OIBC Chair)	Chair, Kona Moku Representative	Agency/Govt

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
State Historic Preservation Division (SHPD) Archaeology and Culture & History/Burials Program branches	Regina Hilo	Burial Sites Specialist (O'ahu)	Agency/Govt
State Historic Preservation Division (SHPD) Archaeology and Culture & History/Burials Program branches	Dr. Susan Lebo	Archaeology Branch Chief	Agency/Govt
State Historic Preservation Division (SHPD) Archaeology and Culture & History/Burials Program branches	Ka'ahiki Solis	Cultural Historian (Oahu, Kauai, Niihau)	Agency/Govt
State of Hawaii - Senate, District 13	Karl Rhoads		Agency/Govt
State of Hawaii, House of Representatives, District 20	Calvin Say		Agency/Govt
State of Hawaii, House of Representatives, District 29	Daniel Holt		Agency/Govt
Aala Dog Park Association	Cathy Au Hoy		Chinatown
American Savings Bank	Michelle Bartell	Director of Communication and Community Advancement	Chinatown
Arts District Merchants Association (ADMA)	Nicole Reid		Chinatown
Borthwick Mortuary	William Mendel		Chinatown
Borthwick Mortuary	Ennilaee Anulao		Chinatown
Borthwick Mortuary	Jay Morford	Funeral Services	Chinatown
Chinatown Business and Community Association (CBCA)	Chu Lan Shubert-Kwock		Chinatown
Chinatown Business and Community Association (CBCA)	Stanley Yon (US China People's Friend)		Chinatown
Chinatown Business Association	Gifford Chang		Chinatown
Chinatown Community Center Association (CCCA)	Allen Stack, Jr.		Chinatown
Chinatown Community Center Association (CCCA)	Alvin Ozaki		Chinatown
Chinatown Community Center Association (CCCA)	Dolores Mollring		Chinatown

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
Chinatown Community Center Association (CCCA)	Liana Benn		Chinatown
Chinatown Community Center Association (CCCA)	Sandra Siu		Chinatown
Chinatown Community Center Association (CCCA)	Walter Chang		Chinatown
Chinatown Community Center Association (CCCA)	Wesley Fong		Chinatown
Chinatown Improvement District	Lee Stack	President	Chinatown
Chinatown Improvement District	Robert Wu		Chinatown
Chinatown Merchants Association	Denton Chun		Chinatown
Chinese Chamber of Commerce Hawaii	Eddie Flores, Jr.		Chinatown
Chinese Chamber of Commerce Hawaii	Mona Choy-Beddow		Chinatown
Chinese Physical Culture Association			Chinatown
Chung Wah Chung Kung Hui	Stanford Yuen	Neighborhood Board President and Community Leader	Chinatown
Dr. Sun Yat- Sun Yat Sen Memorial			Chinatown
Filipino Community Center - Joseph Rizal Memorial			Chinatown
Foster Botanical Gardens			Chinatown
Friends of Chinatown	Eric Wong		Chinatown
Friends of Chinatown	Johnny Ng		Chinatown
Friends of Chinatown	Kim Tran		Chinatown
Ft Street Mall BID Assoc	Victor Lim		Chinatown
Hawai‘i Chinese Association of Hawai‘i			Chinatown
Hawai‘i Chinese Buddhist Society			Chinatown

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Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
Hawai‘i Chinese History Center			Chinatown
Hawai‘i Chinese Multicultural Museum and Archives			Chinatown
Hawaii Theater	Ruth Bolan		Chinatown
Hawaiian Chinese Civic Association	Sharon L. Pang		Chinatown
Izumo Taishakyo Mission of Hawai‘i	Richard Miyao		Chinatown
Kuan Yin Temple	Merle Chong		Chinatown
Longevity International Enterprises Corporation dba Chinatown Cultural Plaza	Vina Quick		Chinatown
Louis Pohl Gallery	Sandra Pohl		Chinatown
Lum Sai Ho Tong	Howard Lum		Chinatown
Lum Sai Ho Tong	Kehaulani Lum		Chinatown
Lum Sai Ho Tong	Lita Lum		Chinatown
Lum Sai Ho Tong	Luther Chong		Chinatown
Lum Sai Ho Tong	Milton Hee		Chinatown
Lung Doo Benevolent Society	Buck Yong Lee		Chinatown
Lung Kong Kung Shaw	Kristi Quon Esquef		Chinatown
Lung Kong Physical Culture Club	Ernest Loo		Chinatown
Mun Lun School	Kin Ching		Chinatown
Mun Lun School (Center Assoc. & Kalihi-Palama NB 15)	Roland Louie		Chinatown
Pacific Gateway Center	Christy MacPherson	Executive Director	Chinatown
Pacific Gateway Center	Dr. Tim Myaing Thein, Ph.D.	Executive Director	Chinatown
See Dai Doo Society			Chinatown

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Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
See Yup Benevolent Society	Henry Chan		Chinatown
Sing Tao Newspaper, LTD	Joseph Chow		Chinatown
Sui Wah School- Cultural Language School			Chinatown
Sun Yat Sen School- Cultural Language School			Chinatown
Tsung Tin Association	Keith Lim		Chinatown
UCS and Chinatown Community Center Association	Larry Siu		Chinatown
United Chinese Society	Henry Ou	President	Chinatown
United Chinese Society	Ted Li		Chinatown
United Chinese Society	Victor Lim		Chinatown
Wong Kong Har Tong Society	Kimo Wong		Chinatown
	Joseph Young	Honorary Mayor of Chinatown; D.D.S Retired	Chinatown
Hiroshima Peace Bell			Chinatown
Caceres 'Ohana	Mana Caceres		Cultural Descendant
Kaleikini 'Ohana			Cultural Descendant
Lam 'Ohana	Gerald Lam		Cultural Descendant
Makaiwi 'Ohana	Donna Makaiwi		Cultural Descendant
	Ali‘ikaua Kaleikini		Cultural Descendant
	Hāloa Kaleikini		Cultural Descendant
	Kala Kaleikini		Cultural Descendant
	Mahiamoku Kaleikini		Cultural Descendant

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
	Moehonua Kaleikini		Cultural Descendant
	No‘eau Kaleikini		Cultural Descendant
	Paulette Ka‘anohi Kaleikini		Cultural Descendant
	Tuahine Kaleikini		Cultural Descendant
	Betty Keana‘āina		Cultural Descendant
	Kīhei Keana‘āina		Cultural Descendant
	Luther Keana‘āina		Cultural Descendant
	Noelani Keana‘āina		Cultural Descendant
	Regina Keana‘āina		Cultural Descendant
	Vicky Keana‘āina		Cultural Descendant
	Wilsam Keana‘āina		Cultural Descendant
	Bruce Keaulani		Cultural Descendant
	Kalahikiola Keli‘inoi		Cultural Descendant
	Kilinahe Keli‘inoi		Cultural Descendant
	Leon Letoto		Cultural Descendant
	Michael Lee		Cultural Descendant
	Haumea Lew		Cultural Descendant
	Leina'ala Lopes		Cultural Descendant
	Alika Luka		Cultural Descendant
	Donna Makaiwi		Cultural Descendant
	Carolyn Norman		Cultural Descendant

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
	Eileen Norman		Cultural Descendant
	Kaleo Norman		Cultural Descendant
	Keli‘inui Norman		Cultural Descendant
	Theodore Norman		Cultural Descendant
	Kaleo Paik		Cultural Descendant
	Dayleen Yokooji		Cultural Descendant
	Michael Lee		Cultural Descendant
	Natalie Baldauf		Cultural Descendant
	Roddy Akau		Cultural Descendant
Hawai‘i Biological Survey - Nu'uanu Stream			Geographic/Environmental
Nuuanu Stream River Corridor			Geographic/Environmental
Nu'uanu Valley Auwai Study Group	Shannon Wilson		Geographic/Environmental
Ali‘i Pauahi Hawaiian Civic Club	Bruce Keaulani		Hawaiian
Association of Hawaiian Civic Clubs	Hailama Farden	Vice President	Hawaiian
Association of Hawaiian Civic Clubs	Soulee LKO Stroud		Hawaiian
Community Engagement & Resources Group, Kamehameha Schools	Hailama Farden		Hawaiian
Friends of ‘Iolani Palace			Hawaiian
Hawaiian Civic Club of Honolulu			Hawaiian
Native Hawaiian Church			Hawaiian
	William Mendel	Kamaaina of Honolulu	Hawaiian
Japanese Cultural Center of Hawaii			Interested party

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
	Nanette Napoleon Purnell	Trustee of Oahu Cemetery; Author and Researcher	Interested party
	Tom Dang		Interested party
WRNS Studio	Adam Woltag		Interested party
WRNS Studio	Jeff Warner		Interested party
WRNS Studio	Rochelle Nagata-Wu		Interested party
Michaels Development Company	Brandon Hegland		Contractor
Michaels Development Company	Karen Seddon		Contractor
Michaels Development Company	Questor Lau		Contractor
Docomomo US, Hawaii Chapter	Tonia Moy		Architecture
Docomomo US, Hawaii Chapter	Alison Chiu	Director	Architecture
Historic Hawaii Foundation	Kiersten Faulkner	Executive Director	Architecture
Better Tomorrows	Anni Peterson	Director	other
Care Companions and Consulting	Sharon L. Pang		other
Enterprise Honolulu	Pono Shim		other
Faith Action for Community Equity	Leotele Togafau	Executive Director	other
Interstate Realty Management	Mary Keshishian		other
Interstate Realty Management	Stacie Brach		other
Kalanihuia Home for the Aged			other
Onward Creative	Jeff Mull		other
Transit Oriented Development			other
World Journal	Karl Kao		Other

DRAFT

EXHIBIT F

Advisory Council on Historic Preservation
Notice of Election Not to Participate in Consultation

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Preserving America's Heritage

November 7, 2019

Ms. Rebecca C. Borja
U.S. Department of Housing and Urban Development
1132 Bishop Street, Suite 1400
Honolulu, HI 96813

Ref: *Proposed Halewaiolu Senior Residence Project at 1331 River Street*
Honolulu, Hawaii
ACHPConnect Log Number: 14616

Dear Ms. Borja:

The Advisory Council on Historic Preservation (ACHP) has received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and it is determined that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Hawaii State Historic Preservation Officer (SHPO), and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA, and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the notification of adverse effect. If you have any questions or require further assistance, please contact Ms. Sarah Stokely at (202) 517-0224 or via email at sstokely@achp.gov.

Sincerely,

LaShavio Johnson

LaShavio Johnson
Historic Preservation Technician
Office of Federal Agency Programs

401 F Street NW, Suite 308 • Washington, DC 20001-2637
Phone: 202-517-0200 • Fax: 202-517-6381 • achp@achp.gov • www.achp.gov

DRAFT

Appendix N

Archaeological Inventory Study
Cultural Surveys Hawai‘i, Inc.
December 2019

Draft

Archaeological Inventory Survey Report for the Halewai‘olu Senior Residences Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 1-7-006:012

Prepared for
Halewai‘olu Senior Development, LLC

Prepared by
Gina M. Farley, M.A.,
Ena Sroat, B.A.,
and
Matt McDermott, M.A.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: HONOLULU 87)

December 2019

O‘ahu Island	Maui Island	Hawai‘i Island	Kaua‘i Island
P.O. Box 1114	1860 Main Street	399 Hualani St.	2970 Kele St.
Kailua, HI 96734	Wailuku, HI 96793	Suite 124	Suite 114
Ph: (808) 262-9972	Ph: (808) 242-9882	Hilo, HI 96720	Līhu‘e, HI 96766
Fax: (808) 262-4950	Fax: (808) 244-1994	Ph. (866) 956-6478	Ph. (808) 245-9374

Management Summary

Reference	Archaeological Inventory Survey Report for the Halewai‘olu Senior Residences Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 1-7-006:012 (Farley et al. 2019)
Date	December 2019
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: HONOLULU 87
Investigation Permit Number	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological fieldwork permit number 19-07, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	SHPD; Federal Housing and Urban Development (HUD); City and County of Honolulu Office of Strategic Development, Department of Land Management (DLM), and Department of Planning and Permitting (DPP)
Land Jurisdiction	City and County of Honolulu
Project Proponent	City and County of Honolulu Office of Strategic Development
Project Funding	Federal; HUD Community Development Block Grants (CDBG)
Project Location	The Halewai‘olu Senior Residences project is at 1331–1347 River Street, between Vineyard Boulevard and North Kukui Street. The AIS study area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Project Description	The John R. Gilliland Sr. Building and its surrounding parking lot are planned for demolition, to be replaced by proposed affordable senior housing. The proposed project will redevelop land acquired by the City and County of Honolulu in 1992 with funds received from HUD-CDBG. The 17-story housing facility will consist of 155 units (plus one resident manager unit), a community room with warming kitchen, restrooms and storage, a computer room, social services activity rooms, a social services office, property management offices, mail and package boxes, and an elevator lobby on the ground level. A courtyard, retail space and parking access, trash compactor room, and loading area will also be on the ground level. Ground disturbance associated with project construction will include demolition and removal of the existing building, borings related to foundation pile installation, and excavations for structural footings, utility installation, roadway and parking area installation, and landscaping.
Project Area, Area of Potential Effect (APE), and AIS Study Area	The area of potential effect (APE) is bounded by Beretania Street on the southwest, ‘A‘ala Street on the northwest, the H-1 freeway on the northeast, and portions of Maunakea Street and Nu‘uanu Avenue on the southeast side (forming an “L” shape). The project area is identical to

	the APE, in accordance with HAR §13-275-2. The AIS study area within the APE/project area is restricted to the proposed project's footprint at 1331–1347 River Street.
Project Acreage	The APE/project area is approximately 45 acres (18.2 hectares). The AIS study area is approximately 0.6 acre (0.24 hectare).
Historic Preservation Regulatory Context	As a City and County of Honolulu project on City and County lands, the project is subject to historic preservation review under Hawai‘i Revised Statutes (HRS) §6E-8 and HAR §13-275. Additionally, the proposed project is a federal undertaking as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), due to the use of HUD-CDBG funding for acquisition and/or improvement of the project. Project construction is to be funded with federal equity through the Low Income Housing Tax Credit program and Hawai‘i State funds. With the use of federal funding for initial land purchase, the project is subject to HUD's environmental/historic preservation review regulations (24 CFR [Code of Federal Regulations] Part 58), which includes compliance with the National Environmental Policy Act (NEPA) and Section 106 of the NHPA. Following 24 CFR Part 58, the City is the responsible entity to carry out this federal environmental and historic preservation review in compliance with HUD. The City and County of Honolulu DLM initiated project-related HRS §6E-8 consultation with the SHPD at a meeting with the Architecture and Archaeology branches on 12 April 2017. The City DLM subsequently initiated project-related Section 106 consultation with the SHPD in a letter dated 10 June 2019, which was received by the SHPD on 14 June 2019 (Log No.: 2019.01347). Fung Associates, Inc., completed a *Reconnaissance Level Architectural Inventory Survey Form for the John R. Gilliland Sr. Building* (Hibbard and Chiu 2016; see Appendix A), which assessed the building as eligible for listing on the National Register of Historic Places (National Register) under Criterion C. The SHPD concurred with this assessment in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04). Because the project includes demolition of this determined National Register-eligible historic property, a project effect determination of "adverse effect" is likely, leading to a Memorandum of Agreement (MOA) under Section 106. The purpose of the MOA is to codify the mitigation measures for National Register-eligible historic properties that will be adversely affected by the project. CSH prepared a cultural impact assessment (CIA) (Spencer and Hammatt 2019) to support the project's NEPA environmental assessment. This AIS investigation was designed to fulfill both federal and Hawai‘i State historic preservation review requirements for the identification of

	archaeological historic properties. In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and evaluate archaeological historic properties' eligibility for listing on the National Register and to assess archaeological historic property significance under Hawai‘i State significance criteria pursuant to HAR §13-275-6. Archaeological historic property eligibility for listing on the Hawai‘i Register of Historic Places (Hawai‘i Register) was evaluated following the criteria outlined in HAR §13-198-8. This report is intended to support any project-related historic preservation consultation with consulting parties such as State and County agencies, interested Native Hawaiian Organizations (NHOs), and community groups. The identification and treatment of human skeletal remains discovered during this AIS investigation complied with Hawai‘i State burial law (HRS §6E-43 and HAR §13-300).
Architectural Historic Properties	In 2016, Fung Associates, Inc., prepared a reconnaissance level survey (RLS) of architectural historic properties within the project area (Hibbard and Chiu 2016; see Appendix A). The survey assessed the age, integrity, and significance of the AIS study area's only building, the John R. Gilliland Sr. Building. It also identified potential adverse effects and mitigation alternatives relating to the building's demolition. Staff who conducted the survey meet the Secretary of the Interior's Professional Qualifications Standards as architectural historians, per 36 CFR Part 61. The RLS was accepted by the SHPD Architecture Branch in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04). The RLS includes a brief historical context pertaining to the John R. Gilliland Sr. Building. The building was constructed in 1958 and was designed by architect Kenneth Sato. It retains much of its historic character in terms of design, materials, workmanship, and construction methods. The RLS assessed the John R. Gilliland Sr. Building as eligible for listing on the State and National Registers under Criterion C as a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s. Additionally, Fung Associates, Inc., completed a pedestrian survey in 2019 of all architectural properties within the APE built prior to 1972, in accordance with HAR §13-275 and 36 CFR Part 800.4. This study meets both state and federal requirements for the identification of historic properties. Twenty potentially historic resources comprising buildings, sculptures, or objects were identified and evaluated for eligibility based on the project's anticipated completion date of 2022. On behalf of the project proponents, Fung and Associates has submitted these results to

	the SHPD/State Historic Preservation Officer (SHPO) in support of the project’s historic preservation review compliance.
Consultation	Consultation regarding the Halewai‘olu Senior Residences Project has been ongoing since the project’s inception. Consultation efforts among the project proponents, the SHPD, consulting parties, and the River Street community are summarized below. On 12 April 2017, Liz Char of Halewai‘olu Senior Development, LLC, Alison Chiu and Tonia Moy of Fung Associates, Inc., and Matt McDermott of CSH met with Dr. Susan Lebo (archaeology branch chief), Kimi Matsushima and Stephanie Hacker (O‘ahu archaeologists), and Tanya Gumpac-Maguire (architectural historian) of the SHPD. This meeting initiated HRS §6E-8 consultation with the SHPD. Ms. Char introduced the project and provided a background of the property ownership, agency of record, proposed development, and known consulting parties. Because the demolition of the John R. Gilliland Sr. Building would likely result in an adverse effect, the SHPD staff recommended drafting an MOA in parallel with the project consultation and development and suggested additional parties for consultation. Mr. McDermott noted there was no data about subsurface archaeology in the project area, but that archaeological testing would likely yield findings. The SHPD staff recommended consultation with the O‘ahu Island Burial Council (OIBC) and proposed to meet at a later date to discuss a testing strategy for an AIS. On 8 May 2019, Matt McDermott of CSH gave a presentation at the OIBC monthly meeting to introduce the project, the AIS, and the consultation process. Mr. McDermott discussed the need for federal historic preservation review of the project triggered by federal funding and discussed previous land use within the archaeological study area as indicated by background research. Finally, he presented the proposed subsurface testing strategy for the AIS and explained that as a part of the consultation process, letters would be sent to the OIBC, Chinatown community groups, Nu‘uanu Stream groups, architecture groups, and NHOs. On 10 June 2019, invitations to the 25 June public meeting (see below) were sent via email or U.S. mail to the SHPD and consulting parties; this letter formally initiated NHPA Section 106 consultation with the SHPD. On 25 June 2019, a public informational meeting was held at the Blaisdell Center. Sandra Pfund (City and County DLM [Department of Land Management]) introduced the project and described the purpose of the meeting. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Alison Chiu and Bethany Zedalis (Fung Associates) provided an architectural background. On 9 July 2019, a Section 106 consultation meeting was attended by Alison Chiu and Bethany Zedalis of Fung Associates; Tanya Gumpac-

	Maguire of the SHPD Architecture Branch; Sharon Har and Questor Lau of Halewai‘olu Senior Development, LLC; Keith Kurahashi of R.M. Towill; Sandra Pfund from the City and County of Honolulu DLM; and Matt McDermott of CSH. Sharon Har provided an overview of the project and comments from consulting parties. Mr. McDermott provided an update of the ongoing AIS, including the burial find of 8 July 2019 (State Inventory of Historic Places [SIHP] # 50-80-14-8840 Component 2, Feature 6). Ms. Chiu and Ms. Zedalis proposed the APE for the project to consist of an archaeological APE and an additional architectural APE. Ms. Gumpac-Maguire concurred with the two APEs. On 22 July 2019, Ena Sroat and Matt McDermott of CSH met with Susan Lebo of the SHPD (Archaeology Branch) to discuss the results of the AIS testing up to that point and additional testing based on the identification of an in situ burial (SIHP # -8840 Component 2, Feature 6) in Test Excavation 2 (T-2). Based on this discussion, it was agreed that the AIS testing strategy would be increased by three test excavations—two in the vicinity of T-2 and one in the vicinity of Test Excavation 9 (T-9), where a potential agricultural berm had been identified. On 14 August 2019, Matt McDermott of CSH presented the results of the AIS investigation at the OIBC meeting. Mr. McDermott discussed the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6), and how excavation of two additional trenches—one on either side of the initial trench—failed to identify any additional human remains. He explained that the forthcoming burial treatment plan (BTP) will be part of the MOA and that the Native American Grave Protection and Repatriation Act (NAGPRA) does not apply, as the project does not involve tribal or federal land. He stated that Board Member Mana Caceres had been involved in the early stages of consultation regarding the burial find, and that Mr. Caceres would be applying as a cultural descendant for the remains. On 19 September 2019, a second public informational meeting was held at the Blaisdell Center. Sandra Pfund of the City and County of Honolulu DLM explained that the purpose of the meeting was to update the community regarding the AIS and CIA studies and how they relate to the project’s historic preservation review process. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Bethany Zedalis (Fung Associates) provided an architectural background. Matt McDermott of CSH presented the preliminary results of the project’s AIS and proposed mitigation commitments, including burial treatment for the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6). There were no questions from the audience members.

	On 6, 8, and 9 October 2019, a notice regarding the identification of human remains on 8 July 2019 (SIHP # -8840 Component 2, Feature 6) was published in the *Honolulu Star-Advertiser*. At the 9 October 2019 OIBC meeting, Brandy Caceres and ‘Ohana (family) were recognized as cultural descendants of the *‘iwi kupuna* (ancestral human remains) identified on 8 July 2019 (SIHP # -8840 Component 2, Feature 6). On 19 November 2019, a Section 106 Consultation meeting regarding the project’s MOA was attended by Susan Lebo (archaeology branch) and Tanya Gumpac-McGuire (architecture branch [via phone]) of the SHPD; Randy Chiu of the City and County DLM; Howard and Kehaulani Lum of Lum Sai Ho Ton; Liana Benn of the Chinatown Community Center Association; cultural descendants Mana and Kalehua Caceres; Daron Makaiwi of the Marin ‘Ohana; Sharon Har, Questor Lau, and Benjamin Edger of Halewai‘olu Senior Development, LLC; Matt McDermott of CSH; Tonia Moy and Alison Chiu of Fung Associates; Jay Morford of Hawaiian Memorial Life Plan; Mel Kalahiki of Borthwick Mortuary; Kiersten Faulkner of the Historic Hawai‘i Foundation; and Sylvia Young of HawaiiUSA Federal Credit Union. Ms. Har explained that the purpose of the meeting was to discuss mitigation. Mr. McDermott explained the MOA is being developed to alleviate the adverse effect of the project’s construction on the John R. Gilliland Sr. Building and the archaeological historic property identified during the AIS. SHPD staff proposed that mitigation should focus on things to benefit the community. Ms. Faulkner suggested this could be achieved through a display, a video, an oral history, a traveling exhibit, or by putting funds into an adjacent building. She further emphasized that the MOA needs to be enforceable, with a timeline and specific stipulations as to who does what and to what standard. Discussion also included the proposed activity center within the senior residence, and that it will not just be for residents but also for the community at large. On 21 November 2019, Matt McDermott and Ena Sroat of CSH met with Susan Lebo, Samantha Cragen, and Andrew McCallister of the SHPD Archaeology Branch. Discussion topics included the outstanding SIHP number for the historic property identified during the AIS and possible mitigation measures.
Fieldwork Effort	The AIS fieldwork was conducted between 1 and 30 July 2019, under the general supervision of Matt McDermott, M.A. (Principal Investigator), and Ena Sroat, B.A. (Project Director). CSH archaeologists included Sara Blahut, M.A. (osteologist), Alison Welser, M.A. (osteologist), Gina Farley, M.A., Lisa Manirath, M.A., Brittany Enanoria, B.A., Jessica Burden, B.A., Tanyja Roberson, B.A., Jonathan Alperstein, B.A., Ryan Harismendy, B.A., and Phoenix Pu‘u, B.A. This work required approximately 38 person-days to complete.

	Fieldwork consisted of a pedestrian inspection and the excavation and documentation of 15 test excavations.
Archaeological Historic Properties Identified and Historic Property Significance	One archaeological historic property was newly identified during the Halewai‘olu Senior Residences AIS: SIHP # 50-80-14-8840, subsurface cultural deposits. SIHP # -8840 comprises three components, designated as Components 1–3. SIHP # -8840 Component 1 consists of multiple, buried agricultural deposits associated with use of the Nu‘uanu Stream floodplain. SIHP # -8840 Component 2 consists of possibly pre- to post-Contact habitation layers, including associated pit features and a human burial site, which developed within the uppermost natural alluvium deposits alongside Nu‘uanu Stream. SIHP # -8840 Component 3 consists of historical infrastructure remnants associated with the residential and commercial development of Honolulu. SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to HAR §13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. This historic property has provided and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town from the nineteenth through mid-twentieth centuries; and on late pre- to post-Contact burial practices.
Project Effect	Based on the AIS investigation, the project effect determination per HAR §13-275-7 is “effect, with proposed mitigation commitments.” In addition, under Section 106 of the NHPA, the proposed project will have an “adverse effect” on the identified archaeological historic property.
Mitigation Commitments	Based on the AIS results, the agreed upon mitigation commitments consist of a BTP addressing the previously identified burial site (SIHP # -8840 Component 2, Feature 6) and data recovery in the form of archaeological monitoring for SIHP # -8840 Components 1–3. Mitigation measures will be detailed in the MOA that is currently being prepared pursuant to 36 CFR Part 800.6.

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Section 1 Introduction

1.1 Project Background

At the request of Halewai‘olu Senior Development, LLC, Cultural Surveys Hawai‘i, Inc. (CSH), has prepared this archaeological inventory survey (AIS) report for the Halewai‘olu Senior Residences Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 1-7-006:012. The Halewai‘olu Senior Residences project is at 1331–1347 River Street, between Vineyard Boulevard and North Kukui Street. The area of potential effect (APE) is bounded by Beretania Street on the southwest, ‘A‘ala Street on the northwest, the H-1 freeway on the northeast, and portions of Maunakea Street and Nu‘uanu Avenue on the southeast (forming an “L” shape). In accordance with Hawai‘i Administrative Rules (HAR) §13-13-275-2, the project area is identical to the APE, which comprises approximately 45 acres (18.2 hectares). The AIS study area within the APE/project area is restricted to the proposed project’s footprint at 1331–1347 River Street and comprises approximately 0.6 acre (0.24 hectare). The APE/project area is depicted on a 2013 aerial photograph (Figure 1). The AIS study area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2), a tax map plat (Figure 3), and a 2013 aerial photograph (Figure 4).

The John R. Gilliland Sr. Building (the only building within the AIS study area) and its surrounding parking lot (see Figure 4) are planned for demolition, to be replaced by proposed affordable senior housing. The proposed project will redevelop land acquired by the City and County of Honolulu in 1992 with funds received from Federal Housing and Urban Development (HUD) Community Development Block Grants (CDBG). The 17-story housing facility will consist of 155 units (plus one resident manager unit), a community room with warming kitchen, restrooms and storage, a computer room, social services activity rooms, a social services office, property management offices, mail and package boxes, and an elevator lobby on the ground level. A courtyard, retail space and parking access, trash compactor room, and loading area will also be on the ground level. Ground disturbance associated with project construction will include demolition and removal of the existing building, borings related to foundation pile installation, and excavations for structural footings, utility installation, roadway and parking area installation, and landscaping.

1.2 Historic Preservation Regulatory Context and Document Purpose

As a City and County of Honolulu project on City and County lands, the project is subject to historic preservation review under Hawai‘i Revised Statutes (HRS) §6E-8 and HAR §13-275. Additionally, the proposed project is a federal undertaking as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), due to the use of HUD-CDBG funding for acquisition and/or improvement of the project. Project construction is to be funded with federal equity through the Low Income Housing Tax Credit program and Hawai‘i State funds. With the use of federal funding for initial land purchase, the project is subject to HUD’s environmental/historic preservation review regulations (24 CFR [Code of Federal Regulations] Part 58), which includes compliance with the National Environmental Policy Act (NEPA) and Section 106 of the NHPA. Following 24 CFR Part 58, the City is the responsible



Figure 1. Aerial photograph showing the AIS study area within the APE (note APE is identical to the project area) (Google Earth 2013)

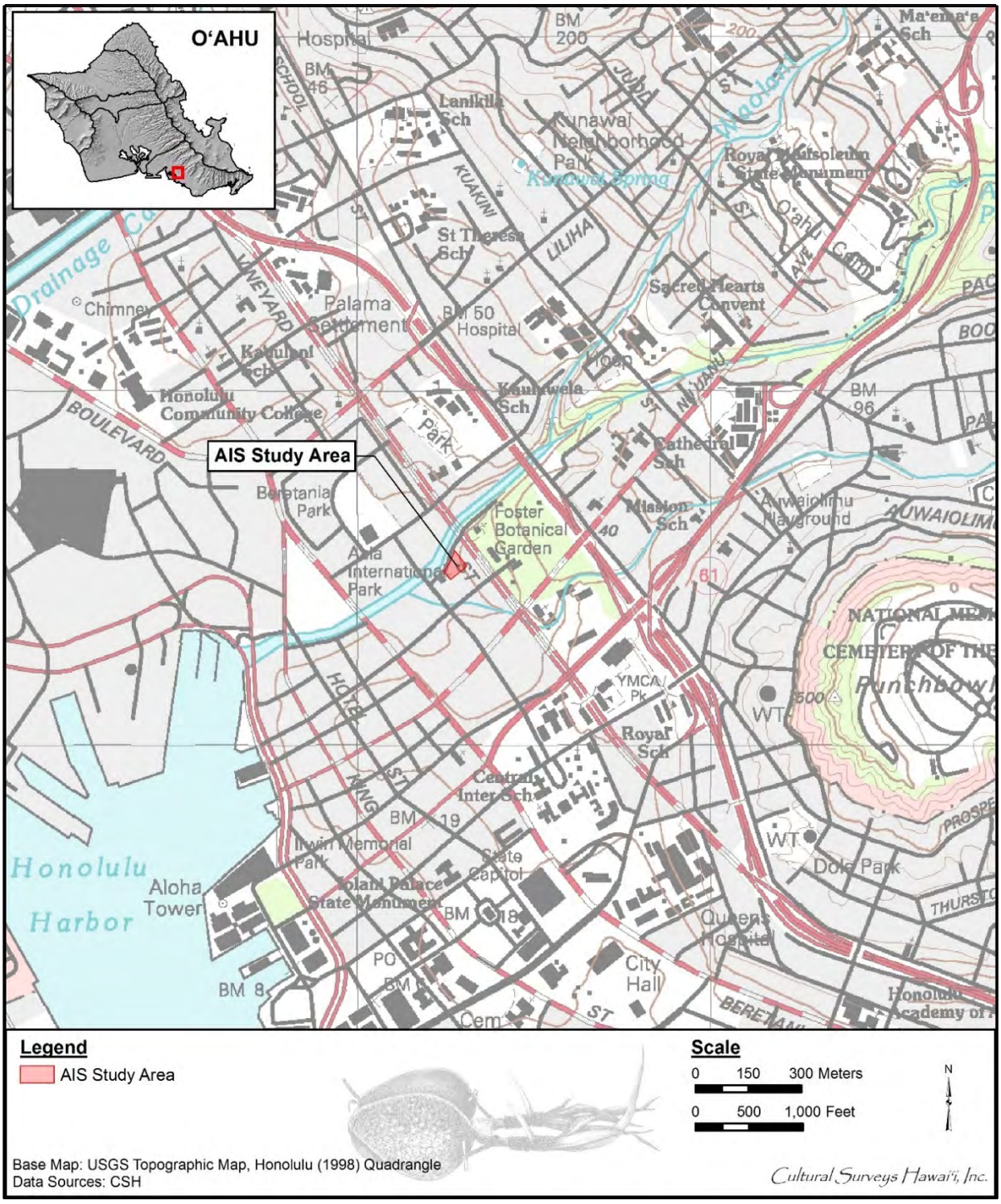

Figure 2. Portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle, showing the AIS study area

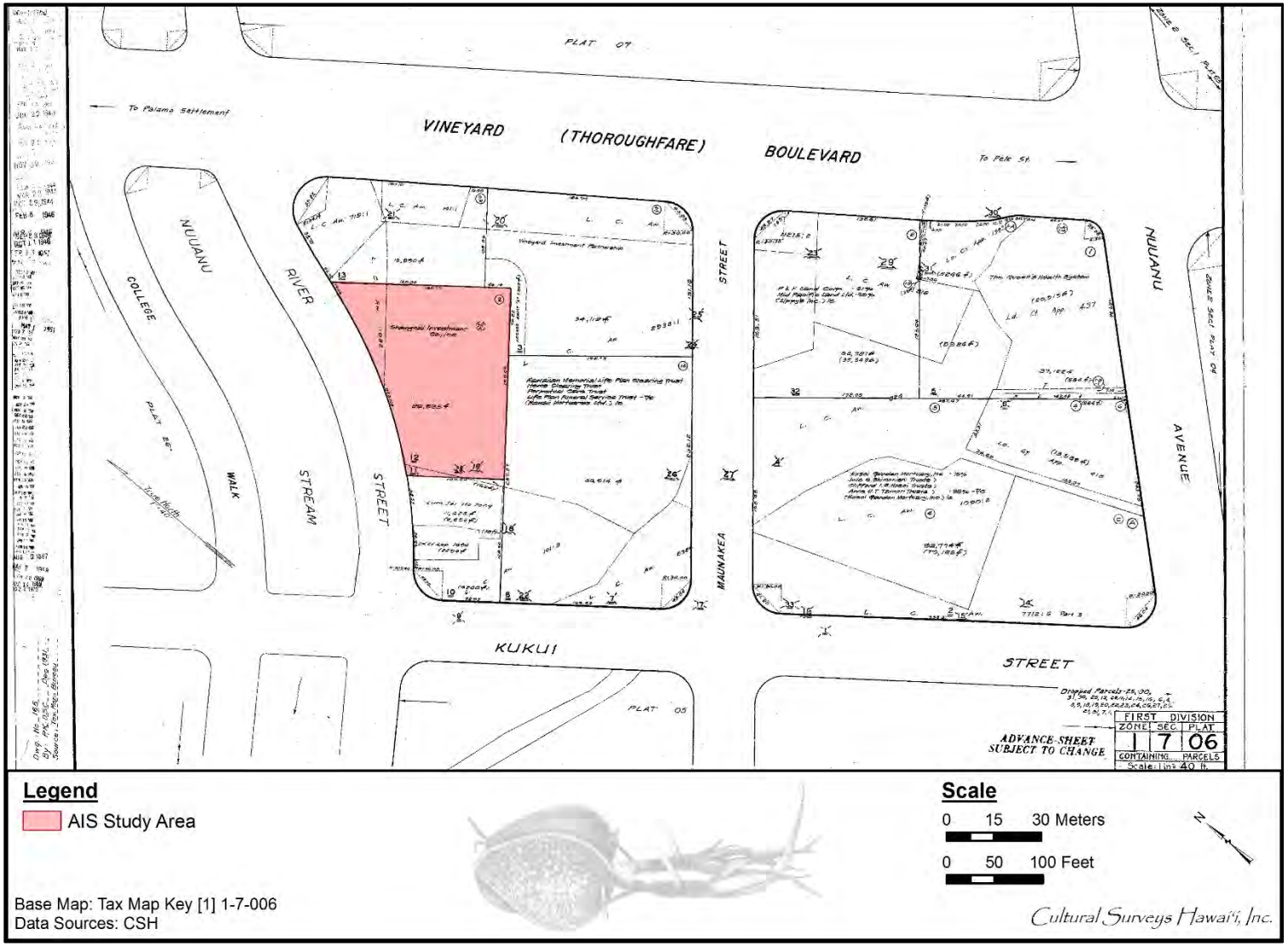

Figure 3. Tax Map Key (TMK) [1] 1-7-006, showing the AIS study area (Hawai‘i TMK Service 2014)



Figure 4. Aerial photograph of the AIS study area (Google Earth 2013)

entity to carry out this federal environmental and historic preservation review in compliance with HUD.

The City and County of Honolulu Department of Land Management (DLM) initiated project-related HRS §6E-8 consultation with the Hawai‘i State Historic Preservation Division (SHPD) at a meeting with the Architecture and Archaeology branches on 12 April 2017. The City DLM subsequently initiated project-related Section 106 consultation with the SHPD in a letter dated 10 June 2019, which was received by the SHPD on 14 June 2019 (Log No.: 2019.01347).

Fung Associates, Inc., completed a *Reconnaissance Level Architectural Inventory Survey Form for the John R. Gilliland Sr. Building* (Hibbard and Chiu 2016; see Appendix A), which assessed the building as eligible for listing on the National Register of Historic Places (National Register) under Criterion C (embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction). The SHPD concurred with this assessment in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04). As a result, a Memorandum of Agreement (MOA) is required for the project under Section 106. The purpose of the MOA is to codify the mitigation measures for National Register-eligible historic properties that will be adversely affected by the project.

CSH prepared a cultural impact assessment (CIA) (Spencer and Hammatt 2019) to support the project's NEPA environmental assessment.

This AIS investigation was designed to fulfill both federal and Hawai‘i State historic preservation review requirements for the identification of archaeological historic properties. In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-276 and the *Secretary of the Interior's Standards for Archaeology and Historic Preservation*. It was conducted to identify, document, and evaluate archaeological historic properties' eligibility for listing on the National Register and to assess archaeological historic property significance under Hawai‘i State significance criteria pursuant to HAR §13-275-6. Archaeological historic property eligibility for listing on the Hawai‘i Register of Historic Places (Hawai‘i Register) was evaluated following the criteria outlined in HAR §13-198-8. This report is intended to support any project-related historic preservation consultation with consulting parties, such as State and County agencies, interested Native Hawaiian Organizations (NHOs), and community groups.

The identification and treatment of human skeletal remains discovered during this AIS investigation complied with Hawai‘i State burial law (HRS §6E-43 and HAR §13-300).

1.3 Architectural Historic Properties

In 2016, Fung Associates, Inc., prepared a reconnaissance level survey (RLS) of architectural historic properties within the project area (Hibbard and Chiu 2016; see Appendix A). The survey assessed the age, integrity, and significance of the AIS study area's only building, the John R. Gilliland Sr. Building. It also identified potential adverse effects and mitigation alternatives related to the building's demolition. Staff who conducted the survey meet the Secretary of the Interior's Professional Qualifications Standards as architectural historians, per 36 CFR Part 61. The RLS was accepted by the SHPD Architecture Branch in a letter dated 27 February 2017 (Log No.: 2017.02503; Doc. No.: 1702JLP04).

The RLS included a brief historical context pertaining to the John R. Gilliland Sr. Building. The building was constructed in 1958 and was designed by architect Kenneth Sato. It retains much of its historic character in terms of design, materials, workmanship, and construction methods. The RLS assessed the John R. Gilliland Sr. Building as eligible for listing on the State and National Registers under Criterion C as a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s.

Additionally, Fung Associates, Inc., completed a pedestrian survey in 2019 of all architectural properties within the APE built prior to 1972, in accordance with HAR §13-275 and 36 CFR Part 800.4. This study meets both state and federal requirements for the identification of historic properties. Twenty potentially historic resources comprising buildings, sculptures, or objects were identified and evaluated for eligibility based on the project's anticipated completion date of 2022. On behalf of the project proponents, Fung and Associates has submitted these results to the SHPD/State Historic Preservation Officer (SHPO) in support of the project's historic preservation review compliance.

1.4 Environmental Setting

1.4.1 Natural Environment

The Halewai‘olu Senior Residences project is on the southern leeward coastal plain of Honolulu, approximately 0.7 km (0.4 mile) inland from Honolulu Harbor. It is relatively flat and is 2.7 m (8.9 ft) above sea level. Rainfall in the AIS study area averages 833.5 mm (32.8 inches) annually (Giambelluca et al. 2013), and the average temperature is 23.7° C (74.6° F) (Giambelluca et al. 2014). There is no vegetation within the AIS study area, which is paved with asphalt and concrete.

The AIS study area is on the margins of Nu‘uanu Stream, within the stream's floodplain as it enters Honolulu Harbor. According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist of Ewa silty clay loam, moderately shallow, 0 to 2% slopes (EmA) (Figure 5). The Ewa Series is described as follows:

> This series consists of well-drained soils in basins and on alluvial fans on the islands of Maui and Oahu. These soils developed in alluvium derived from basic igneous rock. […]
>
> These soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of fingergrass, kiawe, koa haole, klu, and uhaloa. [Foote et al. 1972:29]

1.4.2 Built Environment

The Halewai‘olu Senior Residences project is within central Honolulu, surrounded by modern urban development including commercial buildings, paved streets, sidewalks, utility infrastructure, and landscaped margins. The AIS study area consists of a two-story commercial building, the John R. Gilliland Sr. Building, and surrounding asphalt-paved parking lot (see Figure 4). The channelized Nu‘uanu Stream is northwest of the project area, across River Street.

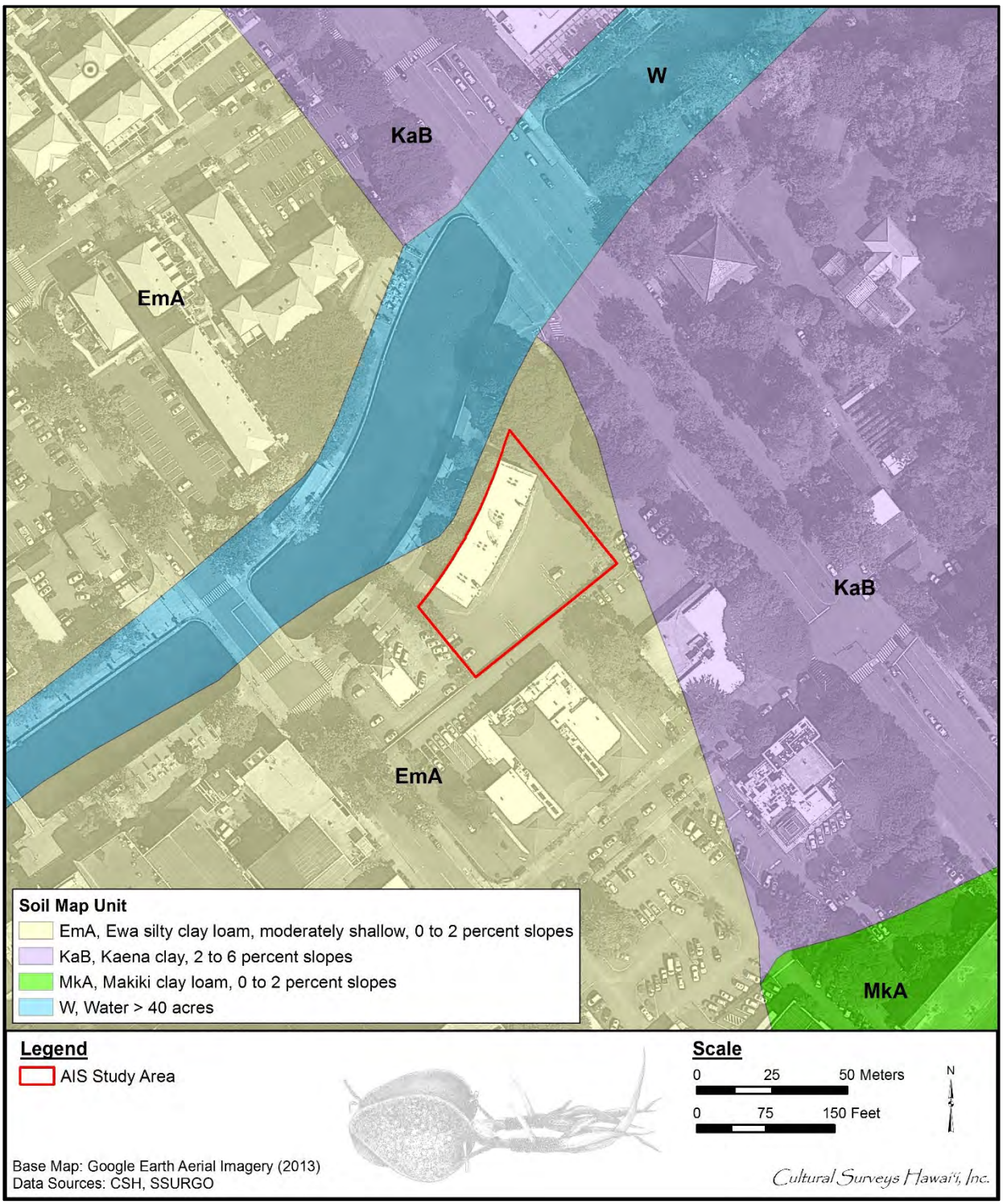

Figure 5. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the AIS study area (USDA SSURGO 2001)

Section 2 AIS Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological fieldwork permit number 19-07, issued by the SHPD pursuant to HAR §13-282. Fieldwork was conducted between 1 and 30 July 2019 under the general supervision of Matt McDermott, M.A. (Principal Investigator), and Ena Sroat, B.A. (Project Director). CSH archaeologists included Sara Blahut, M.A. (osteologist), Alison Welser, M.A. (osteologist), Gina Farley, M.A., Lisa Manirath, M.A., Brittany Enanoria, B.A., Jessica Burden, B.A., Tanyja Roberson, B.A., Jonathan Alperstein, B.A., Ryan Harismendy, B.A., and Phoenix Pu‘u, B.A. This work required approximately 38 person-days to complete.

As the Halewai‘olu Senior Residences AIS study area consists of a two-story commercial building (the John R. Gilliland Sr. Building) and associated asphalt parking lot, no surface archaeological historic properties were anticipated. Although fieldwork included a 100% pedestrian survey of the AIS study area, investigations focused on a program of test excavations to identify subsurface archaeological historic properties.

2.1.1 Subsurface Testing

The proposed subsurface testing strategy consisted of 12 test excavations (T-1 through T-12) distributed throughout the AIS study area, each measuring 0.6 by 6.1 m (2 by 20 feet [ft]) (Figure 6). The distribution was based on general coverage of the AIS study area; the planned locations of deep project-related ground disturbance such as elevator shafts (Figure 7); the accessibility of interior building space; and a review of cultural and historical background research, including historical maps and aerial photographs (see Section 3: Background Research). Based on the results of utility toning, several of the exterior test excavations were adjusted slightly (Figure 8). Based on spatial limitations and the results of utility toning, the dimensions of the two planned interior test excavations were adjusted to 0.9 by 3 m (3 by 10 ft) (T-10) and 0.6 by 3 m (2 by 10 ft) (T-11).

Following completion of AIS test excavations T-1 through T-12, CSH consulted with the SHPD regarding the testing results and the sufficiency of the testing strategy. Based on the documentation of a human burial site (State Inventory of Historic Places [SIHP] # 50-80-14-8840 Component 2, Feature 6) within T-2, CSH proposed two additional test excavations (T-2B and T-2C) on either side of T-2 to investigate the presence of a potential burial cluster and to delineate the burial site boundaries. The SHPD agreed with this strategy and additionally requested a third test excavation in the vicinity of T-9 in order to investigate further a potential agricultural berm feature (T-9B) (see Figure 8).

Initial excavation methods consisted of saw-cutting the asphalt parking lot surface (exterior excavations) or concrete building foundation (interior excavations). Excavation then proceeded via backhoe scrapes to approximately 1.5 m (5 ft) below surface (i.e., the maximum depth to safely enter the excavation without a shoring device). The excavation sidewalls were then cleaned, inspected, and documented, and soil samples were collected if appropriate. Excavation then continued to just below the water table and/or a culturally sterile, buried streambed (Stratum III). In general, this final excavation to the water table and/or streambed proceeded in two phases. The

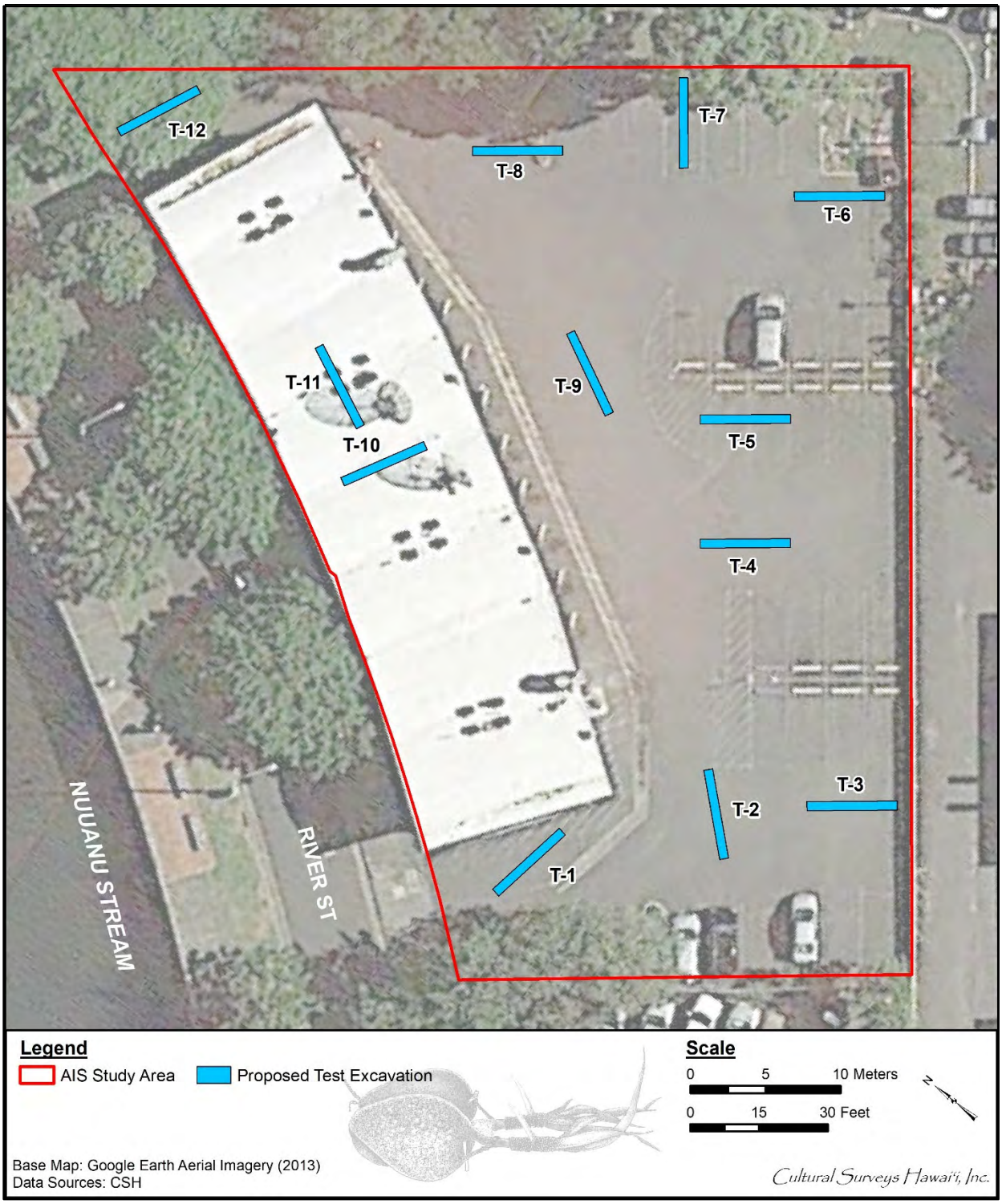

Figure 6. Aerial photograph showing 12 proposed AIS test excavations within the AIS study area (Google Earth 2013)

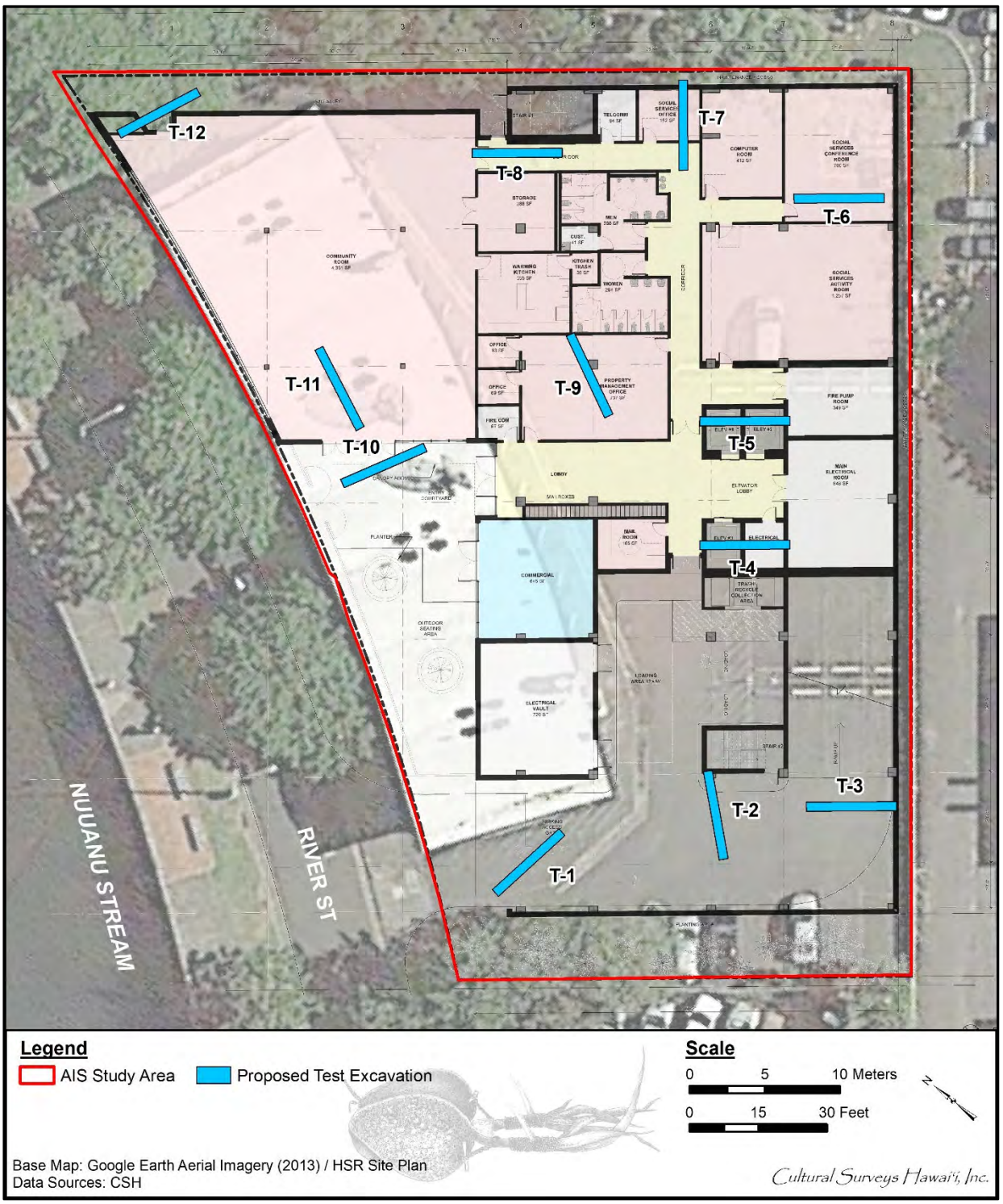

Figure 7. Aerial photograph of the AIS study area, with overlay of the project design; note T-4 and T-5 target planned deep elevator pit ground disturbance (Google Earth 2013)

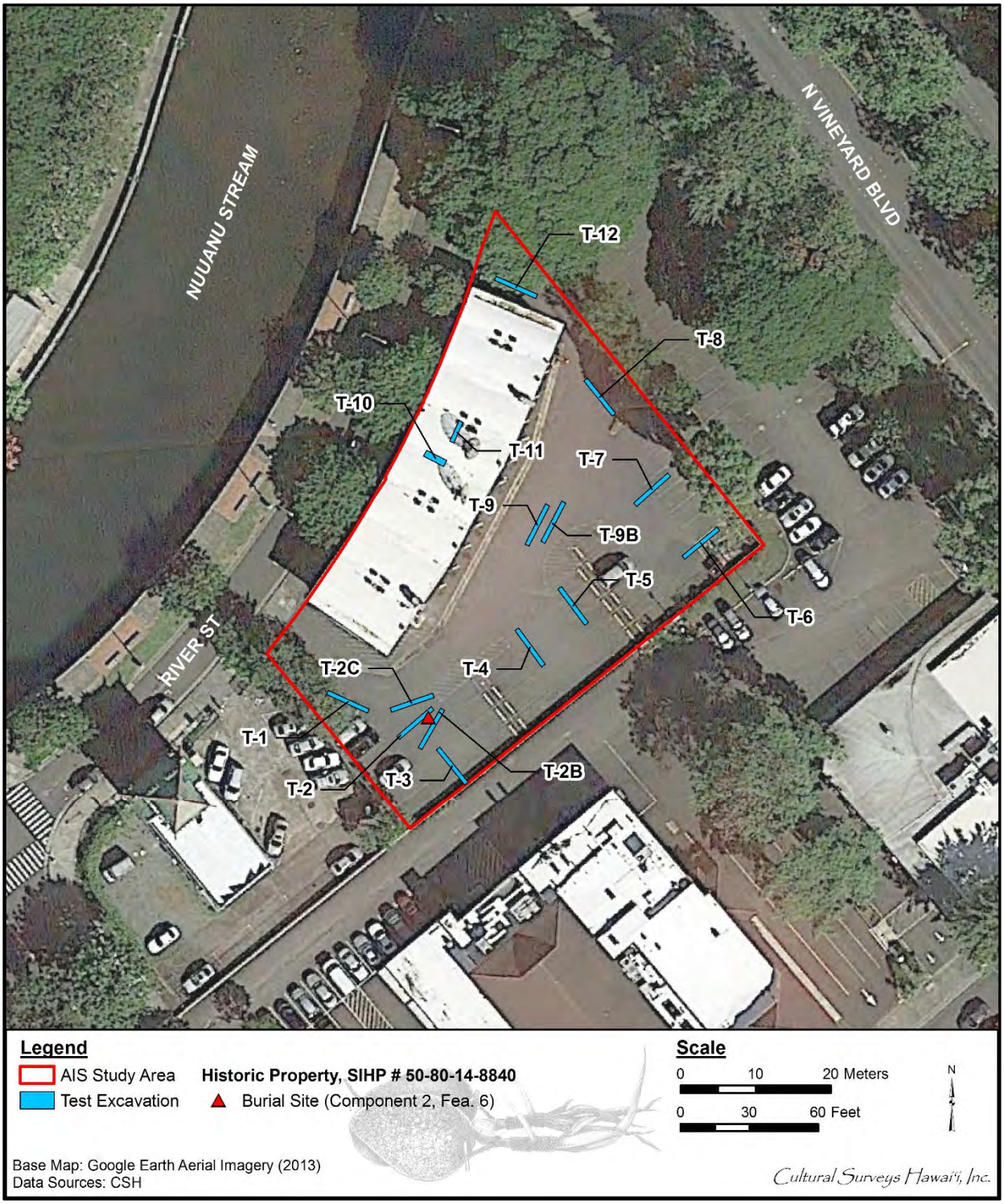

Figure 8. Aerial photograph of the AIS study area, showing the 15 completed AIS test excavations and the SIHP # -8840 Component 2, Feature 6, human burial (Google Earth 2013)

first phase consisted of completion of one half of the trench (e.g., the *makai* half), with the uncompleted portion (e.g., the *mauka* half) serving as a pedestal from which to safely inspect, document, and sample the deepest stratigraphy. The second phase consisted of excavation of the remaining portion of the trench, with close inspection of the extracted sediments to correlate with the previously collected data. Exceptions to this methodology included T-8, which was excavated to the water table in one phase, with shoring installed prior to inspection of the deepest stratigraphy; this was done to compare the efficacy of different methodologies. In a few instances, a portion of the test excavation could not be excavated to the water table and/or streambed due to safety concerns or subsurface obstacles. Safety issues included petroleum contamination within shallow fill deposits (T-4 and T-5) and unstable sidewalls due to demolition rubble (T-3). Subsurface obstacles included a large boulder within T-6 and a utility pipe within T-10. In addition, the immediate area of the human burial site identified within T-2 was not excavated in order to ensure the integrity and safety of the burial.

A stratigraphic profile of each test excavation was drawn and photographed. The observed soils/sediments were described using standard USDA soil description observations/terminology. Descriptions included Munsell color, texture, consistence, structure, plasticity, cementation, origin, descriptions of any inclusions, such as cultural material and/or roots, lower boundary distinctiveness and topography, and other general observations. Where stratigraphic anomalies or potential cultural deposits were exposed, these were carefully represented on test excavation profile maps. Photographs were also taken of the general AIS study area and in-progress work, recording on-the-job procedures, personnel, work conditions, and the area’s natural and built environment. A photographic scale and north arrow were included in each photograph.

Cultural material observed within modern and historical fill deposits such a demolition layers was generally recorded (e.g., photographed, described) but not collected. Cultural material associated with potential historic properties such as historical trash pits was photographed and grab samples were collected, with care given to including representative artifact types as well as those with the most diagnostic characteristics.

Representative soil/sediment samples were collected from the natural strata underlying modern and historical fill deposits, including potential cultural deposits (i.e., habitation layers, agricultural deposits), for further characterization within the CSH laboratory and for outsourced sample analysis as described in Section 2.2 below. Samples were collected as bulk or column samples, and all samples were collected as single stratum samples without crossing stratigraphic boundaries. Care was taken during the collection of column samples to clean/sterilize the extraction implement so as not to cross-contaminate samples.

The locations of the exterior test excavations were recorded using a Trimble GPS Pathfinder ProXH mapping-grade GPS unit with a TSCI Datalogger using real-time differential correction. This unit provides sub-meter horizontal accuracy in the field. GPS field data was then post-processed. GPS location information was converted into GIS shape files using Trimble’s Pathfinder Office software, version 5.6, and graphically displayed using ESRI’s ArcGIS, version 10.2.1. The approximate locations of the two interior test excavations were extrapolated based on triangulation of architectural components of the John R. Gilliland Sr. Building.

2.2 **Laboratory Methods**

Materials collected during AIS fieldwork were identified and catalogued at CSH's laboratory facilities on O‘ahu. Analysis of collected materials was undertaken using standard archaeological laboratory techniques. Materials were washed, screened, sorted, measured, weighed, described, and/or photographed.

2.2.1 Bulk and Column Sample Analysis

Sediment samples collected from a vertical series of natural alluvium deposits (Stratum II), including interpreted agricultural deposits (SIHP # -8840 Component 1), were examined within the CSH laboratory to aid in characterizing these deposits. Samples were collected as bulk or column samples. All samples were labeled with provenience information, and the volume of each sample was recorded so that comparisons could be made among samples. In the lab, bulk and column samples were first visually inspected. Many of the samples were additionally photo-documented, generating a visual record of the potential agricultural deposits. Select column samples were submitted for palynological analysis (see Section 2.2.4.1 below).

Wet screening of samples was performed on selected representative samples (n=7) to document material content. Scaled, close-up photographs of the selected samples were taken prior to wet screening for comparison with post-wet screening results. The samples, ranging from 0.5 to 2 liters, were placed in large (approximately 7-liter) 4-mm sealable (Ziploc-type) plastic bags. The bags were filled with tap water and allowed to soak for an hour with periodic agitation and massaging to break up sediment peds/masses in preparation for wet screening. Soaked and agitated samples were poured onto large, 1/16-inch mesh screens and sprayed with a water hose to work the finer-grained sediment through the mesh. Commonly, gravel-sized peds/masses of soil adhering to itself resulted; the largest of these peds/masses were broken apart by hand as wet screening continued. Smaller peds/masses were not broken down by hand. Sediment that did not pass through the 1/16-inch mesh was spread out on the screen and air-dried. Dried samples were inspected (without magnification) for artifacts, plant remains, charcoal, and limonite root casts and nodules. Post-wet screening, scaled, close-up photographs were taken for comparison. Results of this analysis are presented in Section 5.1: Bulk Sample Analysis.

2.2.2 Artifact Analysis

In general, artifact analysis focused on establishing, to the greatest extent possible, material type, function, cultural affiliation, and age of manufacture. As applicable, artifacts were washed, sorted, measured, weighed, described, photographed, and catalogued. Diagnostic (dateable or identifiable) attributes of artifacts were researched.

No traditional Hawaiian artifactual material was collected. Historical artifacts were analyzed using standard reference materials, as well as resources available on the internet; these included Elliott and Gould (1988), Munsey (1970), Bureau of Land Management/Society for Historical Archaeology (BLM/SHA) (2019), and Florida Museum of Natural History (2018), among others. Analyzed materials were tabulated and are presented in Section 5.2: Artifact Analysis.

2.2.3 Faunal Analysis

Faunal analysis focused on species identification and evidence of food consumption. Collected non-human vertebrate skeletal material was identified to the lowest possible taxa and analyzed

using an in-house comparative collection and reference texts (Adams and Crabtree 2008; France 2009). Identified faunal remains are discussed in Section 5.3: Faunal Analysis.

2.2.4 Floral Analysis

2.2.4.1 Palynological Analysis

Palynology is the branch of science concerned with the study of pollen, spores, phytoliths, and other palynomorphs. Palynomorphs are often preserved in soil/sediment samples and, following physical and chemical extraction, can be identified with a microscope. This information leads to the types of plants that made up the local environment, or the local watershed, at the time the sediment was deposited. A large amount of palynological research has been conducted on O‘ahu to examine human impacts on native vegetation.

Ten samples from two test excavations (T-7 and T-9) were submitted to BGP Consulting, LLC, in Flagstaff, Arizona for pollen analysis. The samples targeted a vertical series of natural alluvium deposits, including interpreted agricultural deposits (SIHP # -8840 Component 1). The results of the palynological analysis are presented in Appendix C and are discussed in Section 5.4.1: Pollen Analysis.

2.2.4.2 Wood Taxa Identification

Charcoal samples from two fire-related features (SIHP # -8840 Component 2, Features 2 and 4) were analyzed for species identification. Samples were sent to the Wood Identification Laboratory at International Archaeological Research Institute, Inc. (IARII), for taxa identification. The samples were viewed under magnification of a dissecting microscope and compared with anatomical characteristics of known woods in the Pacific Islands Wood Collection at the Department of Botany, University of Hawai‘i at Mānoa, as well as in published descriptions. Taxa identification of wood samples provides useful information for interpreting the environmental and cultural history of the area and helps to determine a general time frame of land use. Analysis by IARII also identifies short-lived plant species and/or plant parts that may be used for radiocarbon dating. Following analysis, samples were returned to the CSH laboratory. The results are presented in Appendix D and are discussed in Section 5.4.2: Wood Taxa Identification.

2.2.4.3 Radiocarbon Dating Analysis

Charcoal from SIHP # -8840 Component 2, Feature 4, fire-related feature, was submitted to Beta Analytic, Inc., of Miami, Florida, for radiocarbon dating analysis. Parenchyma charcoal was selected because it is not likely to have much inbuilt age, as soft storage tissues are not long-lived; hence, it provides a tighter timeframe for possible radiocarbon dates. The sample was analyzed using the accelerator mass spectrometry (AMS) method. The conventional radiocarbon age determined by Beta Analytic, Inc., was then calibrated to calendar ages using the IntCal 13 calibration program. The results are presented in Appendix E and are discussed in Section 5.4.3: Radiocarbon Dating Analysis.

2.2.5 Disposition of Materials

The Hawai‘i State rules governing AIS investigations (HAR §13-276) state the following regarding AIS collections from private lands:

> Arrangements shall be made with private landowners on the disposition of collections from their lands. If private landowners request archiving of material, then the archive shall be determined in consultation with the SHPD. [HAR §13-276-6]

All materials collected during the current AIS, including samples and artifacts, are the property of the landowner. Upon conclusion of the AIS investigation, all collected materials were temporarily stored at the CSH office in Waimānalo, O‘ahu. Disposition of the collection will be determined in consultation with the landowner. All data generated during the course of the AIS is stored at the CSH offices.

2.3 Research Methods

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historical photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historical maps at the Survey Office of the Department of Land and Natural Resources. Historical maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2019). This research provided the environmental, cultural, historical, and archaeological background discussed in the following section.

Section 3 Background Research

3.1 Traditional Background

The area that today comprises the portion of downtown Honolulu surrounding the mouth of Nu‘uanu Stream was known to Hawaiians as “Kou.” This area was a center of population and activity similar to Waikīkī, its preeminent neighbor to the southeast. Kou possessed shoreward fishponds and irrigated fields fed by streams descending from Nu‘uanu and Pauoa valleys (McAllister 1933:80). The land surrounding Nu‘uanu Stream was densely populated, with a concentration of *lo‘i* (irrigated taro patches) and *‘auwai* (irrigation ditches) that brought water to the agricultural fields (Figure 9 and Figure 10). There were several large fishponds, including Kawa and Kūwili, *makai* (seaward) of the current project, where Hawaiians raised fish. Additionally, nearby Honolulu Harbor was brimming with marine resources such as fish, crabs, shells, and seaweed. In addition, Kou/Honolulu had a long tradition as a royal center, where the *ali‘i* (chiefly class) would meet and entertain. Pukui (1983) recounts the poetical saying, *“Hui aka nā maka i Kou”* (“the faces will meet at Kou”), in reference to such gatherings (Pukui 1983:1128).

3.1.1 Place Names and Legends

Pukui et al. (1974:49–50) translate Honolulu as “protected bay,” referring to the protection of Honolulu Harbor. According to Westervelt (1915), Honolulu is a name made by the union of the two words “*Hono*” and “*lulu*”:

> Some say it means ‘Sheltered Hollow.’ The old Hawaiians say that ‘Hono’ means ‘abundance’ and ‘lulu’ means ‘calm,’ or ‘peace,’ or ‘abundance of peace.’ The navigator who gave the definition ‘Fair Haven’ was out of the way, inasmuch as the name does not belong to a harbor, but to a district having ‘abundant calm,’ or ‘a pleasant slope of restful land.’
>
> ‘Honolulu’ was probably a name given to a very rich district of farm land near what is now known as the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs of the time of Kakuhihewa, according to the legends. [Westervelt 1915:14]

Older names for the harbor are Kou and Māmala. Kākuhihewa was a *mō‘ī* (king, sovereign) of O‘ahu prior to the time of Kamehameha I. Kākuhihewa divided the island amongst his favorite chiefs and officers, who gave their names to the places they received; hence, the place now known as Honolulu was, until the time of Kamehameha I, called Kou after a chief who was an *ilāmuku* (marshal) under Kākuhihewa (Westervelt 1915:14). According to Westervelt (1915:14), “Ke-kai-o-Mamala was the name of the surf which came in the outer entrance of the harbor of Kou. It was named after Mamala, a chiefess who loved to play konane (Hawaiian checkers), drink awa [*kawa*; *Piper methysticum*], and ride the surf.”

The *ahupua‘a* (traditional land division) of Kou/Honolulu was subdivided into several smaller land divisions known as *‘ili*. The area between Maunakea Street and Nu‘uanu Stream, *makai* of King Street was known as Kapu‘ukolo. The area between Maunakea Street and Nu‘uanu Stream, *mauka* (inland, toward the mountains) of King Street to Beretania Street was called Kīkīhale. Pukui

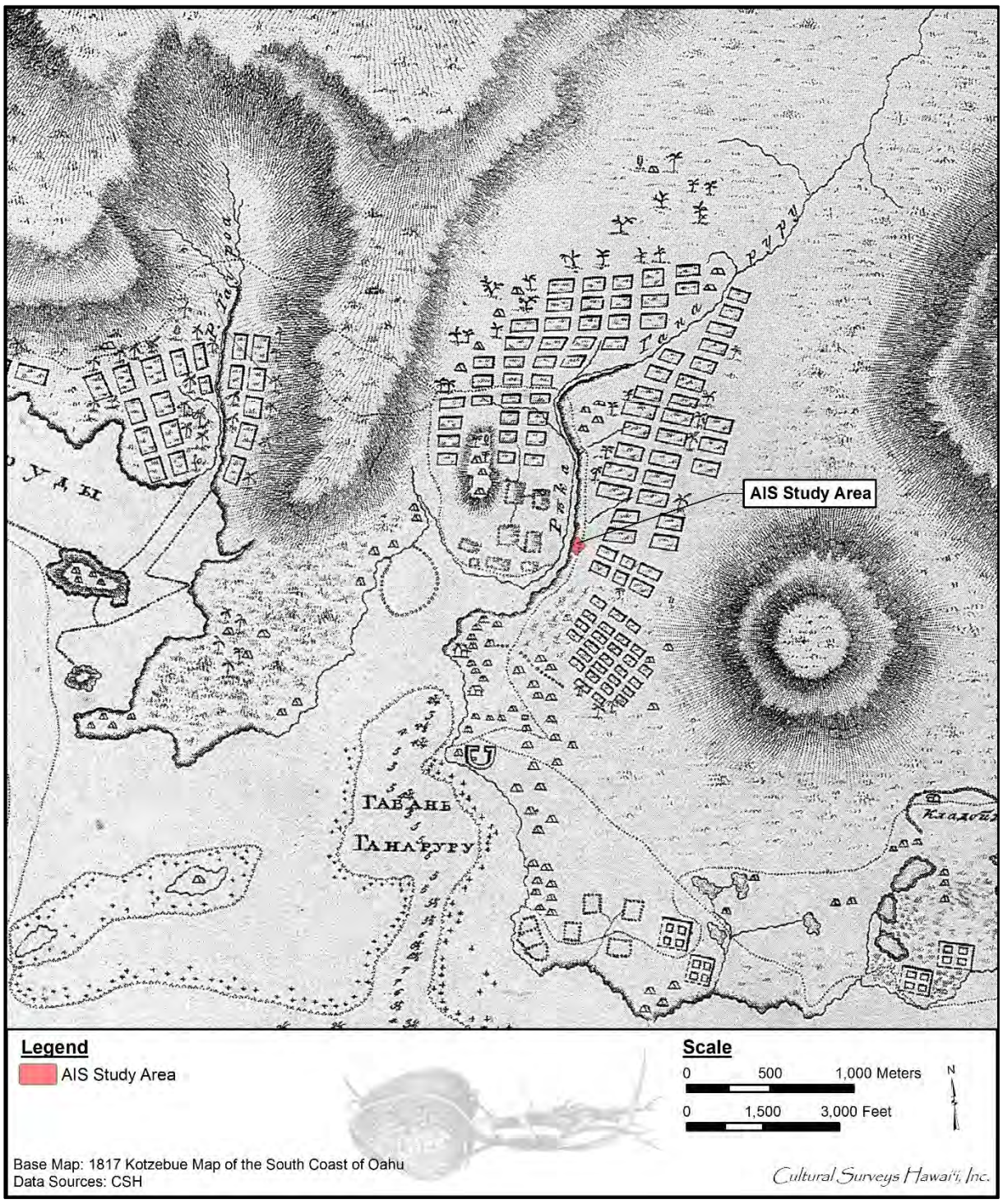

Figure 9. Portion of the 1817 map of the south coast of O‘ahu by Otto von Kotzebue, lieutenant of the Russian naval vessel, the *Rurick*, showing a concentration of taro fields (rectangles) around the banks of Nu‘uanu Stream and grass huts along the coast and the inland trails



Figure 10. Portion of the 1855 LaPasse map of the South Coast of Oahu, showing the AIS study area within a concentration of taro fields (rectangles) around the banks of Nu‘uanu Stream

et al. (1974:110) state that Kīkīhale was named for the daughter of the chief, Kou, for whom the area was named. The current project is within the *‘ili* of Kalāwahine (Figure 11), which Pukui et al. (1974) indicate as being named for a deity who guarded water sources. The literal translation is “the day [of] women” (Pukui et al. 1974:76). Some of these place names are mentioned in the legend of ‘Ai‘ai, described below (Thrum 1998:230–254).

Kū‘ula, the god presiding over the fish of the sea, had a son named ‘Ai‘ai. ‘Ai‘ai was the first to teach the Hawaiians how to make various fishing lines and nets and was the first to set up a *ko‘a kū‘ula*, a rock shrine, on which the fishermen would place their first catch as an offering to Kū‘ula. He was also the first to set up *ko‘a i‘a*, fishing stations, where certain fish were known to gather (Thrum 1998:231). Leaving his birthplace in Maui, ‘Ai‘ai traveled around the islands establishing *ko‘a kū‘ula* and *ko‘a i‘a*. He landed first at Ka‘ena Point, then traveled around the island of O‘ahu, stopping in Kaka‘ako (an *‘ili* now covered by One Waterfront Plaza) to visit his friend, Apua. Here, he met the famed O‘ahu chief, Kou, a skilled fisherman who caught the large *aku* (bonito; *Katsuwonus pelamis*) in the bay of Māmala (Honolulu Harbor). ‘Ai‘ai soon met a young woman named Puiwa. They married and had a son named Puniaiki.

One day, the family went to a dam on Nu‘uanu Stream to catch *‘o‘opu* (gobies) and *‘ōpae* (shrimp). When Puiwa left the newborn, Puniaiki, on the bank of the stream, the baby started to cry. ‘Ai‘ai told his wife to tend to the child, but she answered him back saucily. ‘Ai‘ai called on his ancestors, and a storm came up, flooding the dam and sweeping the child into the stream. Leaving his wife, ‘Ai‘ai went downstream to the *‘ili* of Kaumakapili. Here, he saw the chiefess Kīkīhale gather a large *‘o‘opu* from the stream. Kīkīhale’s guardian advised her to put it in a calabash with water and keep it as a pet. ‘Ai‘ai realized that the *‘o‘opu* was Puniaiki, his transformed child who had been swept downstream to Kīkīhale (referring to both the person and the *‘ili* named Kīkīhale). The next day, the chiefess’ guardian saw that the *‘o‘opu* had turned back into a child, and Kīkīhale instructed her to raise the child until it was an adult, so that she could take the young man for a husband. This came to pass, but the chiefess was not satisfied with her husband Puniaiki, since he did not bring fish home as the other men in the islands. Puniaiki was annoyed with her complaints and took the pearl fishhook, Kahuai, given to him by his father, ‘Ai‘ai, and went out with the men of Kou to fish for the *aku*. When Puniaiki held the pearl fishhook in his hand, “the akus, unprecedented in number, fairly leaped into the canoes. They became so filled with the fish, without labor, that they sank in the water as they reached Kapuukolo, and the men jumped overboard to float them to the beach” (Thrum 1998:247–248). This suggests Kapu‘ukolo was not only an *‘ili* name but also a canoe landing, a place to come ashore after *aku* fishing.

Kou is also mentioned in the legend of Hi‘iaka, beloved sister of the Hawaiian volcano goddess, Pele. Hi‘iaka and her companions had been traveling around O‘ahu on the land trails but decided to travel from Pu‘uloa (Pearl Harbor in ‘Ewa) to Waikīkī by canoe. At Pu‘uloa, Hi‘iaka met a party who was planning on traveling to the house of the chiefess Pele‘ula in Waikīkī. Hi‘iaka recited a chant, telling the people that although they were going by land, and she was going by sea, they would meet again in Kou:

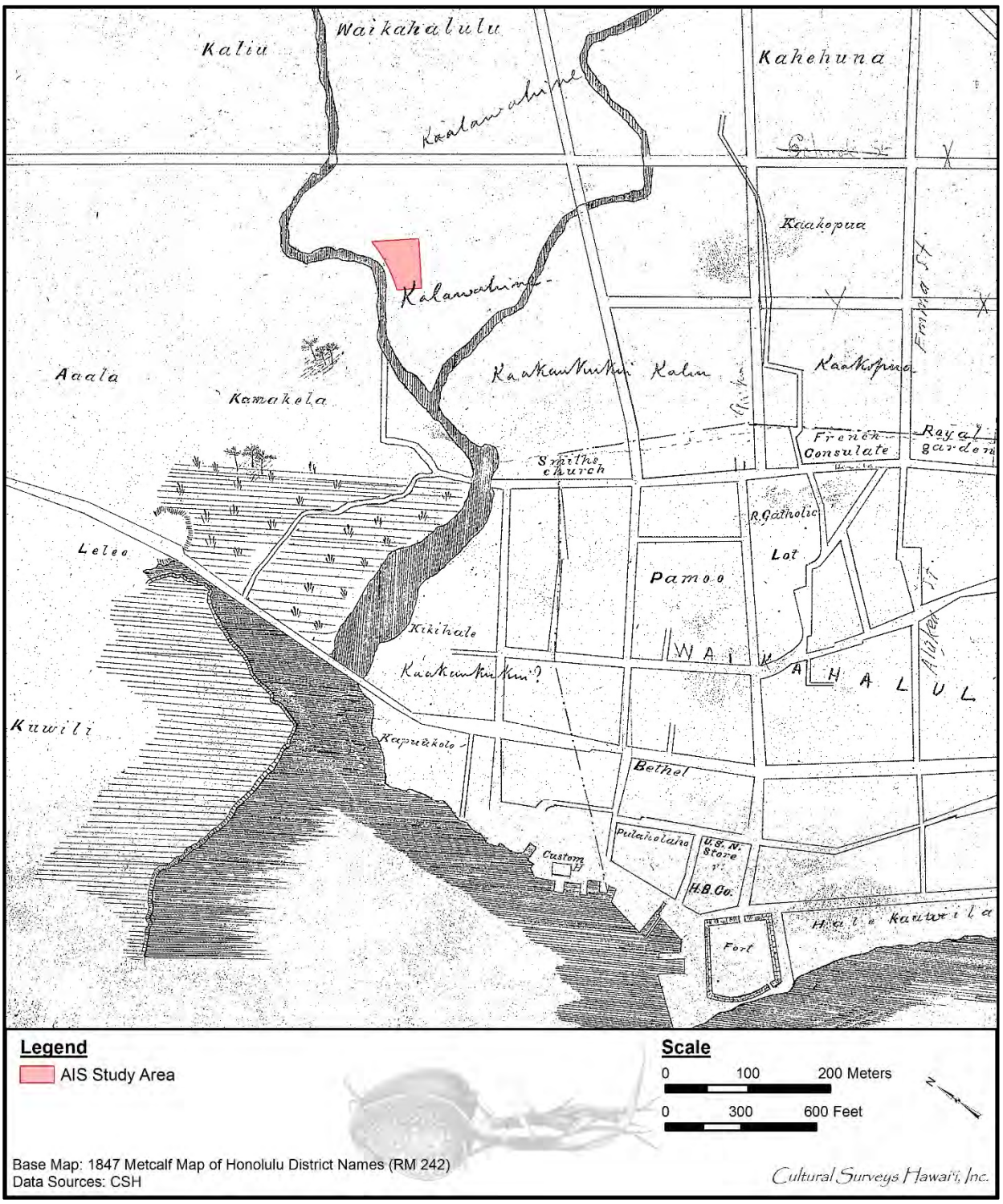

Figure 11. Portion of the 1847 Metcalf map of Honolulu District names (RM 242), showing the AIS study area within the *‘ili* of Kalāwahine

Kou is the coral flat	*‘O Kou ka papa*
Ka‘ākaukukui is the pool	*‘O Ka‘ākaukukui ka loko*
Some ‘alamihi [a black crab], indeed	*‘O ka ‘alamihi a‘e nō*
Wait all day until night	*‘O ka lā a pō iho*
Friends shall meet in Kou.	*Hui aku i Kou nā maka*.

[Ho‘oulumāhiehie 2008a:277; Ho‘oulumāhiehie 2008b:297]

3.1.2 *Ali‘i* and Battles

Nu‘uanu Valley, *mauka* of the current project, was the site of several battles during the pre-Contact period, usually between leeward Kona chiefs and windward Ko‘olau chiefs who moved along the Pali trail and pass to conduct raids into each other’s territories:

> Between Kahapa‘akai clear to the mouth of the valley were situated many celebrated *heiaus* (*luakini waihau*) where people went to worship. [These had been] erected in ancient days as war *heiaus* or *heiaus* for purifying the land; for Nu‘uanu had been a magnificent battleground in those old times. Here Pele-io-holani fought against Alapa‘i-nui, ruling chief of Hawaii, and so fought chiefs before and after his day. [Kamakau 1991:291]

Through a series of such battles, Kū‘ali‘i unified the island of O‘ahu around AD 1720-1740. In the Legend of Kalelealuaka, Kū‘ali‘i fought to overcome the district chief, Kākuihiwewa. An account from Thrum (1907:102) reported, “In a few days again came a report that Kualii had an army at a place called Kahapaakai, in Nuuanu. Maliuhaaino [the war chief of Kākuihiwewa] immediately marshaled his forces and started for the scene of battle the same evening.”

The hero Kalelealuaka had the ability to fly from one point to another in the blink of an eye. He became a warrior for the O‘ahu chief, Kākuhihewa, during a series of battles with the O‘ahu chief Kūali‘i. “Kalelealuaka flew to the battlefield, slaying many of the warriors, including the captain of Kūali‘i’s forces. Kūali‘i sued for peace and agreed to live as a subject under the dominion of Kākuihiwewa” (Thrum 1907:102).

However, in a second story of the battles in Nu‘uanu, it is Kūali‘i who is the victor:

> In the valley of Waolani, a side valley from the great Nuuanu, stood one of the sacred Heiaus called Kawaluna, which only the highest chief of the island was entitled to consecrate at the annual sacrifice. As Moi of Oahu the undoubted right to perform the ceremony was with *Kualii*, and he resolved to assert his prerogative and try conclusions with the Kona chiefs, who were preparing to resist what they considered an assumption of authority by the Koolaupoko chief. Crossing the mountain by the Nuuanu and Kalihi passes, *Kualii* assembled his men on the ridge of Keanakamano, overlooking the Waolani valley, descended to the Heiau, performed the customary ceremony on such occasions, and at the conclusion fought and routed the Kona forces that had ascended the valley to resist and prevent him. The Kona chiefs submitted themselves, and *Kualii* returned to Kailua. [Fornander 1996:280]

In 1783, the Maui chief Kahekili invaded O‘ahu, landing at Waikīkī. The chief of O‘ahu, Kahahana, resided at Kawānanakoa in upland Nu‘uanu at the time (Kamakau 1992:135). In

Fornander’s (1996) legendary account, Kahekili marched through several places in the vicinity of the current project:

> In the beginning of 1783—some say it was in the month of January—Kahekili, dividing his forces in three columns, marched from Waikiki by Puowaina, Pauoa, and Kapena [in Nu‘uanu], and gave battle to Kahahana near the small stream of Kaheiki. Kahahana’s army was thoroughly routed, and he and his wife Kekua-poi-ula fled to the mountains. [Fornander 1996:224–225]

Kahekili’s forces first moved toward Nu‘uanu Valley and reached Kulaokahu‘a, the arid coastal plain between Honolulu and Waikīkī. The great warrior Pe‘ape‘a, a follower of Kahekili who lived in Mānoa, heard of the Maui’s chief’s movements and ran toward the battle:

> *A lohe o Peapea, haalele iho la ia i ka wahine a holo mai la ma uka mai o Ualakaa, a Makiki, Pauoa, Kaheiki, e pili la me Maemae. Ilaila loaa iaia ka maka mua o na kanaka o Kahekili. A o ko Kahahana aoao hoi, i Waolani ka poe, i Maemae ka maka mua e iho mai ana.*
>
> When Peapea heard this he left his wife and ran above Ualakaa [Roundtop], Makiki, Pauoa, and Kaheiki, which is adjacent to Maemae. There he met the van of the army of Kahekili. As to the forces of Kahahana, the main army was at Waolani, while the front was descending from Maemae. [Fornander 1919:458–459]

At Ma‘ema‘e, which Fornander (1919) places around Wyllie Street (approximately 2 km *mauka* of the current project), Pe‘ape‘a came between the two forces and began to single handedly destroy Kahahana’s army:

> *Pela no kona hele luku ana a hiki i Luakaha, a Nuuanu. Hee o Kahahana ame kona mau alii a holo aku la, o ka nui ua pau i ka make ia Peapea. A puni ae la o Oahu nei ia Kahekili, lawe ae la o Peapea ia Kekuapoi, wahine a Kahahana i wahine nana, mamuli o kona koa ame ka ikaika, a noho iho la.*
>
> Thus he went slaughtering until reaching Luakaha [most *mauka ‘ili*] in Nuuanu. Kahahana and his chiefs were defeated and fled, the majority having been all slain by Peapea. Oahu being conquered by Kahekili, Peapea took Kekuapoi, Kahahana’s wife, as his own, on account of his courage and strength, and [they] lived together. [Fornander 1919:460–461]

3.1 Historical Background

3.1.1 Early Post-Contact Period

In the early post-Contact period, Kou was not a major destination for foreigners visiting the island. A discouraging factor for early trade on O‘ahu was political instability. The ruling chief Peleiōhōlani died around 1779, and his heir, Kumuhana, was almost immediately deposed in a *coup d’etat*. A period of political unrest followed. This included the successful invasion by Kahekili of Maui in 1783; the bloody crushing of the O‘ahu rebellion in 1786; the invasion by the Kaua‘i ruler, Ka‘eokūlani, in 1791; the passing of the rule to Kalanikūpule after Kahekili’s death in 1794; and finally, Kalanikūpule’s defeat by Kamehameha I at the Battle of Nu‘uanu in 1795 (Cordy 2002:42–44).

These events contributed to political and economic instability, which in turn delayed the development of Honolulu as a major port. Other events that diminished O‘ahu’s reputation as a port of call include the *Daedalus* killings in 1792; the mysterious death of Captain Kendrick in 1794; the seizure of the *Jackal* and *Prince Lee Boo* ships, which led to the deaths of Captains Brown and Gordon in 1795; and the wreck of the *Arthur* under Captain Henry Barber in 1796 (Beechert 1991:12–14). The earliest accounts of the south shore of O‘ahu recount the fear of attack; the difficulty of getting water and food, particularly yams (Portlock 1789); and, in one instance, the efforts of natives to seize a whaleboat (Dixon 1789:161).

3.1.1.1 Battle of Nu‘uanu

The Battle of Nu‘uanu, the most significant post-Contact battle, took place when Kamehameha, Hawai‘i Island chief, landed at Waikīkī to fight the forces of O‘ahu. This was Kamehameha’s final battle in his conquest of the island of O‘ahu, which took place in the valley *mauka* of the current project:

> Kamehameha landed his fleet and disembarked his army on Oahu, extending from Waialae to Waikiki. Consuming but a few days in arranging and organizing, he marched up the Nuuanu valley, where Kalanikupule had posted his forces, from Puiwa upwards, occupying Kaumuohena, Kapaeli, Kaukahoku, Kawananakoa, Luakaha, Kahapaakai, Kamoniakapueo, and Nuuanu. At Puiwa the hostile forces met, and for a while the victory was hotly contested; but the superiority of Kamehameha’s artillery, the number of his guns, and the better practice of his soldiers, soon turned the day in his favour, and the defeat of the Oahu forces became an accelerated rout and a promiscuous slaughter. Of those who were not killed, some escaped up the sides of the mountains that enclose the valley on either side, while a large number were driven over the pali of Nuuanu, a precipice of several hundred feet in height, and perished miserably. [Fornander 1996:347–348]

Thomas Thrum (1897) provides additional details regarding how the battle raged at Nu‘uanu:

> […] the position of the Oahu army was on the steep side of the hill, about three miles in the rear of the town of Honolulu. A stone wall protected them in front, and the steepness of the ground availed them against an assault. Believing themselves secure, they defied their enemies with insulting gestures and bravados. A field piece, which Young had brought to bear upon them, knocking the stones about their heads, disordered their ranks and they broke and fled. Its most fatal result was the death of Kaiana, who was killed by this ball. His loss spread consternation among his troops and rendered the victory comparatively easy. The forces of Kamehameha charged; in the onslaught many of the Oahuans were slain, and the rest pursued with great slaughter until they were driven to the end of the valley, which terminates in a precipice of six hundred feet, nearly perpendicular height, forming a bold and narrow gorge between the two forest-clad mountains. A few made their escape; some were driven headlong over its brink, and tumbled, mangled and lifeless corpses, on the rocks and trees beneath; others fought with desperation and met a warrior’s death […] [Thrum 1897:111]

3.1.1.2 Honolulu Harbor

Another factor for the delay in the development of Kou as a major port was the relatively late discovery of Honolulu Harbor, attributed to Captain William Brown in early 1793. Furthermore, Honolulu's prominence had to wait until Kamehameha I established peace and encouraged trade. Kamehameha defeated Kalanikūpule at the battle of Nu‘uanu in 1795 and in 1809, moved his court, government, and residence from Waikīkī to Honolulu. Hence, it was not until the first decade of the nineteenth century that newly arrived foreigners considered Honolulu a place of commercial importance. According to Kuykendall (1938:27), Honolulu was situated in a "rich and productive island and its protected harbor, the only accessible one in the entire group, [which] caused foreign ships to go there in preference to other places." However, into the 1820s, Honolulu remained more notable for its native culture than for Western urbanization. A visitor to Honolulu in 1819 wrote the following:

> The port of Onorourou [Honolulu], generally frequented today by all the European vessels that come to the islands, is without doubt the most favorable location with respect to shelter, commerce, and resources for the supply of ships. The town of Onorourou is located on a large, flat plain. It is on the shores of a bay of the same name. The houses, similar to the most part to those of Owhyhi [Hawai‘i] and of Mowi [Maui], are however interspersed with a certain number of houses built of stone that belong for the most part to Europeans or to Anglo-Americans. [de Freycinet 1978:42]

The 1830s marked a shift in the character of Honolulu as perceived by its inhabitants. By this time, Western commercial and missionary interests had supplanted the Native Hawaiian traditions that had once shaped the environment, and Western and urban ideals propelled Honolulu's growth. Such ideals found expression in events like the formal naming of streets, which commenced in September 1836. At that time, the *Sandwich Island Gazette* began soliciting suggestions for street names from its readers. Among those accepted were King Street, Beretania Street, and Garden Lane (Thrum 1884).

3.1.1.3 Francisco de Paula Marín

The history of the Gillilands in Hawai‘i (after whom the John R. Gilliland Sr. Building in the current AIS study area is named) begins first with Francisco de Paula Marín. Marín was a horticultural experimenter who acquired his knowledge as a youth working in the Andalusian vineyards of Spain. In 1793 or 1794, he traveled to Hawai‘i, where he was befriended by Kamehameha I. Marín served as Kamehameha's interpreter and assumed many government duties. Kamehameha, in turn, gave land to Marín for his agricultural experiments, and Marín introduced numerous plant species to the Islands (Gast and Conrad 1973). Marín had at least three wives of Hawaiian blood and many children. He was known for his flourishing gardens and vineyards, as well as for his reluctance to share those crops with friends and acquaintances; hence, the Hawaiian corruption of his name "Manini" has become a slang word for miserly (Encyclopaedia Britannica 2019).

Most of the current AIS study area is within land formerly owned by Marín, known as "The Vineyard" (see Figure 12 and discussion below of LCA 2938). Around 1813 or 1814, Marín travelled to California to obtain grape cuttings and other plants, which he brought back to O‘ahu. The site of the first planting of the grape cuttings was likely at his land on the harbor front (the

foot of present-day Fort Street); however, the following year (1815), he began a larger planting at his “new vineyard,” described as follows:

> The site of this planting was in the area known as Kalawahine, which had been allotted to Jonathan Winship [pioneer of the sandalwood trade, which Marín had encouraged to Kamehameha to enter] by the king. It was located at the confluence of Nuuanu and Pauoa streams, close to what is now Kukui and River streets […]. Marin had asked Kalanimoku [high chief, similar to a prime minister] for land in which to plant his vines, and Kalanimoku arranged with Winship for the use of part of the Kalawahine holding. [Gast and Conrad 1973:50]

From that time onward, wine-making was almost a year-round activity for Marín. Years later, when a new street adjacent to its *mauka* boundary was constructed, it was called Vineyard Street.

Jacques Arago visited the vineyard in 1819 and described it as follows:

> Yesterday, I made a very interesting excursion, and visited the vineyard of Marin […]. It is situated on the slope of a beautiful hill. The foot of which is watered by a small river bordered by palma christi [castorbean; *Ricinus communis*], banana and superb cocoa-nut trees. I gathered some of the grapes from the vine and found them excellent. [Hee 1955 in Gast and Conrad 1973:52]

Ten years later (1829), C.S. Stewart visited the vineyard and described it as follows:

> We had scarcely passed a hundred rods from the village before we found something new to admire in the yard of Mr. Marini. After crossing a small stream which bounds it on one side, our path led us the whole length of another. It is well planted and cultivated, and yields grapes sufficient to make considerable quantities of wine. Along the fences in some parts are bushes of the damask rose in full bloom, which appeared to fine advantage, in contrast with the pale yellow blossom of the cotton tree, with which they are interspersed. The vineyard is also skirted with pineapples, in different stages of maturity […] [Stewart n.d. in Gast and Conrad 1973:52]

3.1.2 Mid-1800s

3.1.2.1 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848, the crown and the *ali‘i* received their land titles. *Kuleana* (commoner) awards for individual parcels within the *ahupua‘a* were subsequently granted in 1850. These awards were presented to tenants, Native Hawaiians, naturalized foreigners, non-Hawaiians born in the Islands, or long-term resident foreigners who could prove occupancy on the parcels prior to 1845 (Chinen 1958).

Land Commission Award (LCA) documentation provides information on land use within the AIS study area. Historical maps show the majority of the AIS study area as within LCA 2938 to Huanu, for the heirs of Lahilahi (Gilliland ‘Ohana [Family]) (Figure 12 and Figure 13). Huanu is the “grandson of Marin” (see above discussion of Francisco de Paula Marín), and this claim is for “farm land in the vineyard” (Waihona ‘Aina 2019). According to LCA documentation, “P. Manini [another name for Marín] formerly held this land from Kamehameha I, having received it from

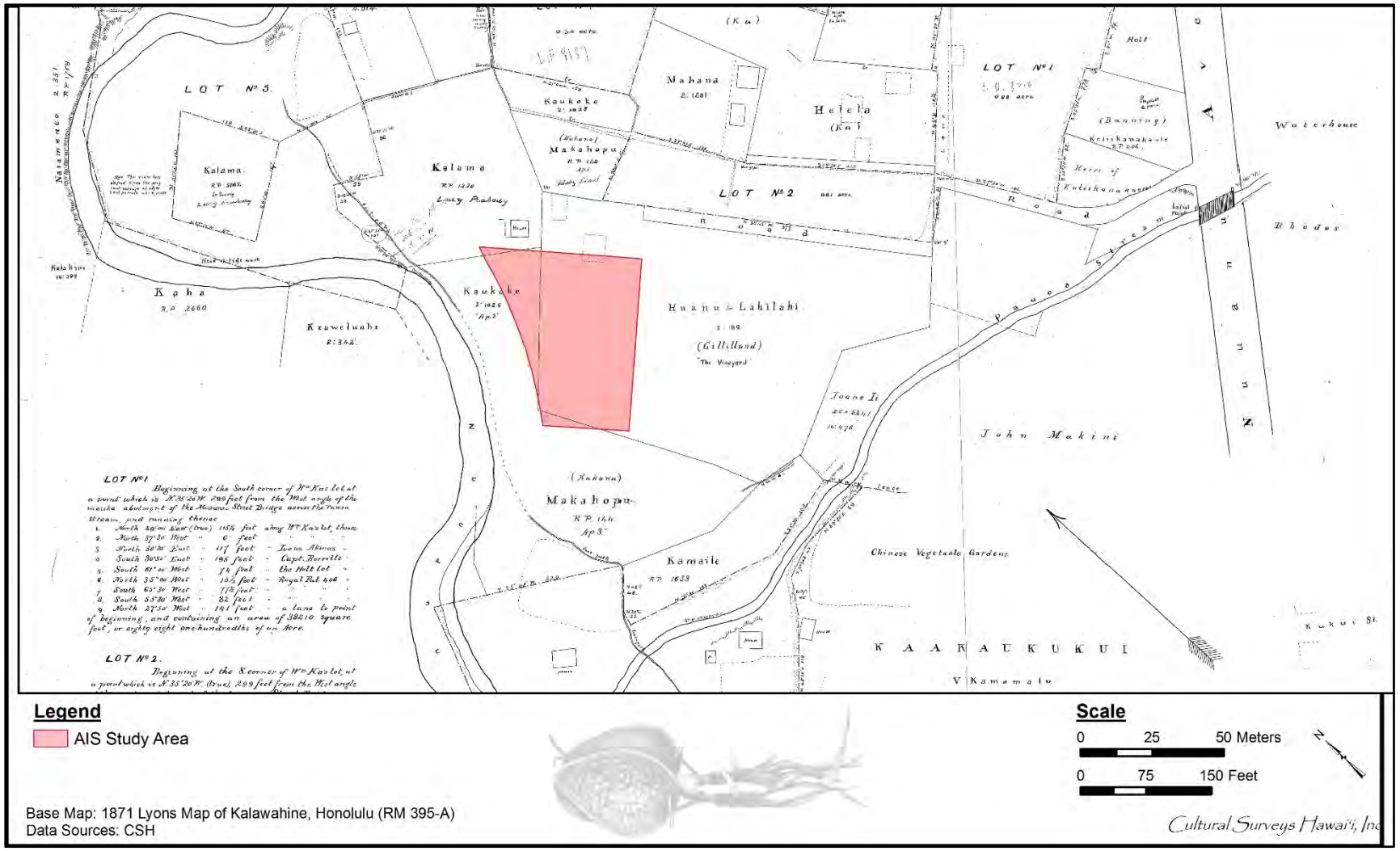

Figure 12. 1871 Lyons map of Kalawahine, Honolulu (RM 395-A), showing LCAs in the vicinity of the AIS study area

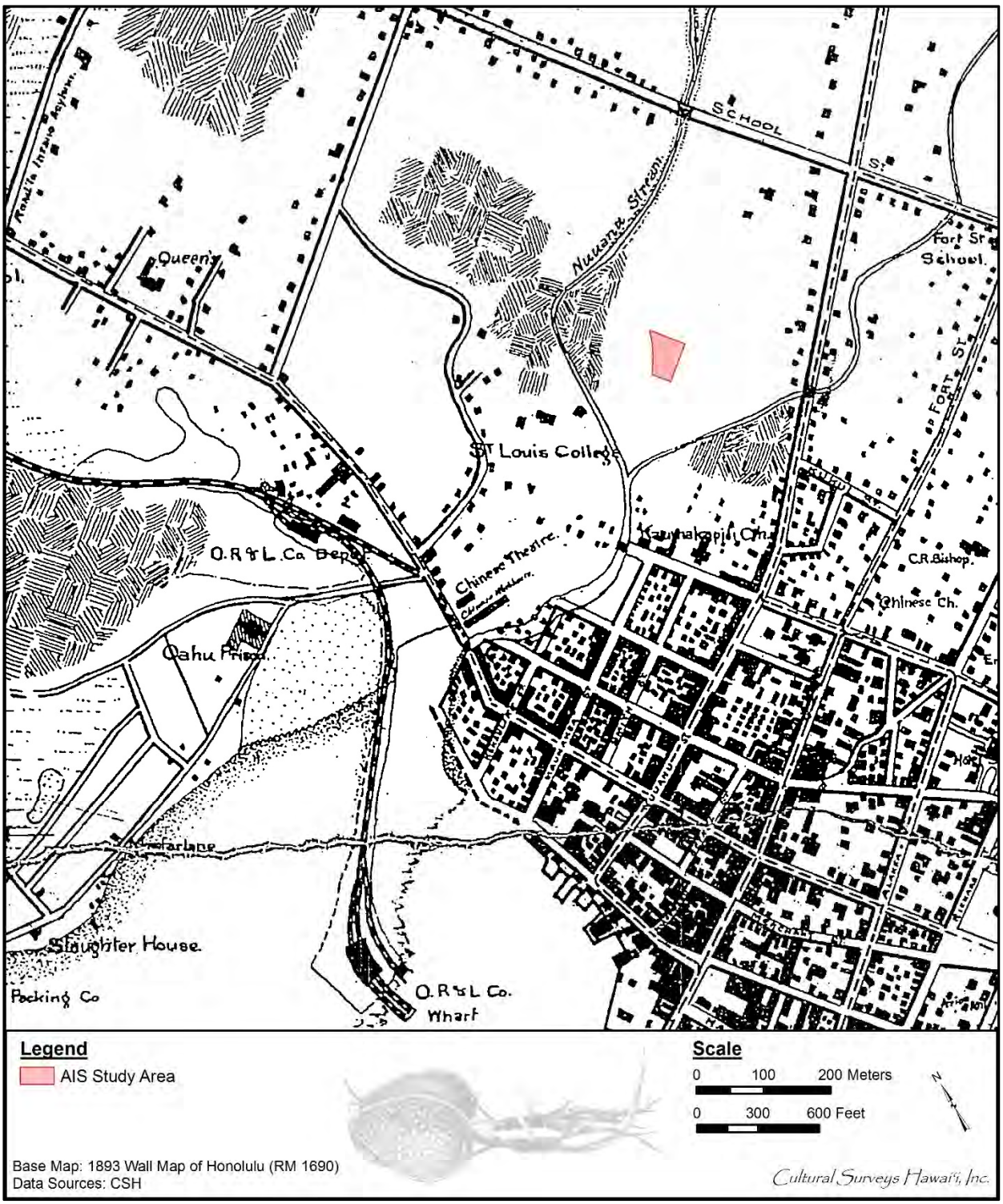

Figure 13. 1893 Dodge and Wall map of Kamanuwai Block and a Part of Kamakakela (RM 1651), showing LCAs in the vicinity of the AIS study area

him. On death of Manini, it came to his daughter, Lahilahi, and on her death to her children […]. The lot is fenced round and has been cultivated and never disputed" (Waihona ‘Aina 2019). The parcel comprises 2.311 acres.

Most of the ‘Ewa (northwest) portion of the AIS study area is within LCA 11082:3 to Kaukoke. The parcel is 330.8 *anana* (Hawaiian unit of measurement equivalent to the distance between the fingertips of the outstretched arms, approximately 2 yards [Mattimoe and Nagao 1967]). In addition, small sections in the west corner of the AIS study area appear to overlap with LCA 141:2 and 3 to Makahopu (also called Makahoku). According to LCA documentation, Makahopu "made the fence and a house and planted food […]. There are some lahala [*Pandanus tectorius*] trees planted on the land by Kaahumanu's orders" (Waihona ‘Aina 2019). ‘Āpana (lot) 2 is 105.9 *anana*, while ‘Āpana 3 is 1,133.7 *anana*. Additionally, the far north corner of the AIS study area may be within LCA 715:1 to Kalama. This claim for four taro patches and a house site comprises 1.03 acres. LCA documentation is included in Appendix B.

Landscape features (solid and dashed lines) depicted within the AIS study area on the 1871 Lyons map and the 1893 Dodge and Wall map (see Figure 12 and Figure 13) may represent the boundaries between LCAs and/or agricultural or house plots within LCAs. A structure is also indicated as partially within the northeast portion of the AIS study area.

3.1.2.2 Mentions of Kalāwahine in Hawaiian Language Newspapers

Two notices published in *Ka Hae Hawaii* in 1861 describe the prohibition of people and animals, including horses, cows, mules, and donkeys, from trespassing upon the fields of Kalāwahine (*Ka Hae Hawaii* 10 and 31 July 1861). The second notice additionally describes a prohibition on the collection of firewood at the mountain in Kalāwahine, without permission from the *konohiki* (land supervisor) P. Naone. These prohibitions were placed by "L. Haalelea," presumably referring to Liwai (Levi) Ha‘alelea, the son of Ha‘alou, governor of Moloka‘i under Kalaimoku. Ha‘alelea was a Hulumanu (court favorite) of Kamehameha III and was elevated to chief upon his marriage to Kekauonohi, daughter of Kamehameha I, around 1848 (Barrere 1994).

A 31 October 1861 notice in *Ka Hoku o Ka Pakipika* announces the auction of the estate of Po, which included five *lo‘i* at Kalāwahine.

In addition, two birth and death announcements for residents of Kalāwahine appeared in *Ka Nupepa Kuokoa*. Nawahinelua was born on 22 April 1862 (*Ka Nupepa Kuokoa* 10 May 1862), while Kaili passed away on 25 June 1865 (*Ka Nupepa Kuokoa* 6 July 1865).

3.1.3 Late 1800s

3.1.3.1 Increased Urbanization

The first efforts to deepen Honolulu Harbor were made in the 1840s. The idea of using the dredged material composed of sand and crushed coral to fill in low-lying lands was quickly adopted. From 1857 to 1870, the "Esplanade" between Fort and Alakea streets was created on 22 acres of former reef and tideland. By 1874, Sand (Quarantine) Island, site of the first immigration station, had been created over "reclaimed" land on reefs.

In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the Islands. Charles Wilkes, commander of the U.S.

Exploring Expedition, visited Hawai‘i in 1841 and related that Honolulu was “very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia” (Wilkes 1856:373). Honolulu was in a period of rapid change during the latter half of the nineteenth century, and Reverend Sereno Bishop (1916) offered a unique perspective on the changes in the layout of Honolulu and the buildings that lined the streets:

> When I returned to Honolulu in 1853, after an absence of thirteen years, I was struck by the many changes […]. The major portion of the residents of Honolulu still lived in thatched houses [in 1840]. In fact the town was almost entirely composed of this kind of dwellings […]. When I went away there were only Punchbowl Road, Beretania Street, King Street and Merchant Street. This was the condition of the city in 1840. [Bishop 1916:58]

Beginning at the start of the whaling era (ca. 1820) and extending into the 1840s and 1850s, when seamen came ashore for “rest and relaxation,” the downtown area from Nu‘uanu Street west to Nu‘uanu Stream was a district of “dilapidated native huts and tenements, tiny bar-rooms, coffeeshops, and run-down boarding houses, all turning to the harbor for their opportunities and income” (Daws 2006:239). However, there was some movement of wealthy Caucasian residents into the lower section of Nu‘uanu in the mid- to late nineteenth century. Malcolm Brown (1918) noted the following:

> Towards the latter part of the 1800’s, Nuuanu became the fashionable residential district, and there were many beautiful homes lining Nuuanu Ave. and the cross streets in the valley […]. The houses were big because there were many children in most families, and the house lots were large because they needed pasture space for their horses. [Brown 1918:28]

By the late 1800s, historical maps show increasingly dense land use and urbanization in the vicinity of the current project, particularly *makai* of the subject parcel (Figure 14 through Figure 17). St. Louis College, approximately 100 m west of the current project, was established in 1883 by Right Reverend Hermann, D.D. (Doctor Divinitatis), Bishop of Olba. Hermann recruited teachers from the United States and intended for the school to be a first-class preparatory, classical, and commercial school. The school initially comprised a single two-story brick building; however, due to the influx of students, additional accommodations were later constructed (Alexander 1896). The gradual expansion of the campus can be seen in Figure 15 through Figure 17.

3.1.3.2 Realignment of Nu‘uanu Stream

Another change in the late nineteenth century was the realignment of Nu‘uanu Stream. In the late nineteenth century, spurred by the deaths during the recent cholera epidemic, the government began to plan and institute public improvements to the roads, bridges, sewer systems, and streams in the western Honolulu area. Thomas Thrum (1896), editor of the *Hawaiian Almanac and Annual*, reported on these improvements in his annual retrospect of the preceding year:

> The new spirit of public improvements […] has been pushed with vigor. The relaying of larger water mains through a number of streets and completion of the new pumping plant, auxiliary to the reservoir system, was effected in time to do valuable service during the cholera period by shutting off the reservoir supply with its possible contamination, and flushing the mains with artesian water […]. The

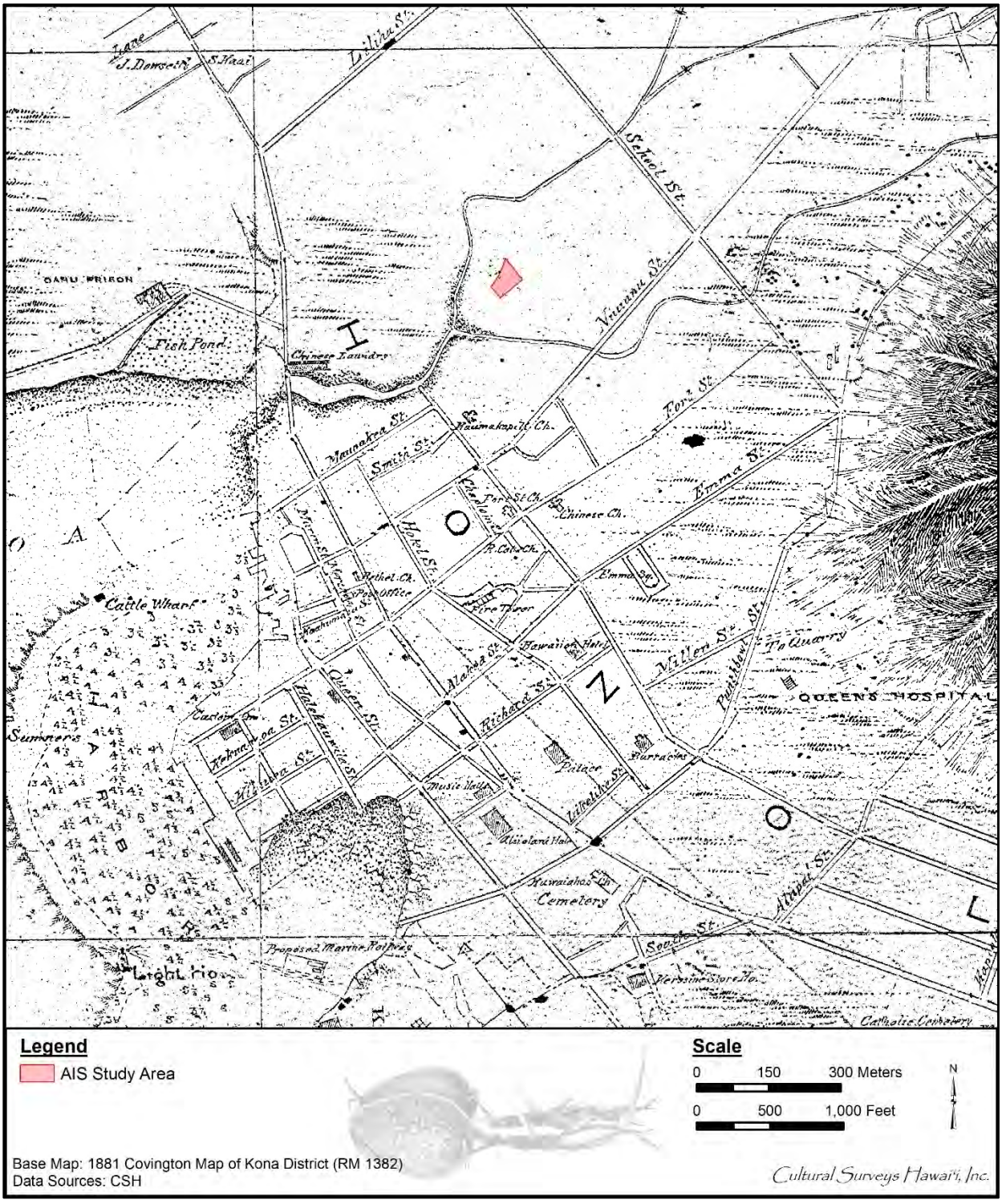

Figure 14. Portion of the 1881 Covington map of Kona District (RM 1382), showing urban development *makai* of the AIS study area

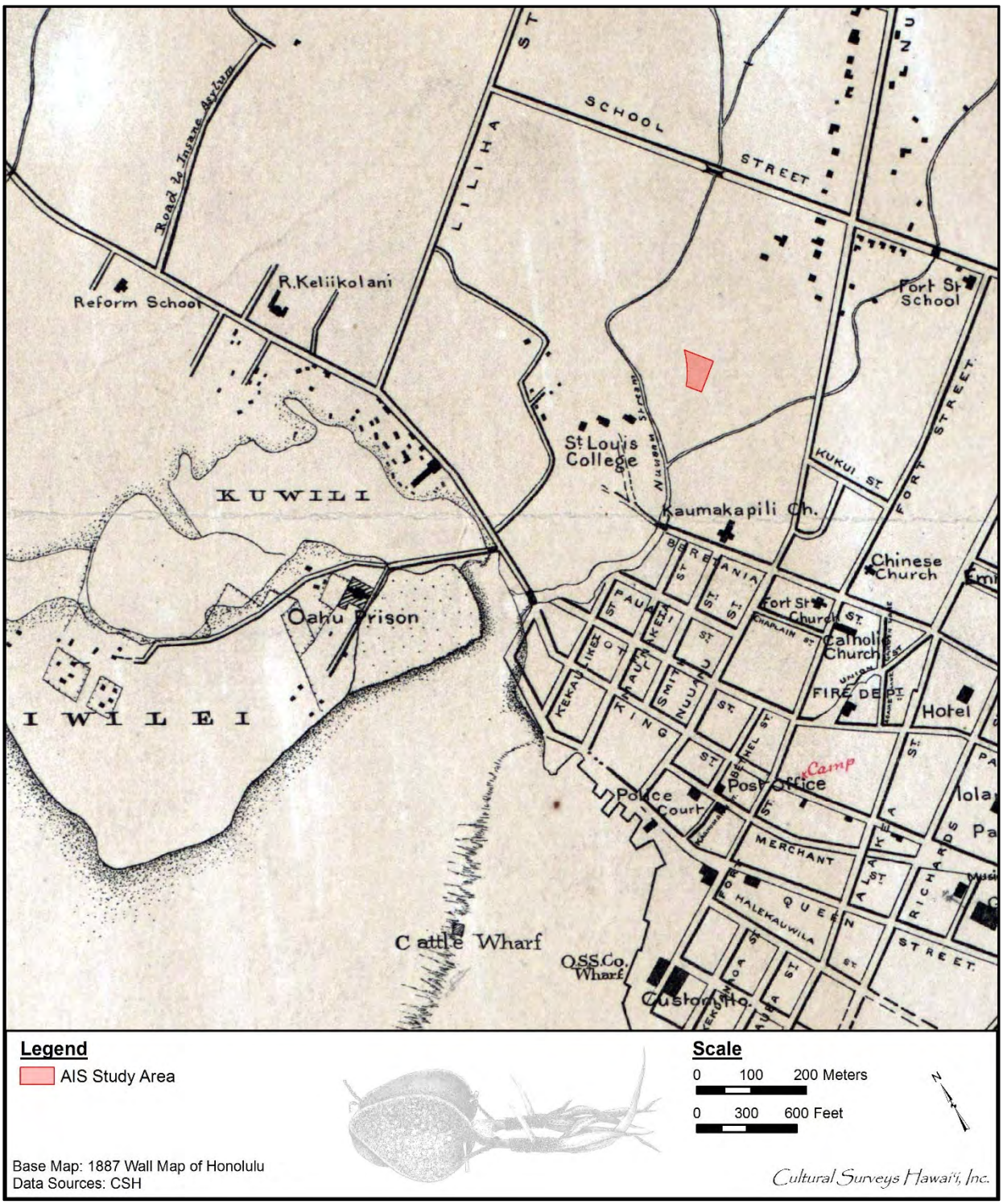

Figure 15. Portion of the 1887 Wall map of Honolulu, showing urban development *makai* of the AIS study area

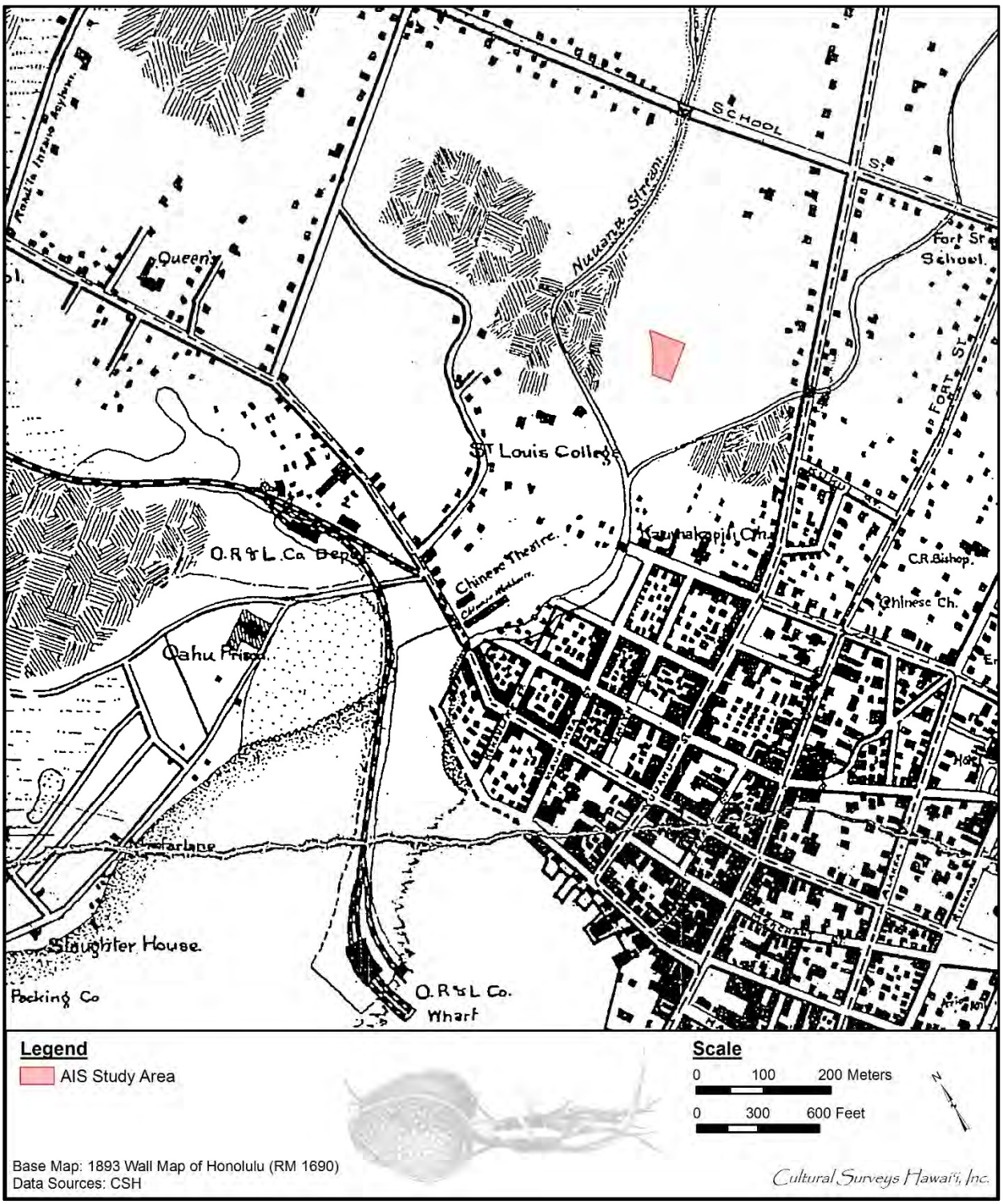

Figure 16. Portion of the 1893 Wall map of Honolulu (RM 1690), showing urban development *makai* of the AIS study area

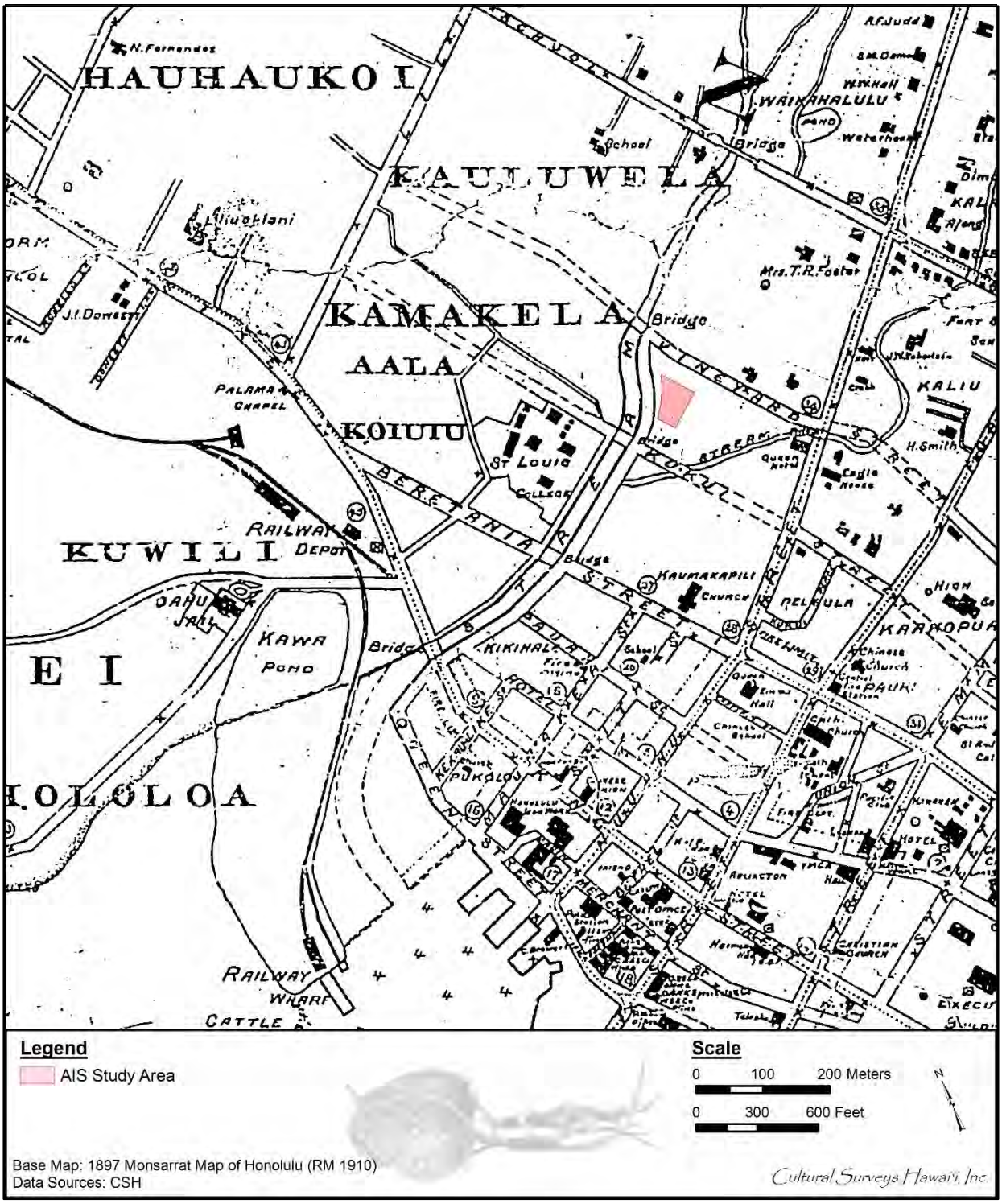

Figure 17. Portion of the 1897 Monsarrat map of Honolulu (RM 1910), showing urban development surrounding the AIS study area

> enlargement of the inner harbor by dredging, with contemplated increased wharfage facilities along the extension of Queen street toward the King street bridge has already been entered upon. The dredging serves the further beneficial purpose of filling in the low land partly occupied, till recently, by the old wash houses, on the northern side of Nuuanu stream which is to be assigned to park [Aala Park] purposes for the benefit of the residents in that part of the city and the improvement of its sanitary condition. This, with the change of the wash houses to Iwilei, and the hurried occupancy of the new market, and destruction of the old one, were imperative health measures adopted during the cholera visitation. [Thrum 1896:144]

Beginning in 1896, Nu‘uanu Stream was dredged, and the water course was changed. The stream was diverted from approximately 100 m west of the current AIS study area to nearly adjacent to it (see Figure 11 through Figure 17). A stone wall was built on both sides of the stream, and dredged material was used to create River Street, adjacent to the current AIS study area (Hurst 1992). Due to the infilling and stabilization of the Nu‘uanu stream banks, more substantial wood structures could be built, replacing the adobe cottages and dilapidated shacks of the early years.

3.1.4 1900s to Present

Honolulu in the late nineteenth century consisted of many unpaved streets and several small lanes (that no longer exist) between major roads. Bishop Street, the main road now between Fort and Alakea streets, did not exist. However, by 1919, Honolulu had wide paved streets with blocks of contiguous brick and stone stores along all major downtown roads. The first section of Bishop Street, between Fort and King streets, was built in 1900. This street quickly became the financial sector of the city, and many of the “Big Five” companies (Castle & Cooke, Alexander & Baldwin, C. Brewer & Company, American Factors [now Amfac], and Theo H. Davies & Company) built their headquarters and their banks on this street (Ames 1996:27). By 1918, the section from the harbor to King Street had been completed and paved (Ames 1996:119). In 1919, the *mauka* extension of Bishop Street from Hotel to Beretania streets began. The city condemned all the property in the way of this new thoroughfare and, in 1927, razed all of the buildings (Ames 1996:120).

3.1.4.1 Chinatown

In 1852, there were only about 71 Chinese living around Honolulu, most of whom had come to the Islands as merchants and continued to carry out this trade. That year, sugar planters began to import large numbers of Chinese “coolies” to work on their sugar plantations. Once their contracts were fulfilled, some of the workers moved to Honolulu to open their own businesses in the area that came to be known as Chinatown. The unsanitary and over-populated area alarmed the white business class, who noted that “[m]ost Chinese businesses were housed in decaying buildings on the depressed lower blocks of Nu‘uanu and Maunakea Street, and in Chinatown the womanless coolies congregated to gamble, smoke opium or simply pass the time” (Daws 2006:300). By the 1870s, a sizeable population of Chinese immigrants had settled in Honolulu, concentrated in the blocks between Nu‘uanu and Maunakea streets (see Figure 16). An 1878 census recorded 1,299 Chinese in Honolulu; the total city population numbered 14,114.

In 1899, the first case of bubonic plague was identified in Hawai‘i, in a Chinese bookkeeper named You Chong. After an examination by Dr. G.H. Herbert, who noted a high temperature and

swelling in the groin, the patient died the next night. After an autopsy, the diagnosis of bubonic plague was determined. Since the disease had broken out in the immigrants' area of Honolulu, all Chinese and Japanese were barred from leaving Honolulu for other ports. Two other cases were reported the same day, and the Board of Health laid down a strict quarantine for Chinatown (area bound by Nu‘uanu, Kukui, River, and Queen streets; just *makai* of the current project). Approximately 7,000 people, primarily Chinese and Japanese immigrants, lived and worked in this area (Iwamoto 1967:122–124). A third ethnic group who inhabited this area were Hawaiians, numbering approximately 1,000, on land their families had occupied for generations (Mohr 2005:63).

From 12 December 1899 to 31 March 1900, 71 cases of bubonic plague were reported; 61 people died, 41 of whom lived within the established Chinatown quarantine area. The Board of Health concluded they could not contain the plague and decided the best remedy was to set "sanitary fires" to infected wooden buildings. Forty-one controlled fires were set between 31 December 1899 and 13 August 1900 as follows:

> Therefore, on December 30, after careful deliberation, the Board of Health chose fire as the 'surest, most thorough, and most expeditious' method. Fire would destroy the plague germs, kill rats, cleanse the soil and open it up to the purifying influence of sun and air, and would prevent any occupancy of the premises until a safe period of time had elapsed. [Iwamoto 1967:124]

Infected patients were moved to a quarantine camp at Kaka‘ako. Some people, not necessarily patients, whose houses were burned were housed at the barracks of the Kaka‘ako Rifle Range. Their belongings were stored in the cellars of Kaumakapili Church, approximately 200 m south of the current project (see Figure 14 through Figure 17).

On 20 January 1900, a fire set between Kaumakapili Church and Nu‘uanu Avenue quickly got out of control. Rising winds swept burning embers to the roof of the church; the fire then jumped to several other blocks and then to the wharfs:

> By 1:30 p.m. the fire began making its way from Beretania Street along Achi Lane toward Kukui Street. People feared that the *mauka* section of the city would be destroyed. Chinatown refugees rushed back to save belongings, but were driven back by fire and smoke; they formed a seething mob near the bridge and Kukui Street […]. The Chinese consul and vice consul also circulated among the people and tried to pacify them, since at this time the Chinese believed that the Board of Heath had purposely burned their homes. [Iwamoto 1967:130–131]

No one was killed in the fire, but Chinatown was destroyed. Many people were homeless and bereft of all belongings, which were lost when Kaumakapili Church burned to the ground. No additional patients were identified with the disease in April 1900, and the Hawaiian Islands were declared free of the plague (Iwamoto 1967:125, 129).

The Chinatown Historic District (SIHP # -9986) is approximately 200 m *makai* (southwest) of the current project. The buildings are typically two or three stories, with older buildings made of brick, wood, or cut stone, and newer buildings made of concrete or steel. Despite the relatively small population of Chinese currently living in Chinatown, this area still serves as the principle

center for the business and social life of the Chinese community of the island (Historic Hawai‘i Foundation 2015-2016).

3.1.4.2 Foster Botanical Garden

Foster Botanical Garden comprises 21.02 acres of land adjoining Nu‘uanu Stream in downtown Honolulu. The garden can be divided into two sections. The southern section, called Foster Garden, is 13.55 acres. The northern section, called Lili‘uokalani Garden, is 7.475 acres. Although there are no major architectural features within the garden, the historic landscaping, which includes a large number of historic trees, makes this area significant to the history of Hawai‘i (Follmer 1988).

In 1855, William Hillebrand, a German physician and botanist, settled on approximately 6 acres of purchased and leased land west of Nu‘uanu Avenue and east of Nu‘uanu Stream. Hillebrand propagated trees and cultivated a botanical garden there until he returned to Germany some 20 years later. In 1880, ship owner Thomas Foster and his part-Hawaiian wife, Mary, purchased the property. Mary Foster expanded the existing garden by increasing the acreage of the property and planting additional trees. In 1919, she leased 2 acres to the Hawaiian Sugar Planters' Association for an experiment station (Follmer 1988).

In 1884, Princess (later Queen) Lili‘uokalani purchased the land that came to be known as Lili‘uokalani Garden from the estate of Queen Kalama, wife of Kamehameha III. During most of her adult life, Lili‘uokalani kept a small house on the property, just above the falls. In 1912, five years before her death, the newly established Lili‘uokalani Trust transferred the Queen's land to the Civic Federation of Honolulu as a park and recreation ground. The Civic Federation then acquired additional lots in the area and, in 1916, transferred 2.75 acres of land to the City of Honolulu. The City subsequently added another 4.75 acres to the garden (Follmer 1988).

In 1930, Mary Foster bequested her home and garden, comprising 5 acres, to the City of Honolulu; an additional 8.5 acres was subsequently added. Foster Botanical Garden (SIHP # -1389) is the core of a botanical garden system that collectively contains the most diverse tropical plant collection in the United States (Follmer 1988). It is approximately 50 m *mauka* (northeast) of the current project, just across Vineyard Boulevard (Figure 28 through Figure 31).

3.1.4.3 Development within the Current AIS Study Area

A review of twentieth century historical maps and aerial photographs (Figure 18 through Figure 31) indicates urban development within the AIS study area by 1906. At that time, a tenement was at the center of the AIS study area, while several dwellings and stores were along the northwestern boundary; a kitchen facility was in between the tenement and the stores (see Figure 18 and Figure 20). The stores included a Plumbing and Tin Shop, a restaurant, and a Mattress Factory (see Figure 20 and Figure 23). By 1950, additional dwellings were within the eastern and southeastern portions of the AIS study area, and a parking area for automobiles was at the south corner (see Figure 27). The stores along the northwestern boundary, although in the same location, were described as having concrete floors by that time; hence, these buildings may have been remodeled or rebuilt between 1927 and 1950.

The John R. Gilliland Sr. Building was constructed within the AIS study area in 1958; it is visible on 1968 and 1982 aerial photographs (see Figure 29 and Figure 31). Fung Associates (Hibbard and Chiu 2016) assessed this two-story commercial building as eligible for listing on the National Register under Criterion C. They assert that the building is architecturally significant as

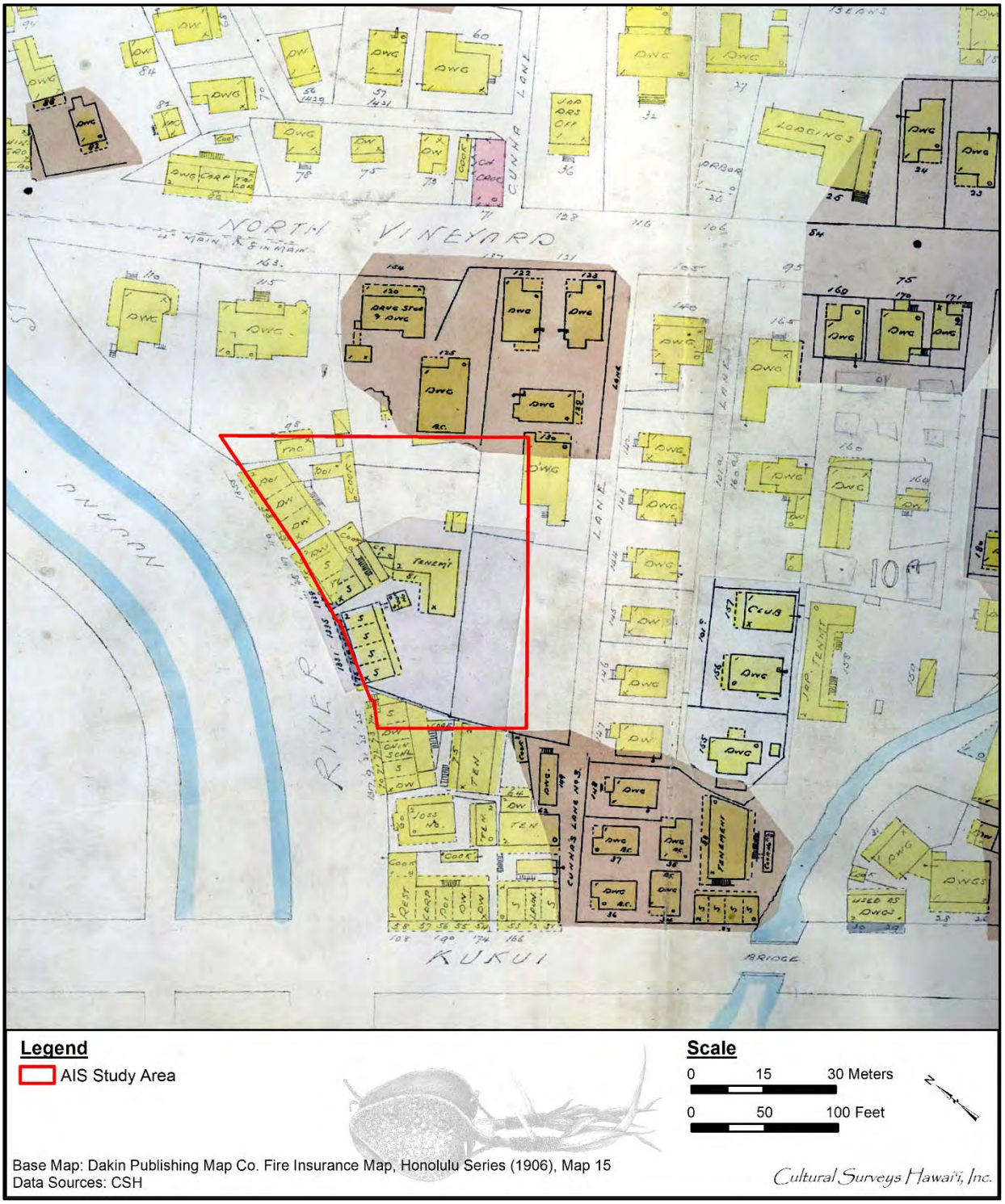

Figure 18. 1906 Dakin Publishing Map Company fire insurance map, Honolulu Series, Map 15, showing the AIS study area

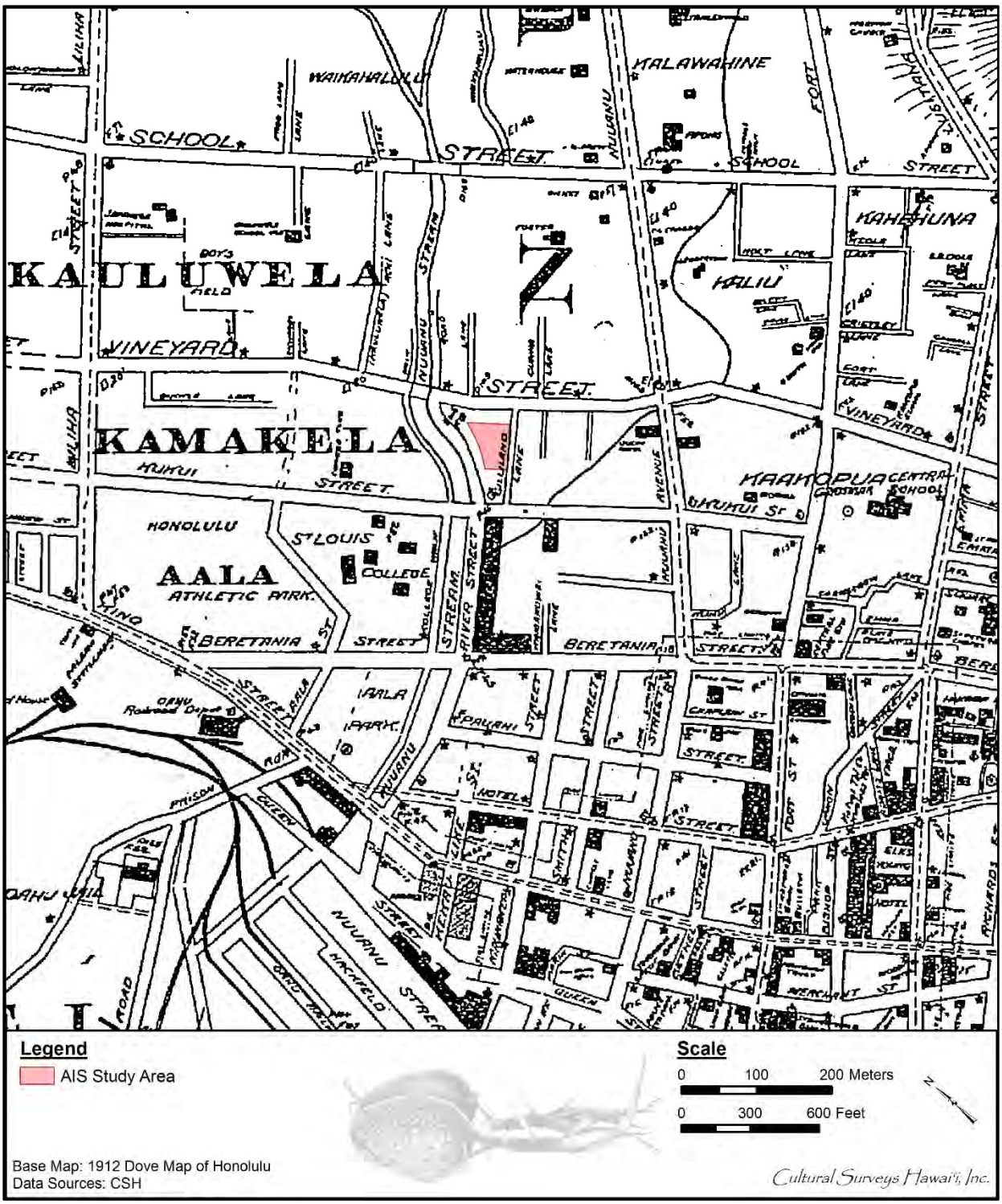

Figure 19. Portion of the 1912 Dove map of Honolulu, showing the AIS study area

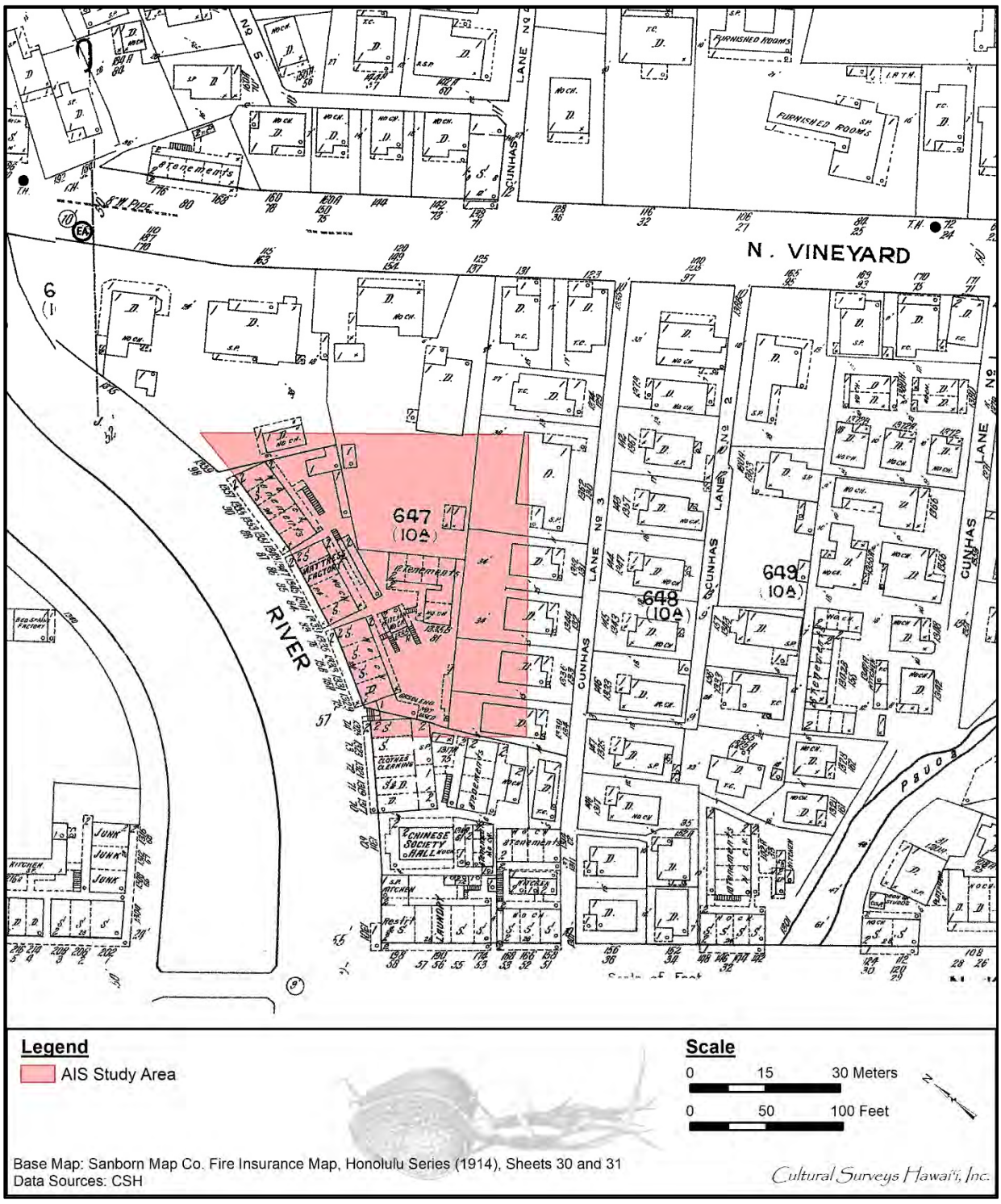

Figure 20. 1914 Sanborn Map Company fire insurance map, Honolulu Series, Sheets 30 and 31, showing the AIS study area

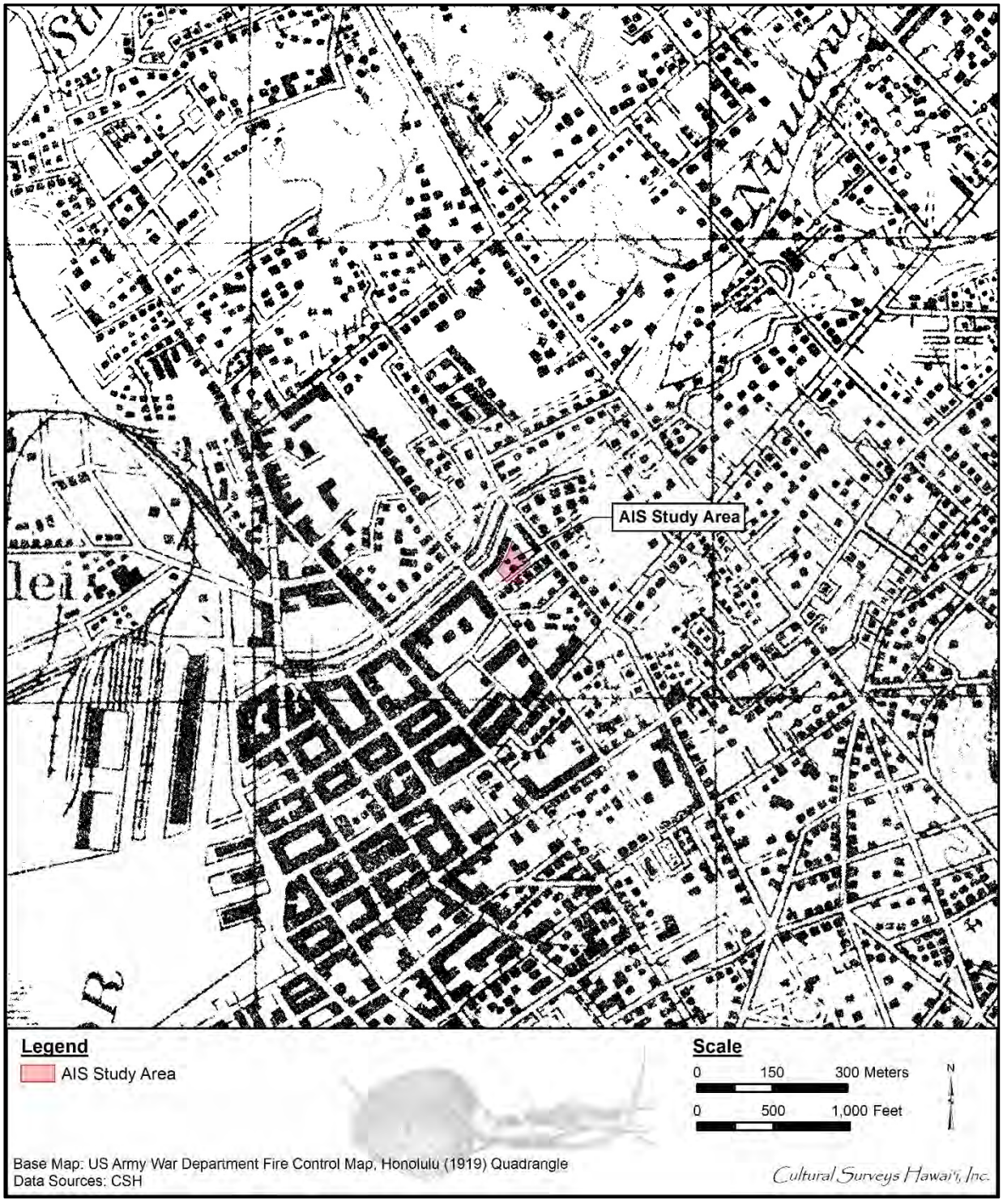

Figure 21. Portion of the 1919 U.S. Army War Department fire control map, Honolulu quadrangle, showing the AIS study area

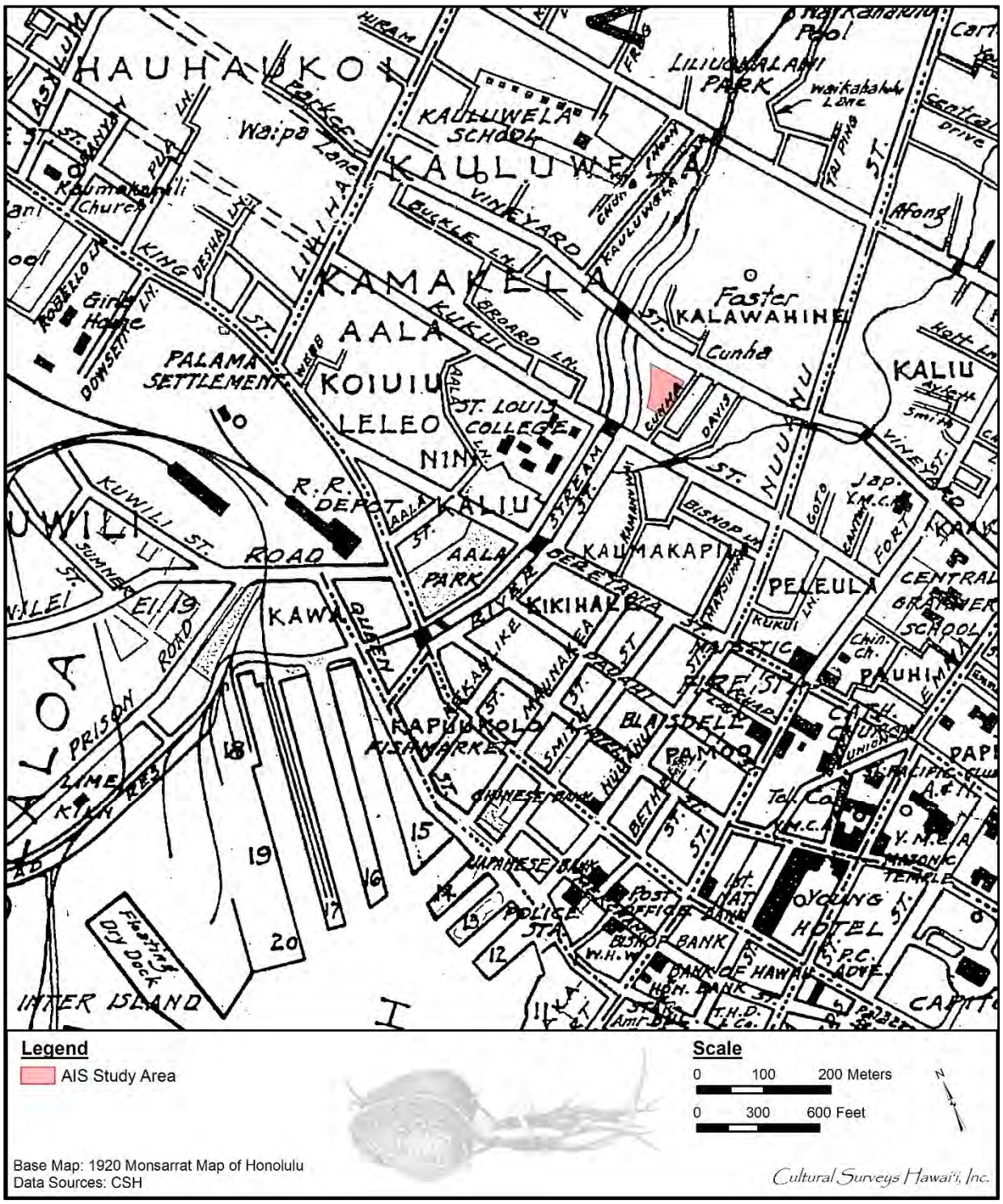

Figure 22. Portion of the 1920 Monsarrat map of Honolulu, showing the AIS study area

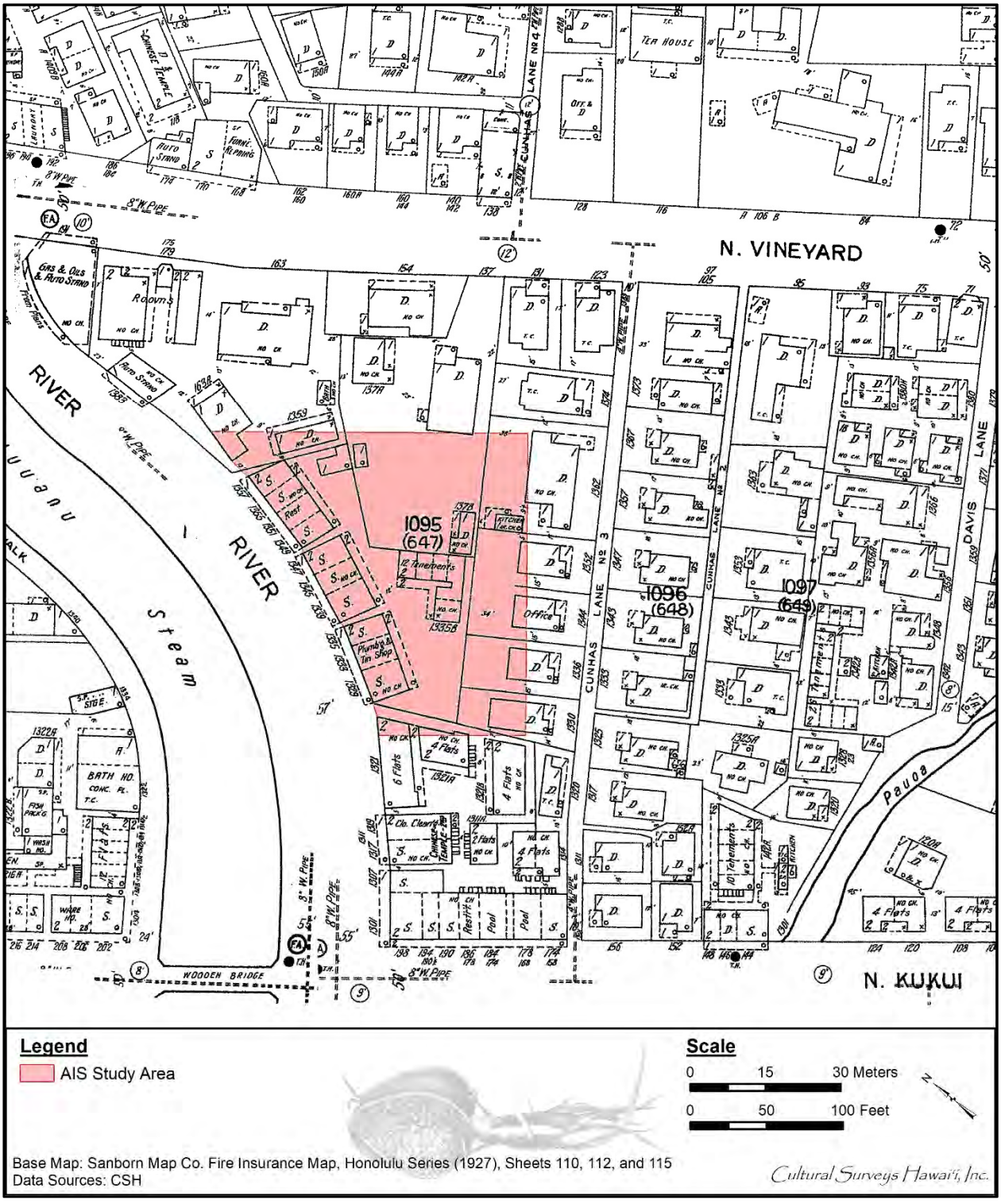

Figure 23. 1927 Sanborn Map Company fire insurance map, Honolulu Series, Sheets 110, 112, and 115, showing the AIS study area

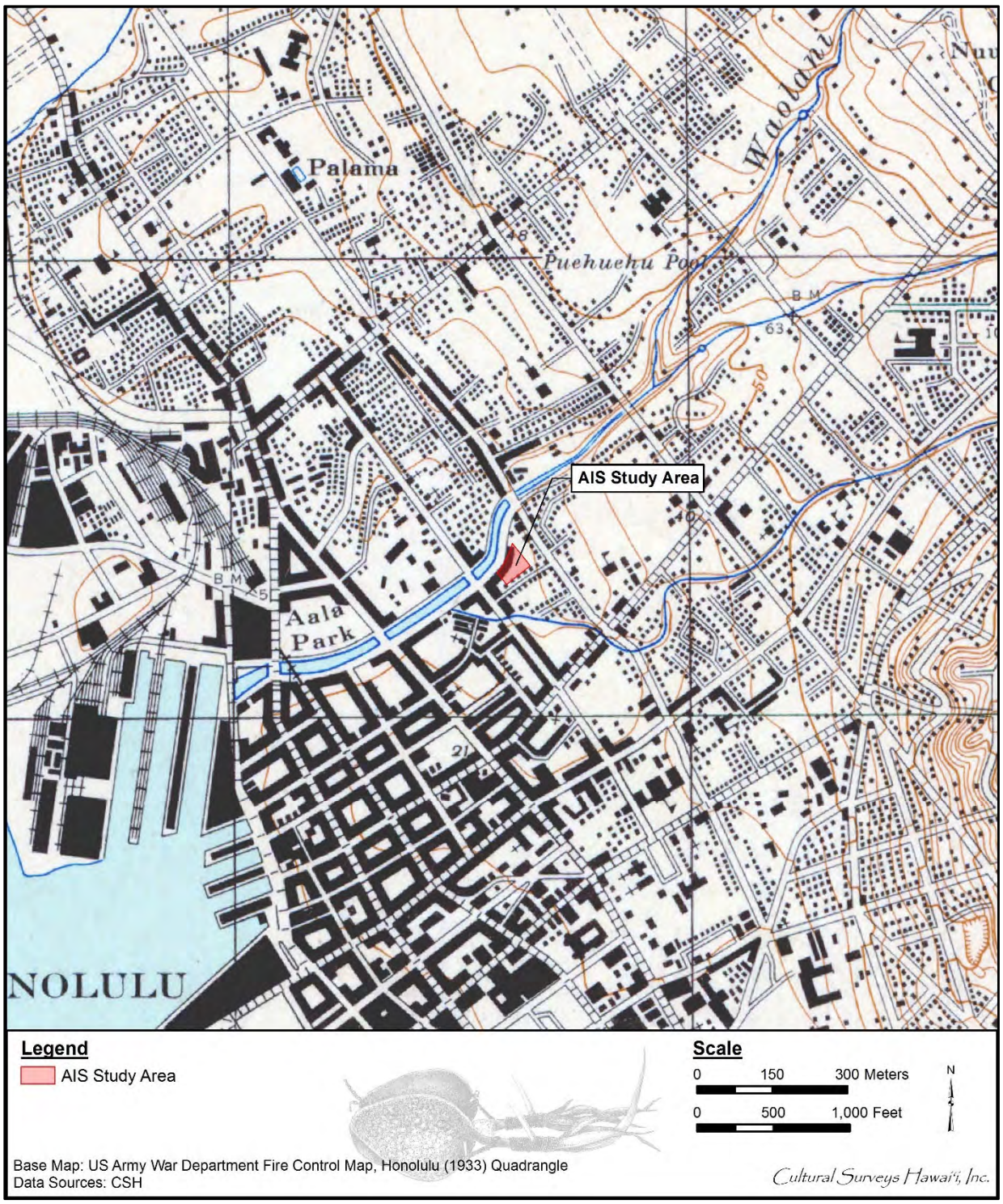

Figure 24. Portion of the 1933 U.S. Army War Department fire control map, Honolulu quadrangle, showing the AIS study area

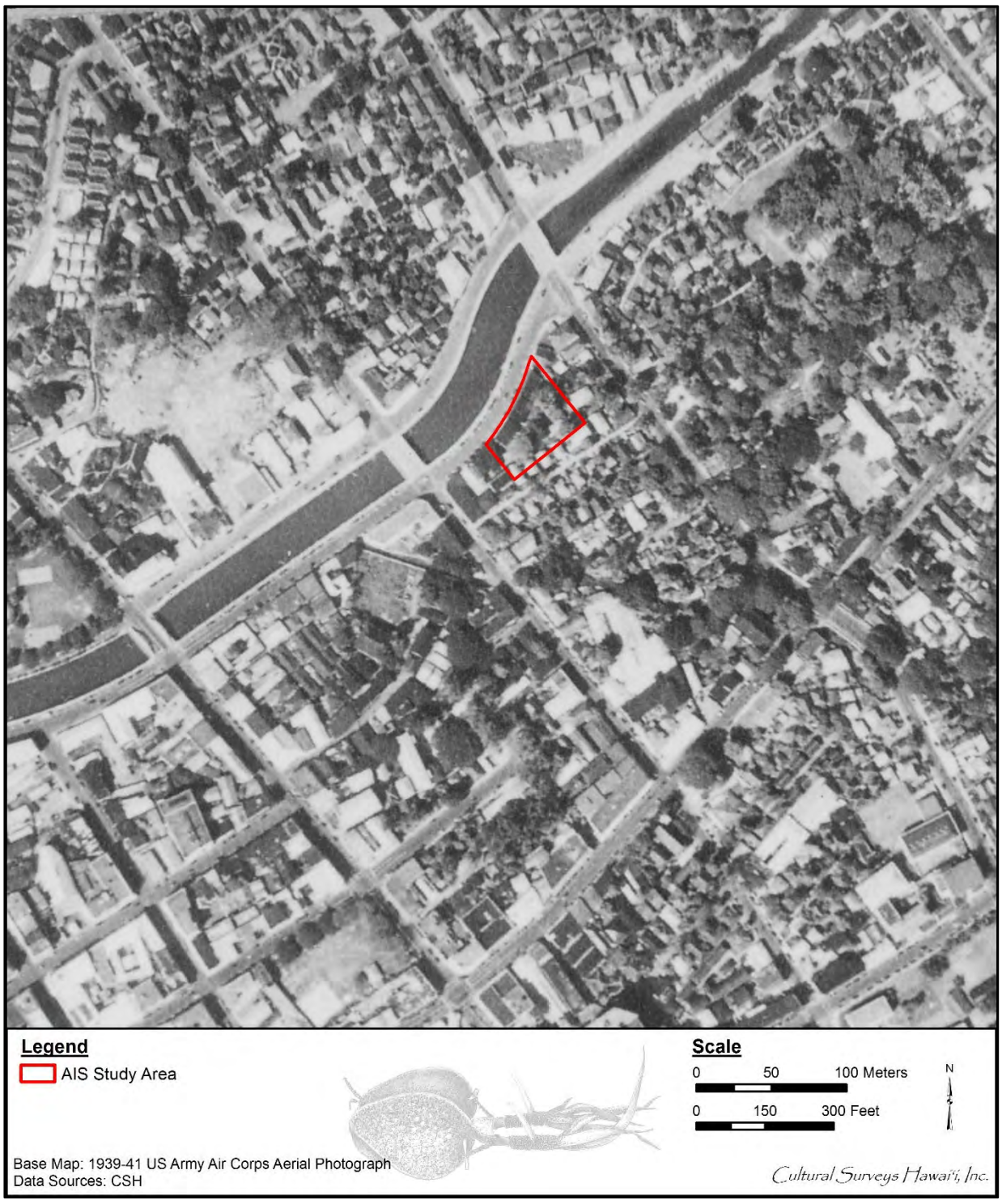

Figure 25. 1939-41 U.S. Army Air Corps aerial photograph, showing the AIS study area



Figure 26. Portion of the 1943 U.S. Army War Department terrain map, Honolulu quadrangle, showing the AIS study area

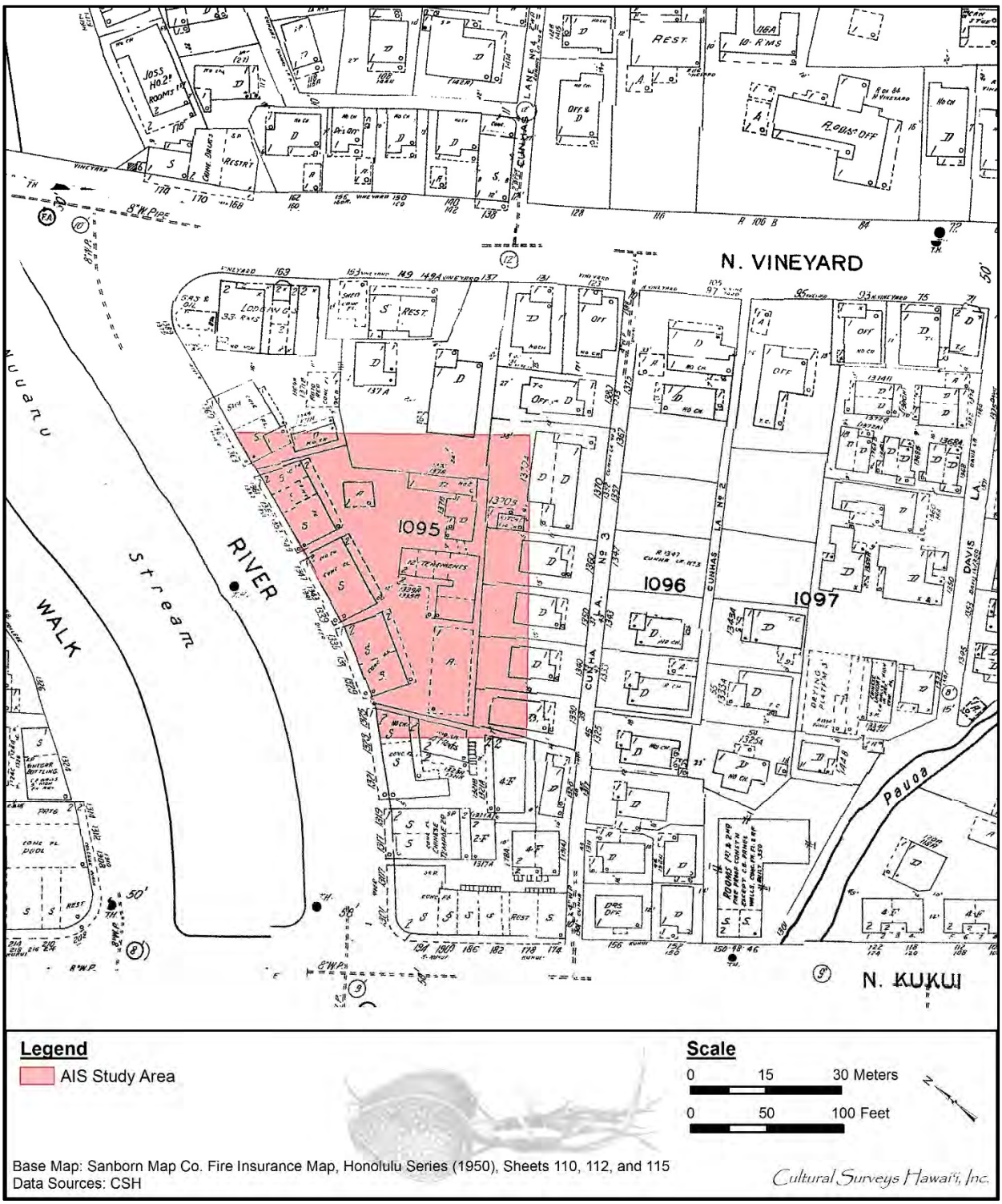

Figure 27. 1950 Sanborn Map Company fire insurance map, Honolulu Series, Sheets 110, 112, and 115, showing the AIS study area

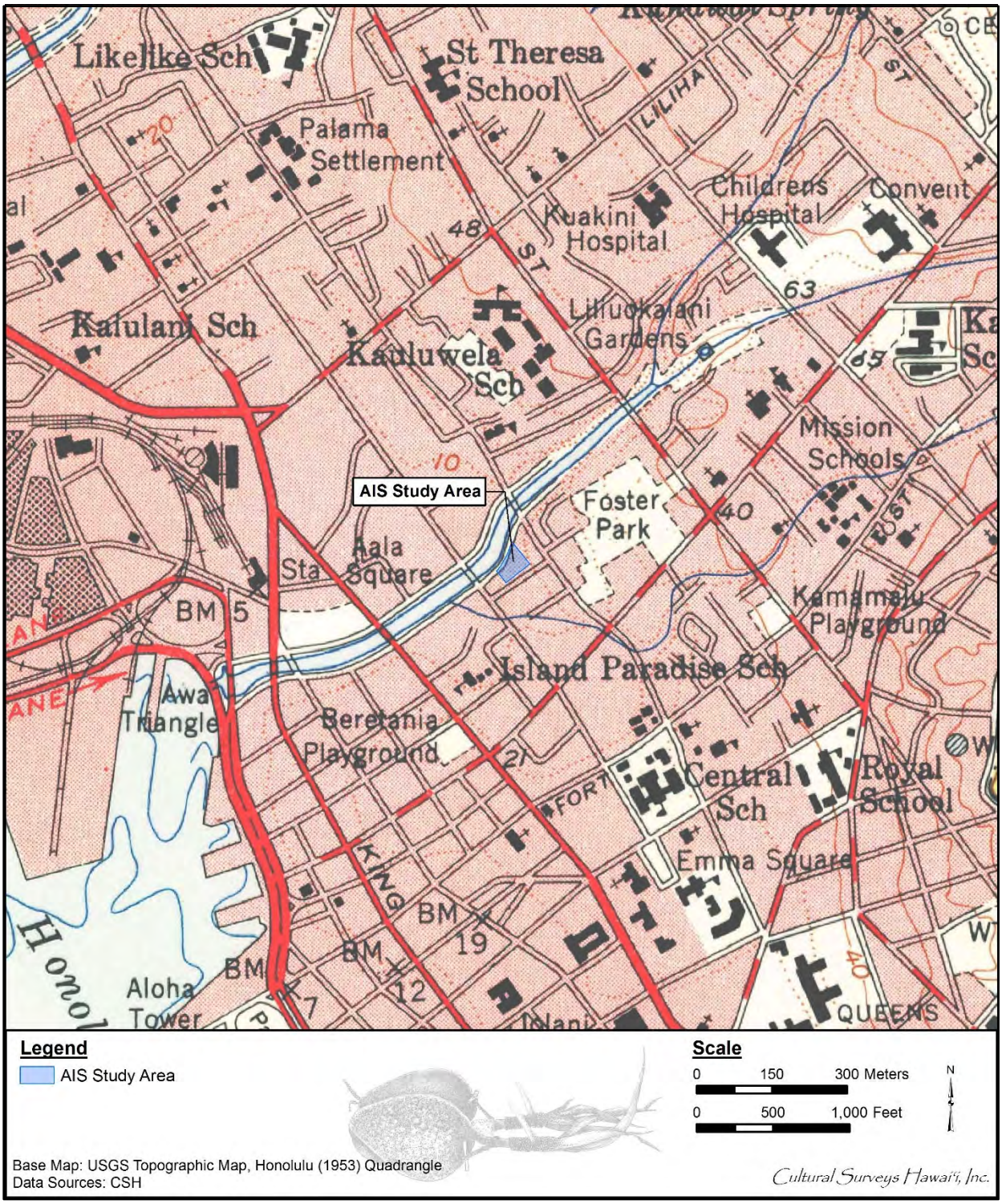

Figure 28. Portion of the 1953 Honolulu USGS topographic quadrangle, showing the AIS study area

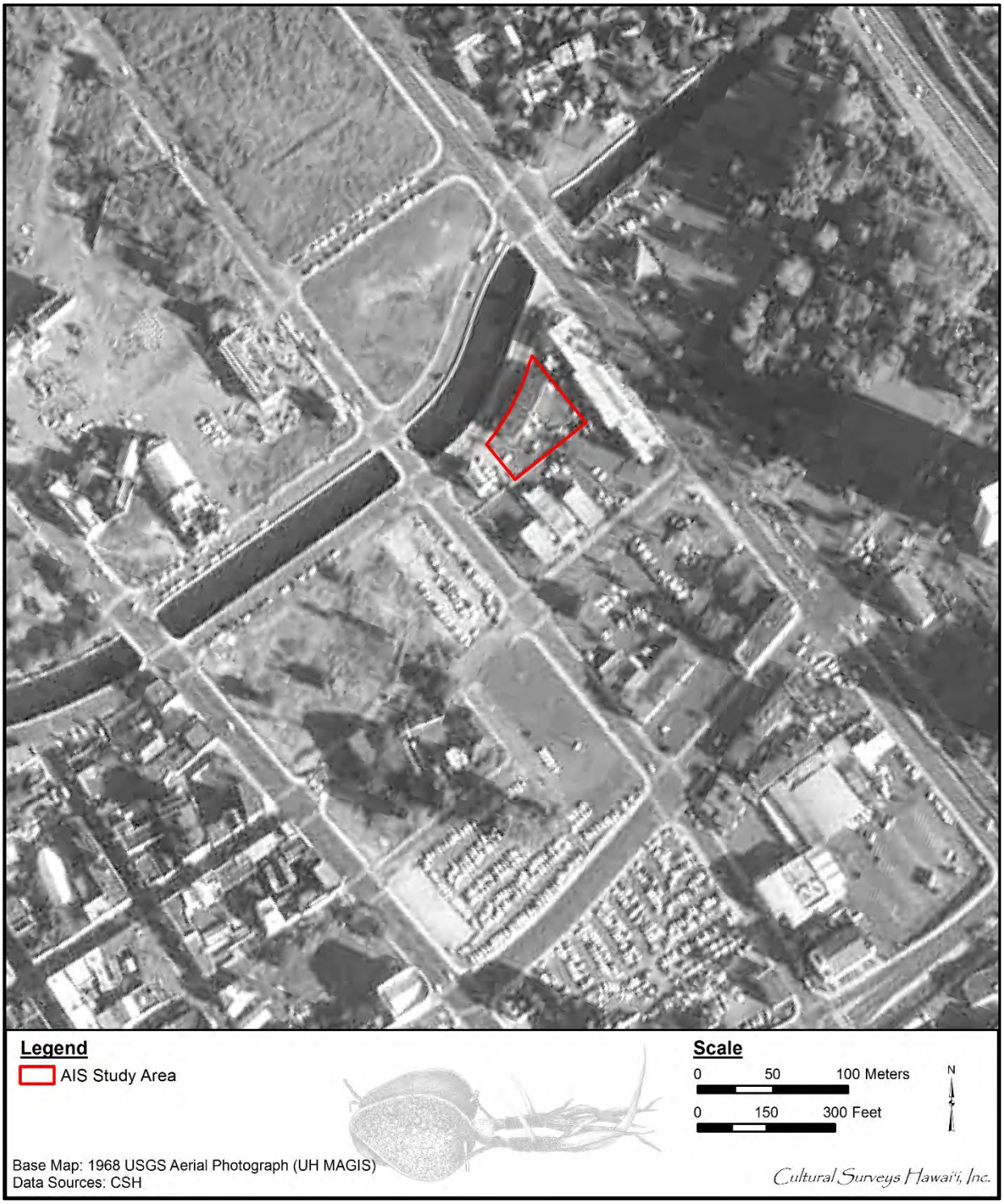

Figure 29. 1968 USGS aerial photograph (UH MAGIS), showing the AIS study area

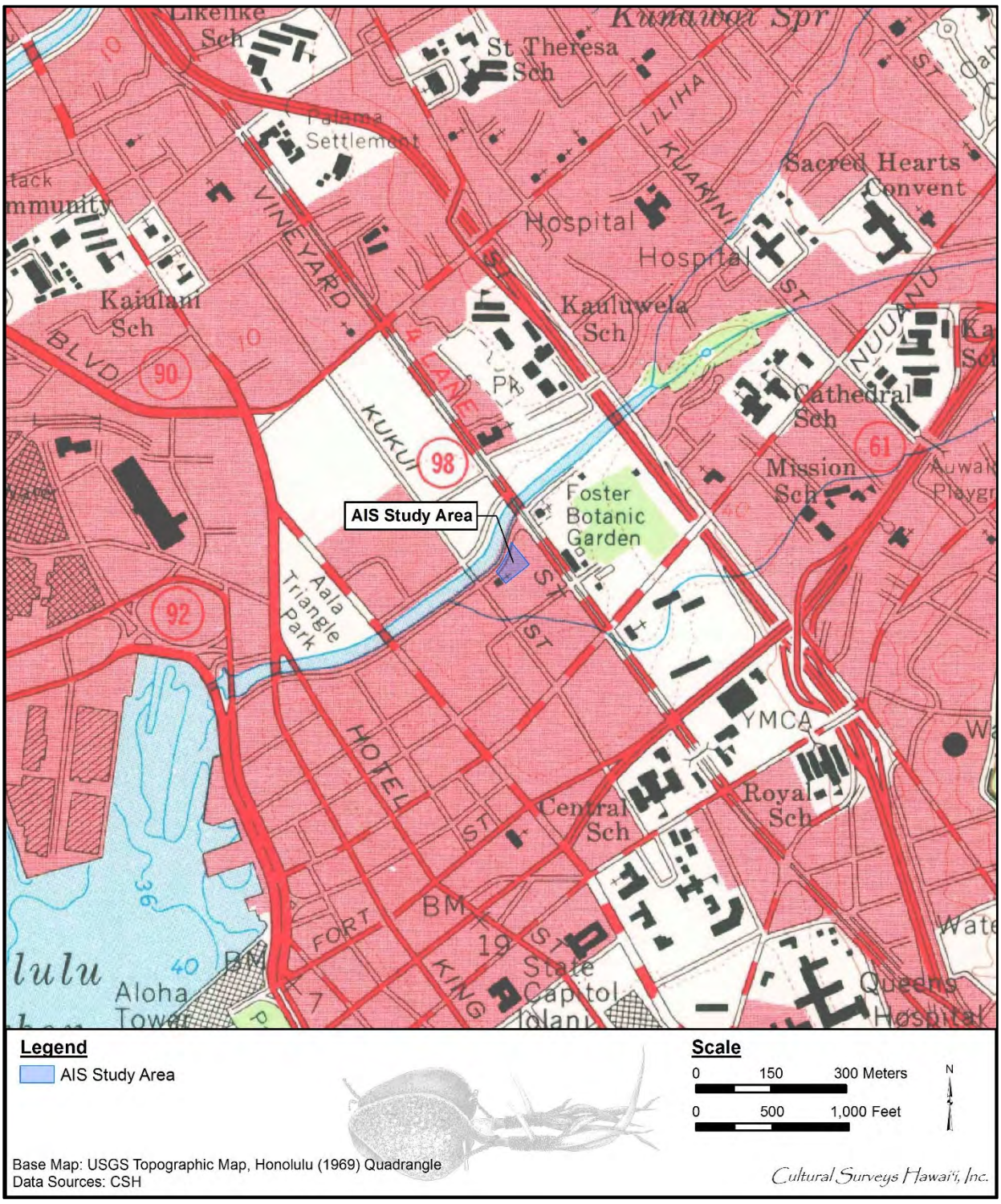

Figure 30. Portion of the 1969 Honolulu USGS topographic quadrangle, showing the AIS study area

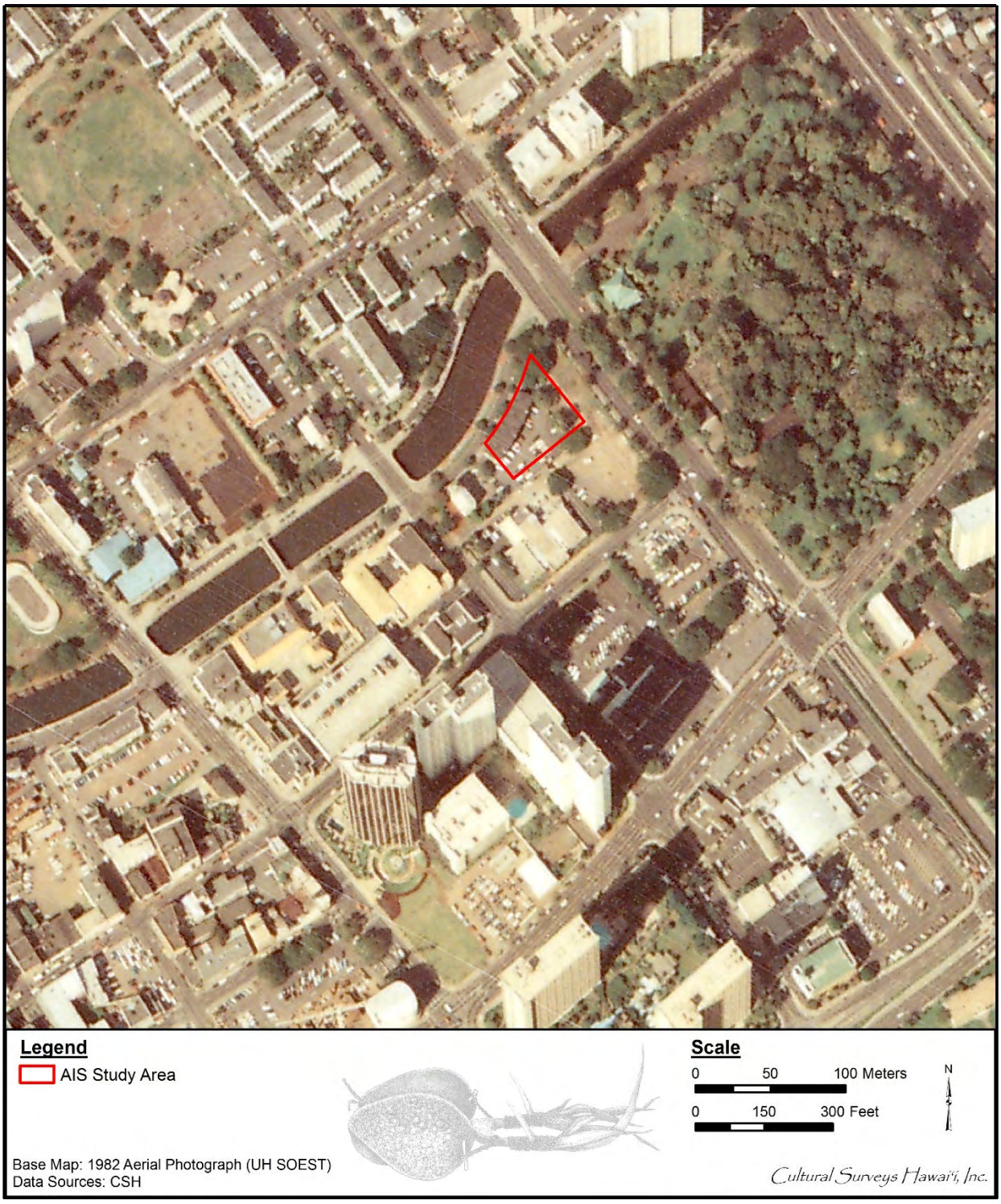

Figure 31. 1982 aerial photograph (UH SOEST), showing the AIS study area



Figure 32. The John R. Gilliland Sr. Building within the AIS study area (from Hibbard and Chiu 2016)

a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s, and that it is typical of its period in design, materials, workmanship, and construction methods.

The John R. Gilliland Sr. Building is also a good example of the architectural work of Kenneth Sato. Sato was born in Kahuku on O‘ahu and received a civil engineering degree from the University of Hawai‘i. He owned the Kewalo Steel Company and designed a number of churches, apartments, and low-rise commercial buildings. He also worked on a number of public schools and bridges for the Territory of Hawaii. Other works by Sato include the Miyamoto buildings at 1331 Nu‘uanu Avenue and the Door of Faith Church on Young Street in Honolulu (Hibbard and Chiu 2016).

As of the 2016 study by Fung Associates, only two spaces on the ground floor of the building were occupied: Uptown Café and Hanagasa Inn, with both restaurants serving local/Asian food. Chikara Mochi formerly occupied the space south of Hanagasa Inn. Hibbard and Chiu (2016) also noted three Royal Ponciana trees (*Delonix regia*) lining the sidewalk fronting the building (i.e., the River Street southeast sidewalk) (see Figure 32), and the asphalt-paved parking lot occupying the rear portion of the property. According to Hibbard and Chiu (2016), the rear parking lot was improved and enclosed in 1966 by a concrete masonry unit (CMU) retaining wall.

3.2 **Previous Archaeological Research**

No previous archaeological studies have been conducted within or adjacent to the current AIS study area. Below is a discussion of previous studies in the vicinity, which are depicted on Figure 33 and summarized in Table 1. Historic properties previously identified in the vicinity are depicted on Figure 34.

3.2.1 Erkelens et al. 1994; Goodwin 1997; Goodwin and Allen 2005

In 1994, IARII conducted an AIS for the Kekaulike Revitalization project, Diamond Head Block in the Chinatown Historic District (SIHP # 50-80-14-9986) (Goodwin 1997). The survey identified more than 100 features, designated as SIHP # -4875. At least one of the features was assessed as pre-Contact, while others were determined to be from the first approximately 70 years following Western Contact. Other residential and commercial features dated to the first 50 years of Chinese immigration, along with several from the twentieth century.

The survey also identified human skeletal remains, which were part of a secondary burial containing the incomplete remains of three individuals (Erkelens et al. 1994). Represented in these remains were a male aged 24-30, a female aged 15-18, and a female aged 3-4. These individuals were likely moved from their original context during construction of a post-1900 water line; hence, the original internment may have occurred during the nineteenth century. Erkelens et al. (1994) hypothesize that the individuals may have been victims of the 1860 Chinatown fire.

IARII subsequently conducted data recovery from 2 August to 30 September and 7 October 1994 (Goodwin and Allen 2005). Staff archaeologists recovered artifacts and charcoal that indicated the area was in use as early as the thirteenth century, with heavy occupation occurring from the early to mid-nineteenth century. Four compounds and a blacksmith’s shop, dating partly to the early nineteenth century, were excavated. The 8,552 collected artifacts were associated with a variety of ethnic groups (Hawaiian, Euro-American, and Asian). They included porcelains, earthenware, stoneware, lithics, fishhooks, pendants, a *poi* (taro corm paste) pounder, metal, coins, beads, bottles, glass shards, bone, and shell. Identified features included post molds, living floors, firepits, refuse pits, and fence lines. The large amount of faunal bone recovered included species present in the pre-Contact period (pig, dog, turtle, chicken, shark, fish, and Pacific rat), as well as post-Contact introductions (cow, horse, goat, sheep, domestic cat, and the Norway/roof rat).

Human fetal remains were found in a refuse deposit (Feature 338) during data recovery. Osteological analysis determined the fetus was carried into the second or beginning of the third trimester of pregnancy before a premature birth or miscarriage; there was no evidence of deliberate burial (Erkelens et al. 1994). Artifacts within Feature 338 suggest it dates to 1850-1880.

3.2.2 Kennedy et al. 1994; Riley et al. 1995

Kennedy et al. (1994) conducted an AIS for the Kekaulike Revitalization project, ‘Ewa Block, bounded by King, River, Hotel, and Kekaulike streets (Kennedy et al. 1994). Investigations consisted of nine backhoe trenches and three hand-excavated test units. Two historic properties were identified: SIHP # -4587, a small pond, and SIHP # -4588, a multi-component historic property consisting of 53 features of various functions spanning the pre- to post-Contact periods. The features included 20 post holes, three pits of indeterminate function, three fire pits, three cut stone walls, seven crushed coral foundations, a burn layer (possibly from the 1900 or 1902

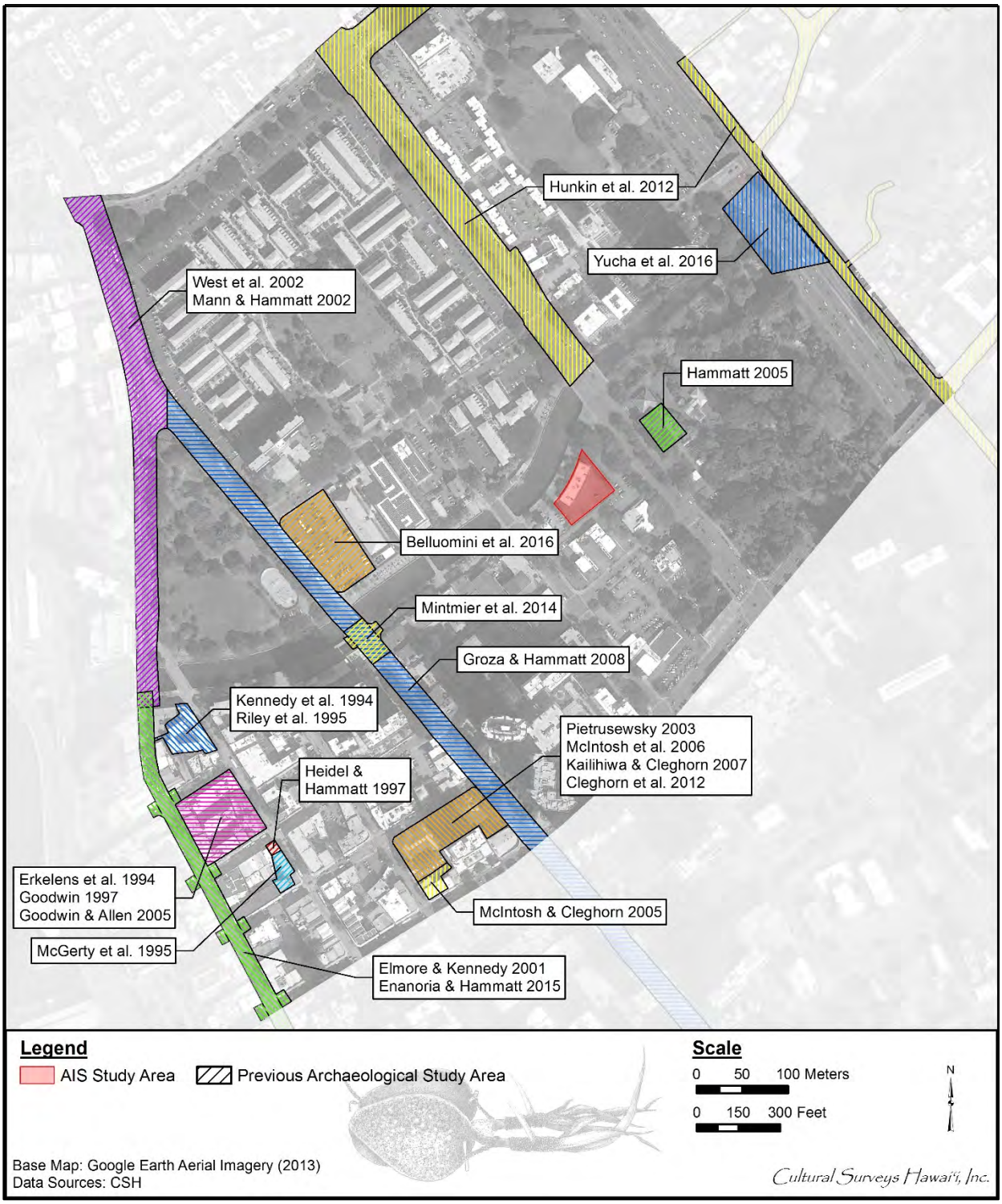

Figure 33. Previous archaeological studies in the vicinity of the AIS study area (Google Earth 2013)

Table 1. Previous archaeological studies in the vicinity of the AIS study area

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Erkelens et al. 1994	Burial report	Kekaulike revitalization, Diamond Head (DH) block	Documented four sets of human skeletal remains associated with SIHP # -4875
Kennedy et al. 1994	Archaeological inventory survey	Kekaulike revitalization, ‘Ewa block	Identified SIHP # -4587, a small fishpond, and SIHP # -4588, a multi-component historic property consisting of 53 features dating from pre-Contact period to twentieth century, including three human burials
McGerty et al. 1995	Archaeological assessment (no finds AIS)	Chinatown Community Service Center	Background research of project area and immediate surroundings indicated pre-Contact agriculture and habitation and urban development associated with Chinatown; AIS recommended
Riley et al. 1995	Data recovery	Kekaulike revitalization, ‘Ewa block	Documented 55 features spanning early pre-Contact period through twentieth century; C14 dating of SIHP # -4587, fishpond, yielded an early tenth century date; dating of SIHP # -4588, coral reef stone platform, yielded an eleventh century date
Goodwin 1997	Archaeological inventory survey	Kekaulike revitalization, DH block	Identified SIHP # -4875, consisting of over 100 features and six culturally enriched strata; majority of features interpreted as Native Hawaiian from early post-Contact period but also included historical and modern features and structural remnants; documented a single burial
Heidel and Hammatt 1997	Archaeological testing	1,700-sq-ft lot in Chinatown	No historic properties identified in four test excavations
Elmore and Kennedy 2001	Archaeological monitoring	King St, between River St and Bethel St	Identified one in situ, flexed human burial (SIHP # -5781) between Maunakea St and Smith St

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Mann and Hammatt 2002	Archaeological monitoring	King St rehabilitation	Identified one incomplete, previously disturbed, human burial (SIHP # -6317) near intersection of King St and Punchbowl St and a pit feature containing non-human skeletal remains at corner of King St and Richards St (no SIHP # assigned)
West et al. 2002	Archaeological monitoring	King St, between Liliha St and River St	Identified Honolulu Rapid Transit & Land Company (HRT&L) trolley (SIHP # -5942) and associated artifacts
Pietrusewsky 2003 (in Kailihiwa and Cleghorn 2007)	Osteological analysis	Smith-Beretania parking lot	Identified remains of two children, five young adults, and 16 adults of Asian, Caucasian, and/or Polynesian descent (SIHP # -6772)
Goodwin and Allen 2005	Data recovery	Kekaulike revitalization, DH block	Excavated four house compounds and a blacksmith’s shop (SIHP # -4875); C14 dating indicated area in use as early as thirteenth century; four human burials documented
Hammatt 2005	Burial report	Foster Botanical Gardens (180 N Vineyard Blvd)	Human bone fragments recovered from backdirt and reinterred on botanical garden grounds (SIHP # -1389)
McIntosh and Cleghorn 2005	Archaeological inventory survey	Pearl St. One Bldg	Identified SIHP # -6691, a four-component historic property composed of two disturbed sets of human remains, two historical trash pits, charred remains of Chinatown structure destroyed in 1900 Chinatown fire, and remnant of historic building that partially collapsed in 2001
McIntosh et al. 2006	Archaeological inventory survey	Smith-Beretania parking lot	Documented SIHP # -6772, which includes trash pits, a cooking feature, building structural foundations, traditional and historic artifacts, and abundant midden deposits
Kailihiwa and Cleghorn 2007	Archaeological monitoring	Smith-Beretania parking lot	Documented SIHP # -6772, including 23 sets of human remains
Groza and Hammatt 2008	Archaeological monitoring	Beretania St between King St and Alapa‘i St	No historic properties identified, likely due to prior disturbance

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Cleghorn et al. 2012	Data recovery	Smith-Beretania parking lot	Documented SIHP # -6772, consisting of pits, privies, and other features with traditional Hawaiian artifacts and two human burials
Hunkin et al. 2012	Archaeological monitoring	Kalihi/Nu‘uanu sewer project	Identified an isolated human bone fragment in fill (no SIHP # assigned)
Mintmier et al. 2014	Archaeological monitoring	Intersection of Beretania St and River St	No historic properties identified
Enanoria and Hammatt 2015	Archaeological monitoring	King St between Bethel St and River St	No historic properties identified
Belluomini et al. 2016	Archaeological inventory survey	American Savings Bank Campus (300 N Beretania St)	Identified SIHP # -7933, human remains and associated features; SIHP # -7934, LCA boundary wall remnants; and SIHP # -7935, building foundation remnants
Yucha et al. 2016	Archaeological monitoring	H-1 from Middle St to Ward Ave	No historic properties identified

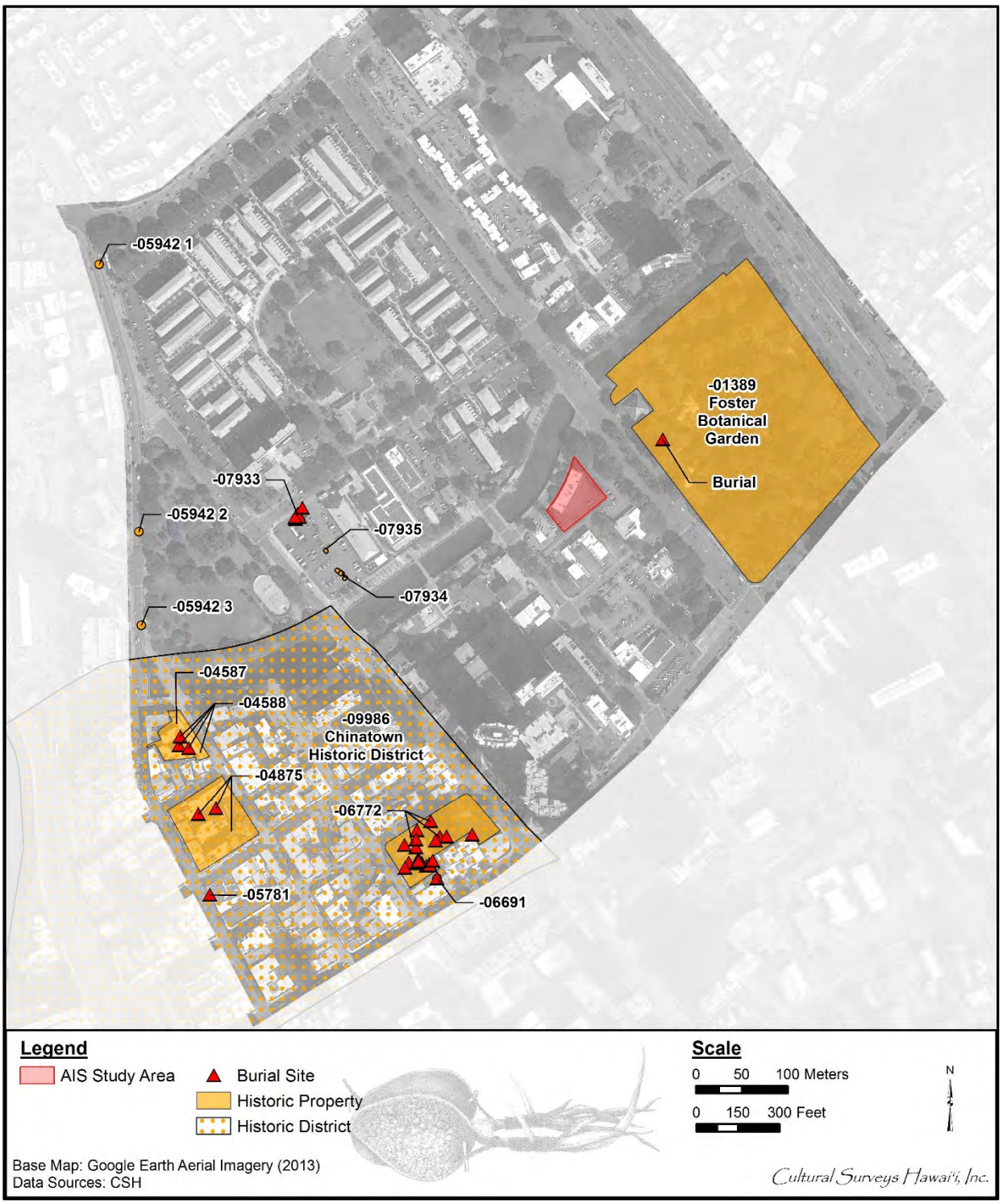

Figure 34. Aerial photograph with overlay of historic properties, historic districts, and human burials in the vicinity of the AIS study area

Chinatown fires), historic trash pits, and three human burials (two likely historical and one likely traditional Hawaiian) (Kennedy et al. 1994).

Subsequently, Riley et al. (1995) conducted data recovery for SIHP #s -4587 and -4588. Sixty-four test units were excavated, and 55 features documented; these inlcuded three additional human burials. Radiocarbon dating of charcoal from SIHP # -4587 yielded a much earlier date than expected, within the tenth century. As the dated charcoal was obtained from behind the pond wall, the radiocarbon date was believed to represent the construction or renovation of the pond. Investigations indicated use of the pond continued up to the 1860s, when it was in-filled.

Analysis of the documented features of SIHP # -4588 indicated an extensive timeline of occupation of the study area. Features ranged from the tenth and eleventh centuries (as evidenced by the pond and a coral reef stone platform with the remnants of a possible human burial), to the seventeenth and eighteenth centuries (as evidenced by a hard-packed living surface with associated traditional Hawaiian artifacts), through the nineteenth century (as evidenced by a latrine pit, a Kaua‘i *poi* pounder, and traditional style fishhooks made from copper), and up to the twentieth century.

Osteological analysis of the three human burials identified during data recovery and the three burials documented during the AIS identified five of the six individuals as being of Chinese descent. The other individual was in a “pre-Western contact” context and was assessed as likely Native Hawaiian.

3.2.3 McGerty et al. 1995

In 1995, McGerty et al. (1995) conducted background research for the Chinatown Community Service Center project. Research included a review of previous archaeological studies in the vicinity, *mo‘olelo* (stories) of the area, archival documents, and historical maps. The study indicated that pre-Contact land use comprised agriculture and habitation. During the historical period, which saw the growth of urban Honolulu Town, the area (known as Kikihale) transformed into a portion of Chinatown and contained a shifting complex of small businesses.

3.2.4 Heidel and Hammatt 1997

In 1997, CSH conducted archeological testing at a 1,700-sq-ft parcel (TMK: [1] 1-7-003:014) in Chinatown (Heidel and Hammatt 1997). Four test trenches yielded no cultural features or materials, with the exception of a historical basement filled with modern debris and sediment. The report does not present a possible association or date of occupation for the basement, and no SIHP number was assigned (Heidel and Hammatt 1997).

3.2.5 Elmore and Kennedy 2001

Elmore and Kennedy (2001) conducted archaeological monitoring for miscellaneous sidewalk improvements on King Street, between River Street and Bethel Street. One in situ human burial, designated as SHIP # -5781, was identified between Maunakea Street and Smith Street, beneath the *mauka* lane of King Street. Based on the burial’s flexed position and lack of post-Contact artifacts, the burial was assessed as likely Native Hawaiian. Artifacts recovered from the backdirt pile included glass and ceramic fragments, a shark tooth, possible drilled shell fragments, a possible shark tooth tool, and one fishhook; however, none could be definitively associated with the burial.

3.2.6 Mann and Hammatt 2002

In 2002, CSH conducted archaeological monitoring for the King Street Rehabilitation project on sections of King Street, between Dillingham Boulevard and South Street (Mann and Hammatt 2002). One human burial, designated as SIHP # -6371, was identified near the intersection of South King Street and Punchbowl Street, *makai* of Honolulu Hale. The skeletal remains were incomplete and poorly preserved due to previous disturbance by construction activities; the SHPD took custody of the remains. In addition, a pit feature containing a substantial quantity of non-human skeletal remains was documented at the corner of South King Street and Richards Street; no SIHP number was assigned.

3.2.7 West et al. 2002

In 2002, Garcia and Associates (GANDA) conducted archaeological monitoring for the installation of water mains along King Street, between Liliha Street and River Street (West et al. 2002). One previously recorded historic property, structural remnants of the Honolulu Rapid Transit & Land Company Trolley (SIHP # -5942), was documented in multiple locations. Documented remnants include railroad ties, metal hardware, and bricks. Small sections of the trolley track (not in situ) were exposed atop fill material, which overlay coral bedrock. Identified cultural material included glass bottles and jars, handmade leather shoes, ceramics, faunal bone (pig, cow, and chicken), shell, wood, charcoal, Belgian Block cobblestones, and metal hardware.

3.2.8 Pietrusewsky 2003; McIntosh et al. 2006; Kailihiwa and Cleghorn 2007; Cleghorn et al. 2012

In 2001, Pacific Legacy conducted an AIS for Block 10, Smith-Beretania Parking Lot, in Chinatown (McIntosh et al. 2006). Six backhoe excavations yielded abundant post-Contact structural materials and artifacts with 68 associated subsurface features, designated as SIHP # -6772. The features included trash pits, cooking features, and building structural foundations with associated European, American, and Asian artifacts; traditional Hawaiian artifacts; and abundant midden deposits. Most of the structural remnants dated between 1850 and 1900 and were likely associated with the buildings destroyed in the 1900 Chinatown fire. Post-Contact artifacts consisted of glass, metal, ceramic, and bone, indicating a wide variety of functions. Fewer Native Hawaiian artifacts were recovered; these included *poi* pounder fragments, an *‘ulu maika* (game stone), cowrie shell lures, a complete stone adze, and a complete conch shell trumpet.

Subsequently in 2001, Pacific Legacy conducted data recovery for Block 10, Smith-Beretania Parking Lot, to mitigate the impacts to SIHP # -6772 (Cleghorn et al. 2012). Data recovery excavations identified numerous pits, privies, and miscellaneous features with traditional Hawaiian and post-Contact artifacts. Two human burials, one adult and one child, were also documented.

In 2002, Pacific Legacy conducted archaeological monitoring for Block 10, Smith-Beretania Parking Lot (Kailihiwa and Cleghorn 2007). Additional features, deposits, and human remains associated with SIHP # -6772 were identified; these consisted of six non-burial features and 22 human burials. In addition, 20 “find spots” (locations where collected artifacts were not associated with a cultural layer or deposit) were documented. The human remains were primarily identified near the south wall of the Smith-Beretania apartment structure.

Dr. Michael Pietrusewsky (2003) analyzed the human remains and determined they could represent individuals of Asian, Caucasian, and/or Polynesian descent. His analysis revealed the remains included two children, five young adults, and 16 adults; hence, he suggests a portion of the study area may have served as a family cemetery. All burials were inventoried, excavated, mapped, and reburied on the property.

3.2.9 Hammatt 2005

In 2004, CSH received a call from Terry Hildebrand of the City and County of Honolulu Department of Design and Construction, reporting a discovery of human remains during trenching activities at Foster Botanical Gardens (SIHP # -1389) (Hammatt 2005). Dr. Sara Collins of the SHPD noted that the remains, which included a maxilla fragment and portion of a long bone, were found in a previously disturbed context. CSH archaeologists screened the backdirt in which the maxilla fragment was found and recovered additional remains, including a long bone, clavicle, fragments of a mandible, loose teeth, and rib fragments. The remains were reinterred on the grounds of the botanical garden near the western side of the Kuan Yin Temple.

3.2.10 McIntosh and Cleghorn 2005

In 2005, Pacific Legacy conducted an AIS at the corner of Nu‘uanu Avenue and Pauahi Street (McIntosh and Cleghorn 2005). A multi-component historic property, SIHP # -6691, was identified. SIHP # -6691 comprises the incomplete remains of two disturbed human burials within two historical trash pits; the charred remains of a structure destroyed in the 1900 Chinatown fire; and structural remnants of a historical building that partially collapsed in 2001. McIntosh and Cleghorn (2005) concluded the burials had been previously disturbed and incorporated into later trash pits, likely during the early 1900s.

3.2.11 Groza and Hammatt 2008

In 2008, CSH conducted archaeological monitoring for the Rehabilitation of Streets project on an approximately 1,800-m (5,900-ft) segment of Beretania Street, between North King Street and Alapa‘i Street (Groza and Hammatt 2008). No historic properties were identified, and extensive fill deposits were encountered. In the eastern portion of the study area, the natural sediment consisted of volcanic cinder from the Sugar Loaf/Tantalus series. In the western portion, the natural sediment was silty clay loam with clay inclusions, likely alluvial deposits from nearby Nu‘uanu Stream.

3.2.12 Hunkin et al. 2012

In 2011, CSH conducted archaeological monitoring for the Kalihi/Nu‘uanu Sewer Rehabilitation project, which extended from Middle Street in Kalihi west toward Pi‘ikoi Street near the eastern boundary of Punchbowl Crater (Hunkin et al. 2012). No historic properties were identified. The study area’s subsurface deposits appeared to have been disturbed by past land use, including extensive earthmoving activity and importation of fill sediments. However, a single isolated human bone fragment was discovered in fill material. The custody of this skeletal fragment was transferred to the SHPD on 4 August 2008, and treatment of the fragment was carried out under the SHPD’s authority. No SIHP number was assigned.

3.2.13 Mintmier et al. 2014

Pacific Consulting Services, Inc. (PCSI), conducted archaeological monitoring for traffic infrastructure improvements at the intersection of Beretania and River streets, partially within the Chinatown Historical District, SIHP # -9986. No contributing features/components of SIHP # -9986, nor any new historic properties, were documented. Eighteen glass and ceramic artifacts were collected and dated to the late nineteenth to mid-twentieth century.

3.2.14 Enanoria and Hammatt 2015

In 2013, CSH conducted archaeological monitoring for rehabilitation and replacement of water, gas, sewer, and drain lines along King Street and at each of the cross-street intersections between River and Bethel streets (Enanoria and Hammatt 2015). In general, the documented stratigraphy consisted of a series of fill sediments associated with the construction of the existing asphalt surface and the construction of subsurface utilities, overlying disturbed natural alluvium, natural volcanic cinder, and the coral shelf. No historic properties were identified.

3.2.15 Belluomini et al. 2016

In 2016, CSH conducted an AIS for the American Savings Bank Campus at 300 North Beretania Street. Subsurface testing identified three historic properties: SIHP #s -7933, -7934, and -7935. SIHP # -7933, identified in the northwest portion of the study area, consists of seven human burials (Burials 1–7) and six associated features (Features 8–13). SIHP # -7934, identified in the southeast portion of the study area, consists of structural remnants interpreted as LCA boundary walls and designated as Features 1–3. SIHP # -7935 consists of the structural remnants of a building foundation, identified in the central portion of the study area.

3.2.16 Yucha et al. 2016

Between 2013 and 2014, CSH conducted archaeological monitoring for the H-1 Resurfacing project from Middle Street to Ward Avenue. As archaeological monitoring was conducted only for excavations conducted deeper than the overlying asphalt/concrete surfaces, monitoring was limited to the area of the Nu‘uanu Stream Bridge widening and lighting replacement activities, identified as Project Area 3. The archaeologists documented a series of highly disturbed fill deposits that averaged more than 100 cm in depth. No historic properties were identified.

3.3 Background Summary and Predictive Model

The current project is within the portion of downtown Honolulu surrounding the mouth of Nu‘uanu Stream, known to Hawaiians as “Kou.” This area was a center of population and activity similar to Waikīkī. Kou had a long tradition as a royal center, where the *ali‘i* would meet and entertain. Kou also possessed shoreward fishponds and irrigated fields, and nearby Honolulu Harbor was brimming with marine resources. The land surrounding Nu‘uanu Stream was particularly densely populated, with a concentration of *lo‘i* and *‘auwai*. Historical maps show the AIS study area as within that dense cluster of *lo‘i*.

In the early post-Contact period, Kou was not a major destination for foreigners visiting the island. However, in 1809, Kamehameha moved his court, government, and residence from Waikīkī to Honolulu, and newly arrived foreigners began to consider Honolulu a place of commercial importance. By the 1830s, Western commercial and missionary interests had supplanted the Native Hawaiian traditions that had once shaped the environment, and Western and urban ideals propelled

Honolulu’s growth. The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. Historical maps indicate most of the ‘Ewa (northwest) portion of the AIS study area was within LCA 11082:3 to Kaukoke, while small sections in the western corner appear to overlap with LCA 141:2 and 3 to Makahopu. LCA documentation indicates these parcels included a house, a fence, and agricultural plots. In addition, the far north corner of the AIS study area may have been within LCA 715:1 to Kalama, who claimed four taro patches and a house site. Landscape features (solid and dashed lines) depicted on late nineteenth century maps as within the AIS study area may represent the boundaries between the LCAs and/or agricultural or house plots within the LCAs. A building or structure is also indicated as partially within the northeast portion of the AIS study area.

However, the majority of the AIS study area was within LCA 2938 to Huanu, for the heirs of Lahilahi (Gilliland ‘Ohana). Huanu was the grandson of Francisco de Paula Marín, and the claim was for “farm land in the vineyard” (Waihona ‘Aina 2019). The history of the Gillilands in Hawai‘i (after whom the John R. Gilliland Sr. Building in the current AIS study area is named) begins first with Francisco de Paula Marín, a Spanish horticultural experimenter. In 1793 or 1794, Marín traveled to Hawai‘i, where he was befriended by Kamehameha I. He served as Kamehameha’s interpreter and assumed many government duties. Kamehameha, in turn, gave land to Marín for his agricultural experiments, and Marín introduced numerous plant species to the Islands. Marín’s land within the current AIS study area was known as “The Vineyard,” which he planted with grape cuttings sourced from California in 1815. Visitors to the vineyard also reported seeing damask rose (*Rosa damascena*) bushes, cotton (*Gossypium* sp.) trees, and pineapples (*Ananas comosus*) growing on the parcel.

By the late 1800s, historical maps show increasingly dense land use and urbanization in the vicinity of the current project, particularly *makai* of the parcel in an area that came to be known as Chinatown. By the 1870s, a sizeable population of Chinese immigrants had settled in Honolulu, concentrated in the blocks between Nu‘uanu and Maunakea streets. Today, this area still serves as the principle center for the business and social life of the Chinese community of the island.

Another change in the late nineteenth century was the realignment of Nu‘uanu Stream. Beginning in 1896, Nu‘uanu Stream was dredged, and the water course was changed, with the stream diverted from approximately 100 m west of the current project to nearly adjacent to it. A stone wall was built on both sides of the stream, and dredged material was used to create River Street, adjacent to the current AIS study area.

A review of twentieth century historical maps and aerial photographs indicates development within the AIS study area by 1906. At that time, a tenement was at the center of the AIS study area, while several dwellings and stores were along the northwestern boundary; a kitchen facility was in between the tenement and the stores, which included a Plumbing and Tin Shop, a restaurant, and a Mattress Factory. By 1950, additional dwellings were present in the eastern and southeastern portions of the AIS study area, and a parking area for automobiles was in the south corner. The stores along the northwestern boundary were by that time described as having concrete floors.

The John R. Gilliland Sr. Building was constructed within the AIS study area in 1958. In 2016, Fung Associates assessed this two-story commercial building as eligible for listing on the National Register under Criterion C, as a very good example of a small retail/office building constructed in

Hawai‘i in a modern style in the 1950s. It is also a good example of the architectural work of Kenneth Sato, who designed several notable buildings in the Islands. According to the study, the rear parking lot was improved and enclosed by a CMU retaining wall in 1966.

Mauka (northeast) of the AIS study area, across Vineyard Boulevard (named for Marín's vineyard), is Foster Botanical Garden (SIHP # -1389), which is the closest previously identified historic property to the current AIS study area (approximately 50 m away). In 2004, human remains were encountered during trenching activities in the southern portion of the garden (Hammatt 2005). The remains were found in a previously disturbed context and were reinterred on the grounds; no SIHP number was assigned. No previous archaeological studies have been conducted within or adjacent to the current AIS study area. However, previous studies in the vicinity have documented pre- and post-Contact habitation layers with associated features, including human burials; infrastructure remnants with associated artifacts; historical trash pits; buried fishpond sediment; LCA boundary wall remnants; and disturbed/displaced human remains.

Based on this background research, it was anticipated that the current AIS could identify buried agricultural deposits and features associated with taro and/or grape cultivation; pre- and/or post-Contact habitation layer(s) with associated features, potentially including human remains; landscape features or structural remnants associated with LCA boundaries; and twentieth century structural remnants with associated artifacts and/or historical trash pits.

Section 4 Results of Fieldwork

The fieldwork component of the Halewai‘olu Senior Residences AIS was conducted between 1 and 30 July 2019 under the general supervision of Matt McDermott, M.A. (Principle Investigator), and Ena Sroat, B.A. (Project Director). The subsurface testing program consisted of 15 test excavations (T-1 through T-12, including T-2B, T-2C, and T-9B), comprising 13 exterior excavations and two interior excavations (Figure 35). The maximum depth of the excavations ranged from 160 to 252 cm below surface (cmbs). The water table was encountered in ten of the 15 test excavations, between 193 and 247 cmbs.

4.1 Historic Properties Identified

One archaeological historic property was newly identified during the Halewai‘olu Senior Residences AIS: SIHP # 50-80-14-8840, subsurface cultural deposits (see Figure 35). SIHP # -8840 consists of three components, designated as Components 1–3. SIHP # -8840 Component 1 consists of agricultural deposits, including possible agricultural berms. SIHP # -8840 Component 2 consists of two habitation layers with associated pit features and a human burial site. SIHP # -8840 Component 3 consists of historical infrastructure remnants associated with the residential and commercial growth of Honolulu.

4.2 Stratigraphic Overview

Stratigraphy within the AIS study area was designated using a Roman numeration system (e.g., Stratum I, II, III), with substrata designated using an alphabetic system (e.g., Stratum Ia, Ib, Ic). Although the alphabetic substrata designations within the Roman numeral designations may vary between test excavations, the Roman numeral stratigraphic designations correlate across the study area, so that stratigraphic patterns can be clearly documented and discussed (Table 2 and Table 3).

All current land surfaces and fill deposits, as well as SIHP # -8840 Component 3 infrastructure remnants, are designated as Stratum I; these are associated with the modern development of the area. All SIHP # -8840 Component 3 infrastructure remnants are given feature numbers; former surfaces and fill deposits are also given stratum designations. The underlying vertical series of natural alluvial deposits is designated as Stratum II; this includes interpreted habitation layers (SIHP # -8840 Component 2) and agricultural deposits (SIHP # -8840 Component 1). Like Stratum I, Stratum II was documented in all 15 test excavations. The Stratum II deposits likely represent overflow or flooding episodes of nearby Nu‘uanu Stream. The two uppermost alluvial deposits, Strata IIa and IIb, contain evidence of cultural use in some areas; within those

Table 2. Stratigraphic designations

Stratum	Sediment Description
I	Modern developed land, fills, and infrastructure remnants (SIHP # -8840 Component 3)
II	Naturally deposited alluvium, including habitation layers (SIHP # -8840 Component 2) and agricultural deposits (SIHP # -8840 Component 1)
III	Streambed

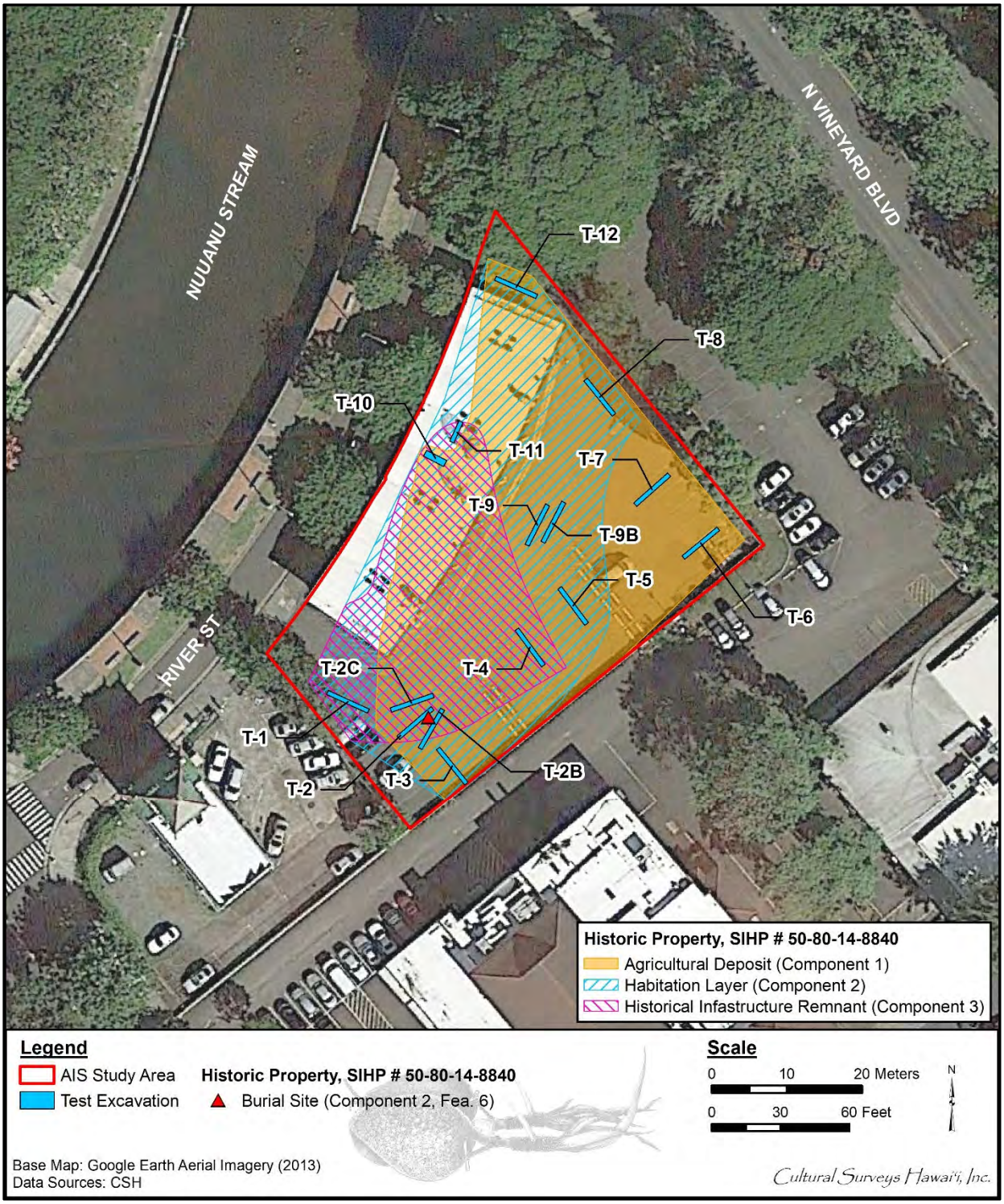

Figure 35. Aerial photograph of the Halewai‘olu Senior Residences AIS study area, showing the locations of AIS test excavations and the distribution of SIHP # -8840 Components 1–3 (Google Earth 2013)

Table 3. Summary of test excavations and stratigraphy

Test Excavation	Location w/in AIS Study Area	Fill Strata and Infrastructure Remnants (SIHP # -8840 Component 3)	Habitation Layers (SIHP # -8840 Component 2)	Agricultural Deposits (SIHP # -8840 Component 1)	Culturally Sterile, Natural Deposits
T-1	West corner	Ia–Ie, If–Ig (Fea. 1)	IIa (Feas. 1–4)	–	IIb–IId, III
T-2	South corner	Ia–Id, Fea. 2	IIa (Feas. 5, 6), IIb (Fea. 7)	IIc	IId, III
T-2B	South corner, just east of T-2	Ia–If, Fea. 2	IIa (Feas. 8, 9), IIb (Fea. 10)	IIc	III
T-2C	South corner, just north of T-2	Ia–If	IIa (Fea. 11)	–	IIb, III
T-3	South corner	Ia–Ie	IIa	IIc	IIb
T-4	Southeast portion	Ia–Ic, Fea. 3	IIa	IIc, IIe	IIb, IId
T-5	Southeast portion	Ia–Id	IIa	IIc, IIf	IIb, IId–IIe
T-6	East corner	Ia–Ie	–	IIc	IIa–IIb, IId
T-7	Northeast portion	Ia–Ic	–	IIc–IId	IIa–IIb, IIe–IIf
T-8	Northeast portion	Ia–Ic	IIa	IIc–IId, IIg	IIb, IIe–IIf
T-9	Central portion	Ia–Ic	IIa (Feas. 12–14)	IIc–IIf	IIb, III
T-9B	Central portion, just east of T-9	Ia–Ic	IIa (Fea. 15)	IIc–IIe	IIb, III
T-10	Inside Gilliland Bldg	Ia–Ib, Ic (Fea. 4), Id–Ie, Fea. 5	IIa (Feas. 16, 17)	IIc	IIb, III
T-11	Inside Gilliland Bldg, northeast of T-10	Ia–Ib, Ic (Fea. 4), Id–Ie, If (Fea. 6), Ig–Ih	IIa (Feas. 18, 19)	–	IIb, III
T-12	North corner	Ia–Id	IIa	IIc	IIb, IIIa–IIIb

excavations, they are designated as part of SIHP # -8840 Component 2, habitation layers. The underlying strata (Strata IIc–IIg) represent at least three periods of agricultural use, likely associated with wetland taro agriculture along the banks of Nu‘uanu Stream. In test excavations where these layers contain evidence of agriculture (e.g., oxidized [red] mottling), they are designated as part of SIHP # -8840 Component 1.

The most recent agricultural deposit (Stratum IIc in T-2, T-2B, T-3 through T-8, T-10, and T-12; Stratum IId in T-9 and T-9B) was identified almost ubiquitously across the AIS study area, within 12 of the 15 test excavations. It contains a dense latticework of oxidized (red) mottling, believed to be the result of chemical interactions between taro roots and the surrounding soil, and in some areas, cinder gravel. The layer generally presents as dark brown silty clay loam. Deeper (i.e., older) agricultural deposits were identified within a discrete zone in the central/*mauka* portion of the AIS study area (within T-4, T-5, and T-7 through T-9B). These strata contain a similar latticework of oxidized (red) mottling, although generally less dense than the overlying stratum.

The basal stratum, Stratum III, is interpreted as a streambed and may represent a former braid delta of Nu‘uanu Stream, pre-dating the deposition of the Stratum II alluvium. Stratum III was documented in nine test excavations (T-1, T-2, T-2B, T-2C, T-9, T-9B, and T-10 through T-12) in the northwestern portion of the AIS study area, closest to Nu‘uanu Stream. Stratum III typically presents as very dark grayish brown sandy clay, sandy clay loam, or silty clay loam. This stratum is distinct from the overlying alluvial series for its inclusion of abundant waterworn basalt gravel and cobbles.

4.3 Subsurface Testing Results

4.3.1 Test Excavation 1 (T-1)

Test Excavation 1 (T-1) is an exterior excavation near the southwestern boundary of the AIS study area. It is oriented northwest-southeast and is 6 m long by 0.85 m wide, with a maximum depth of 230 cmbs. The water table was encountered at 200 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly (basalt) loamy sand base course (Stratum Ib), very gravelly sand (crushed coral) base course (Stratum Ic), a second layer of extremely gravelly (basalt) loamy sand base course (Stratum Id), and cobbly (basalt) silty clay fill (Stratum Ie), overlying an oil-rolled crushed coral surface with associated very gravelly (basalt) sandy loam base course (Strata If and Ig; SIHP # -8840 Component 3, Feature 1), atop silty clay (Stratum IIa; SIHP # -8840 Component 2), three layers of silty clay loam (Strata IIb–IId), and very gravelly (basalt) silty clay loam (Stratum III) (Figure 36 through Figure 39 and Table 4).

The oil-rolled, crushed coral surface and associated base course (Strata If and Ig) are designated as SIHP # -8840 Component 3, Feature 1. Strata If and Ig were documented within all four trench walls, although they were absent from the northeast corner of the excavation (see Figure 36 through Figure 40). Each layer is approximately 10 cm thick, and the base course (Stratum Ig) contains pig (*Sus scrofa*) bone, brick, glass, and ceramic fragments. The pig bone and a grab sample of artifacts were collected. Diagnostic artifacts are of primarily Asian origin and date from the mid-nineteenth to twentieth century. One machine-made bottle fragment (Accession [Acc.] # 132) dates to post-1908, indicating the layer was deposited after that time.

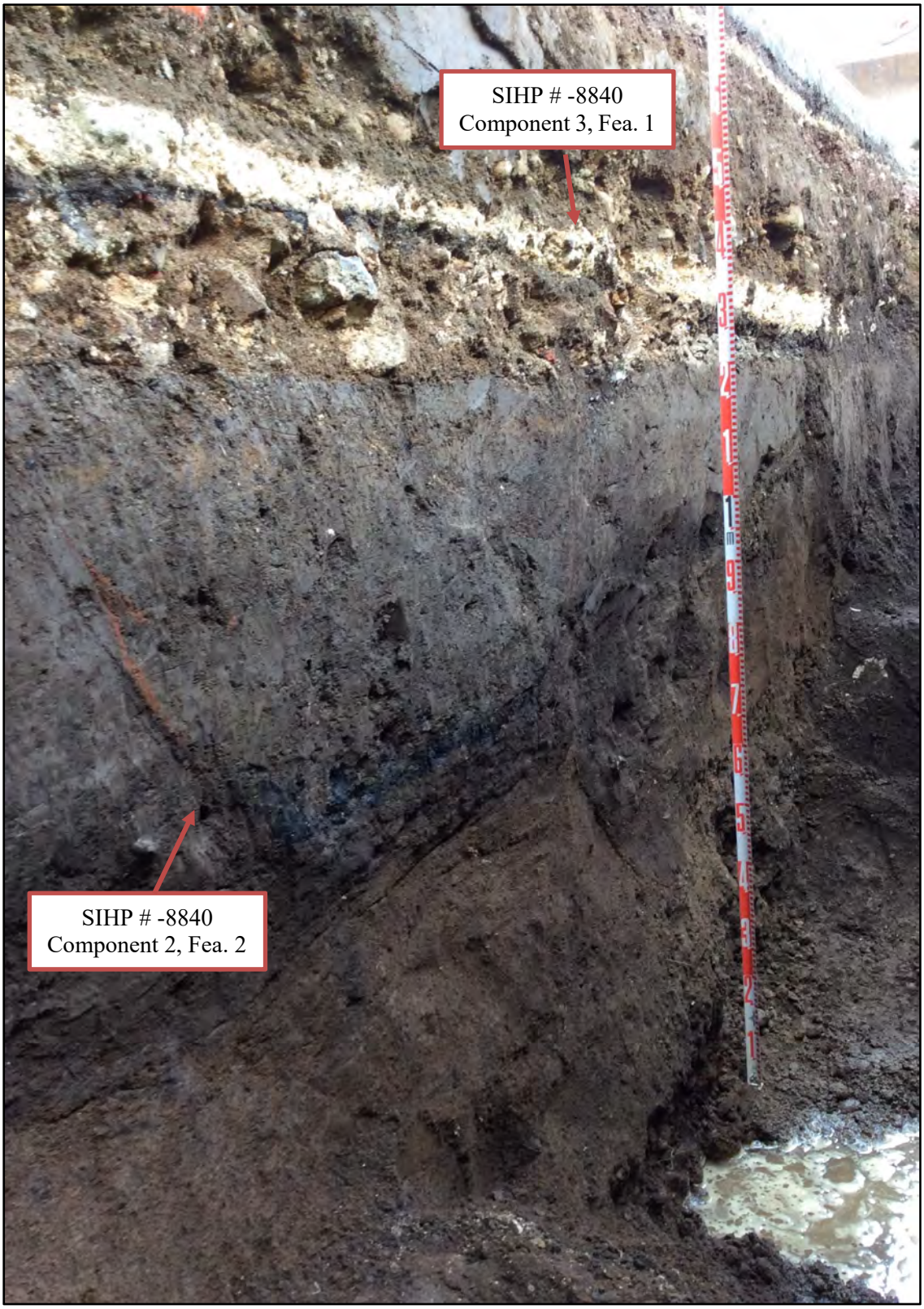

Figure 36. T-1 northeast wall, view to east

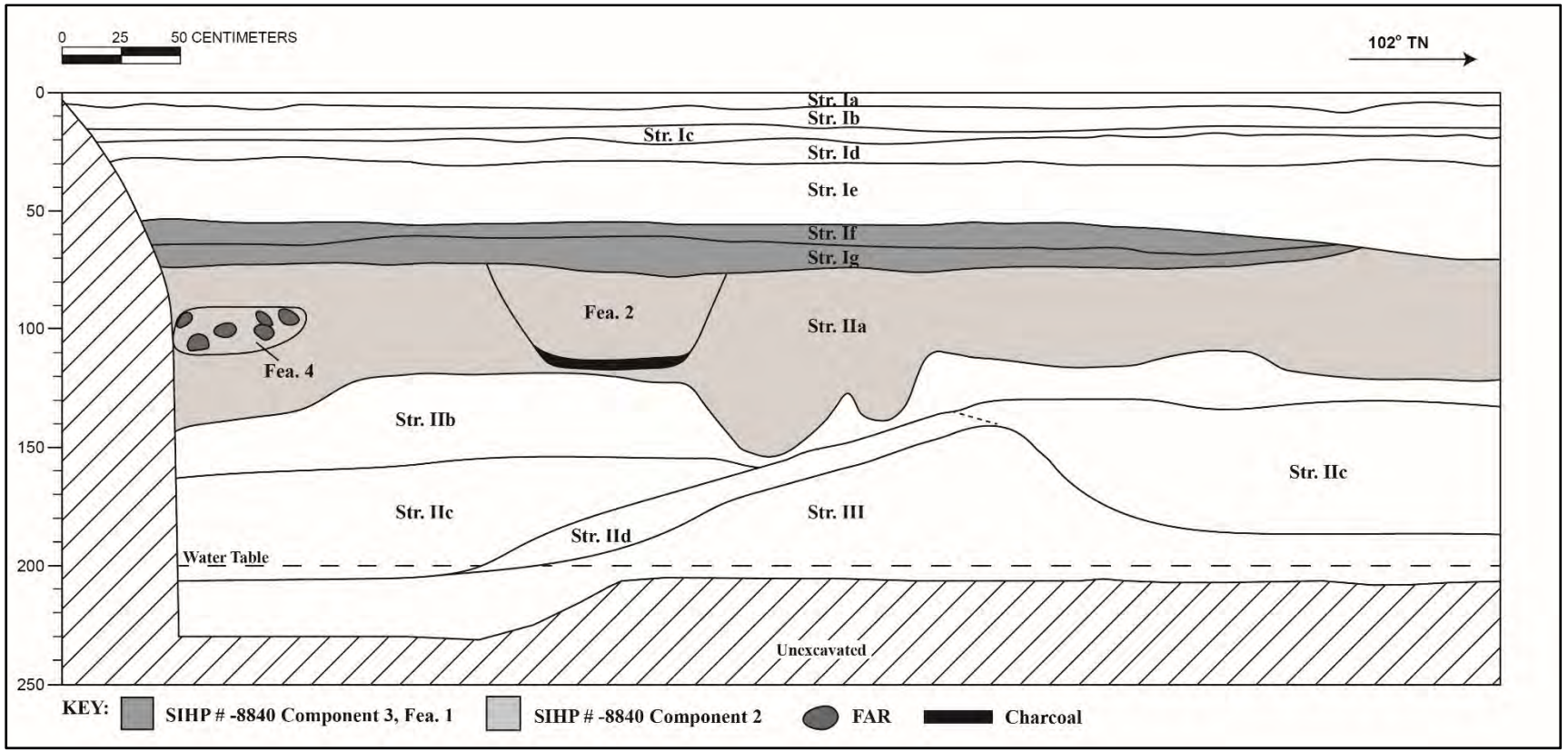

Figure 37. Profile of T-1 northeast wall



Figure 38. T-1 southwest wall, view to south

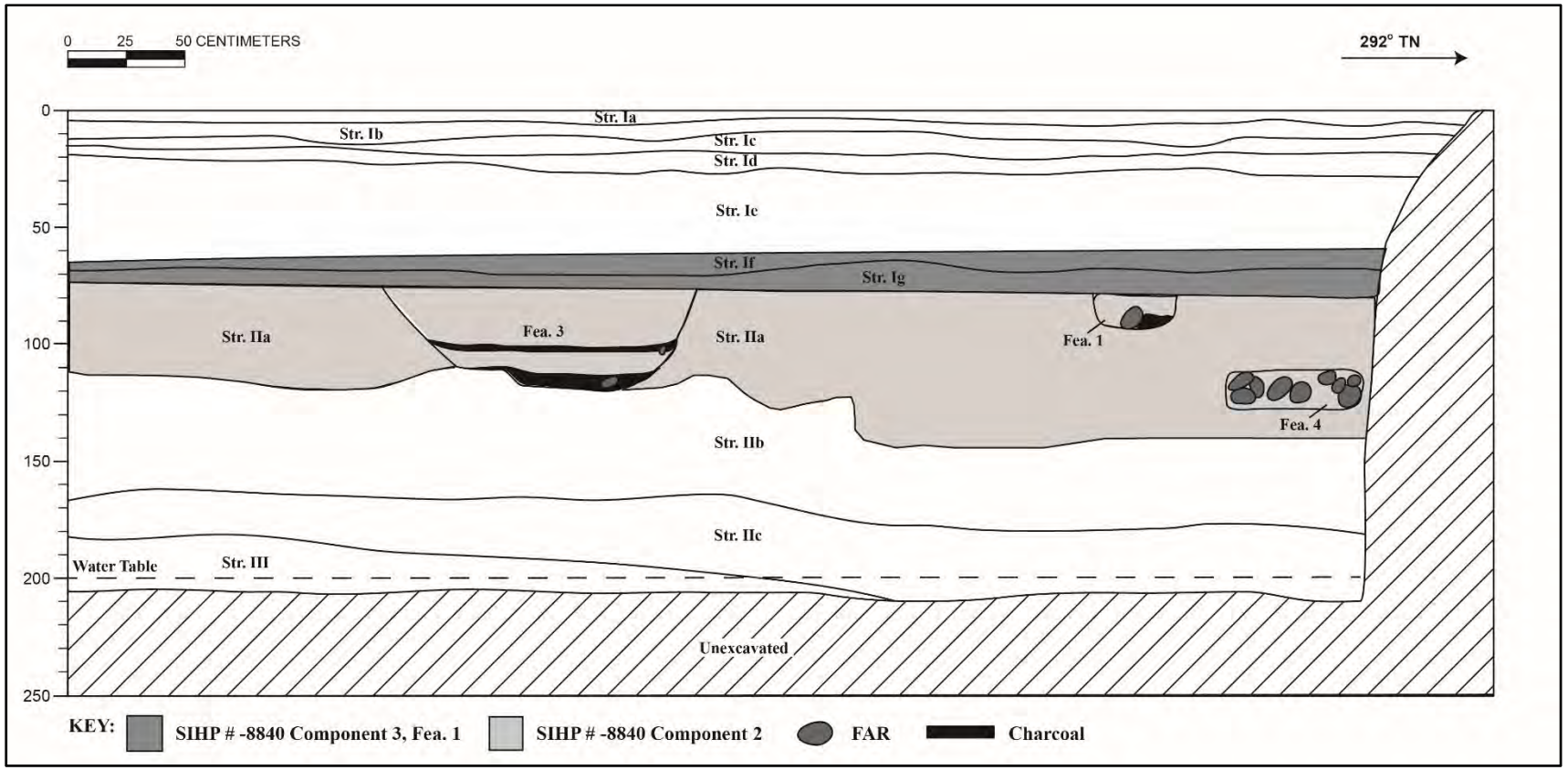

Figure 39. Profile of T-1 southwest wall

Table 4. T-1 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	5–16	Base course; 10YR 3/1, very dark gray; extremely gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	11–20	Base course; 10YR 6/3, pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Id	16–30	Base course; 5YR 3/3, dark reddish brown; extremely gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ie	20–71	Fill; 10YR 4/4, dark yellowish brown; cobbly silty clay; moderate, medium, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; fill derived from alluvium, containing basalt cobbles
If	54–71	SIHP # -8840 Component 3, Feature 1; 10YR 8/2, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, discontinuous lower boundary; no roots observed; oil-rolled crushed coral surface
Ig	60–81	SIHP # -8840 Component 3, Feature 1; 10YR 3/4, dark yellowish brown; very gravelly sandy loam; weak, very fine, granular structure; moist, friable consistence; no cementation; slightly plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course with pig (*S. scrofa*) bone and brick, glass, and ceramic fragments
IIa	70–155	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay; strong, medium, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, irregular lower boundary; few, fine roots; habitation layer with charcoal flecking and four associated pit features (Features 1–4)
	77–93	SIHP # -8840 Component 2, Feature 1; 10YR 3/2, very dark grayish brown; cobbly silty clay; fire-related feature containing fire-affected rock (FAR) and charcoal
	71–115	SIHP # -8840 Component 2, Feature 2; 10YR 3/2, very dark grayish brown; silty clay; fire-related feature containing charcoal

Stratum	Depth (cmbs)	Description
	76–120	SIHP # -8840 Component 2, Feature 3; 10YR 3/2, very dark grayish brown; cobbly silty clay; fire-related feature containing FAR and charcoal
	111–127	SIHP # -8840 Component 2, Feature 4; 10YR 2/2, very dark brown; cobbly silty clay loam; fire-related feature containing FAR and charcoal
IIb	109–181	Natural; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; very plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIc	130–205	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
IId	135–205	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
III	140–230 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; few, fine roots; streambed with waterworn basalt gravel and cobbles



Figure 40. SIHP # -8840 Component 3, Feature 1, oil-rolled crushed coral surface and associated base course (Strata If and Ig), in T-1 southwest wall, view to southwest

Stratum II (a–d) is naturally deposited alluvium, while the underlying Stratum III is interpreted as a streambed, based on the presence of waterworn basalt gravel and cobbles. Because Stratum IIa contains charcoal flecking and four associated pit features, it is designated as part of SIHP # -8840 Component 2, habitation layers. The four features, interpreted as fire-related features, are designated as SIHP # -8840 Component 2, Features 1–4 (Figure 41 through Figure 44). Features 1–3 originate at the upper boundary of the stratum, while Feature 4 is within the lower/middle portion of the stratum. While the upper boundaries of Features 1–3 may have been truncated by the deposition of the overlying fill deposit, based on their matrices, they appear to originate within Stratum IIa; their position at the upper boundary of the layer indicates they are more recent than (i.e., they post-date) Feature 4. The features are described below.

Feature 1 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 41). It was documented between 77 and 93 cmbs and measures 35 cm across. A thin, heat-altered band of reddened sediment, a fire-affected basalt cobble, and a 6-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 2 is a basin-shaped pit feature identified in the northeast wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 36, Figure 37, and Figure 42). It was documented between 71 and 115 cmbs and measures 1 m across. A thin, heat-altered band of reddened sediment and a 4-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. Several small, non-diagnostic bottle glass fragments (not collected) and fire-affected basalt cobbles were also observed within the pit. A charcoal sample was collected.

Feature 3 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 43). It was documented between 76 and 120 cmbs and measures 1.5 m across. Multiple heat-altered bands of reddened sediment and layers of charcoal ranging from 5–10 cm thick were observed within the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 4 is a pit feature identified in both sidewalls of T-1, within Stratum IIa/SIHP # -8840 Component 2 (see Figure 37 and Figure 44). It was documented between 111 and 127 cmbs and measures 55 cm across; the exposed portion is 85 cm long, spanning the width of the trench. This



Figure 41. SIHP # -8840 Component 2, Feature 1, fire-related feature, in T-1 southwest wall, view to west



Figure 42. SIHP # -8840 Component 2, Feature 2, fire-related feature, in T-1 northeast wall, view to northeast

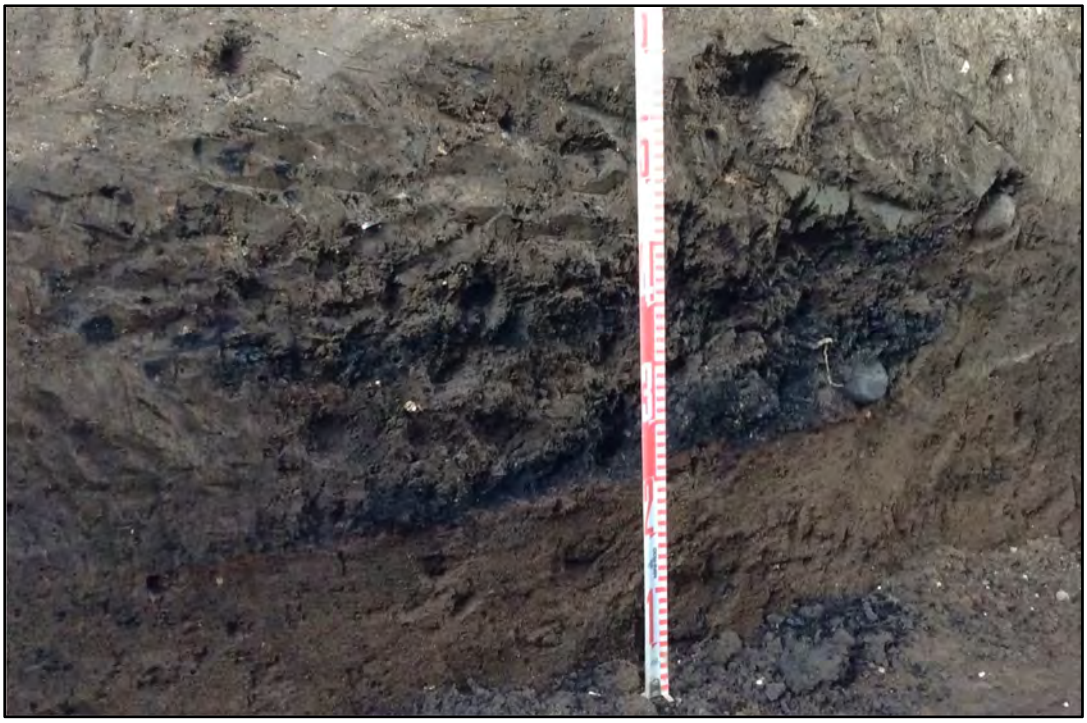

Figure 43. SIHP # -8840 Component 2, Feature 3, fire-related feature, in T-1 southwest wall, view to west



Figure 44. SIHP # -8840 Component 2, Feature 4, fire-related feature, in T-1 southwest wall, view to west

pit is lined with fire-affected basalt cobbles, and charcoal flecking was observed in the matrix surrounding the cobbles; a charcoal sample was collected. This feature is interpreted as a fire-related feature.

Charcoal samples from SIHP # -8840 Component 2, Feature 2 (Sample 1) and Feature 4 (Sample 2), were submitted to the Wood Identification Laboratory at IARII for taxa identification (see Section 5.4.2 for full results). Most of Sample 1 is *kiawe* (*Prosopis pallida*); the rest is indeterminate hardwood. As *kiawe* was likely introduced to Hawai‘i in 1828 (Wagner et al. 1990 in Huebert 2019), the feature was therefore used after that date. In contrast, Sample 2 contains wood from native and endemic species including *‘ōhi‘a lehua* (*Metrosideros polymorpha*), *koa* (*Acacia* cf. *koa*), *kōpiko* (*Psychotria* sp.), and possibly *hau* (*Hibiscus* sp.); no post-Contact introductions were identified within the sample.

The wood identification results are in agreement with the stratigraphic contexts of Features 2 and 4. Although both features were identified within Stratum IIa, Feature 2 originates at the upper boundary of the layer, while Feature 4 is within the middle portion; hence, Feature 2 post-dates Feature 4. The identification of charcoal from a historically introduced species (*kiawe*; *P. pallida*) within Feature 2 securely dates that feature to the post-Contact period, while the apparent lack of historical introductions within the underlying Feature 4 suggests it dates to the pre- or early post-Contact period.

A subsample derived from Sample 2 (Feature 4) was submitted to Beta Analytic, Inc., for radiocarbon dating analysis. The portion of Sample 2 identified as parenchyma charcoal was submitted because it is not likely to have much inbuilt age, as soft storage tissues are not long-lived. The radiocarbon analysis yielded two-sigma calibrated date ranges of AD 1728-1810 (53.5% probability), 1646-1690 (26.0%), and 1925-post 1950 (15.9%). While diagnostic artifacts recovered from overlying fill deposits suggest Stratum IIa functioned as a surface into the 1930s (see Section 5.2.4), the most recent date (1925-post 1950) can likely be discarded. The identification of pit features within different vertical portions of the quite thick stratum suggests the layer was not deposited all at once, but rather over a (potentially extended) period of time. As Feature 4 was identified within the lower portion of Stratum IIa, it would therefore date to the early part of that time period. Furthermore, the cobble-lined fire pit is consistent with traditional Hawaiian fire-related features. Hence, the radiocarbon analysis, like the wood taxa analysis (discussed above), supports a pre- or early post-Contact date for Feature 4.

4.3.2 Test Excavation 2 (T-2)

Test Excavation 2 (T-2) is an exterior excavation near the south corner of the AIS study area. It is oriented northeast-southwest and is 6.1 m long by 0.76 m wide, with a maximum depth of 220 cmbs. The water table was encountered at 214 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) loamy sand base course (Stratum Ib), very gravelly loamy sand (mixed crushed coral) base course (Stratum Ic), very cobbly (basalt) sandy clay loam fill (Stratum Id; demolition fill), and a hollow tile wall with concrete base (SIHP # -8840 Component 3, Feature 2), overlying silty clay loam (Stratum IIa; SIHP # -8840 Component 2), sandy loam (Stratum IIb; SIHP # -8840 Component 2), another layer of silty clay loam (Stratum IIc; SIHP # -8840 Component 1), and terrigenous sand (Stratum IId), atop very cobbly (basalt) sandy clay (Stratum III) (Figure 45 through Figure 50 and Table 5).

Stratum Id is a demolition fill layer containing basalt gravel and cobbles, glass and ceramic fragments, and pig (*S. scrofa*) bone; the pig bone and three complete glass bottles were collected. One machine-made beer bottle (Acc. # 44) dates to post-1921, indicating deposition of the layer after 1921. A hollow tile wall with a concrete base, designated as SIHP # -8840 Component 3, Feature 2, was also identified within Stratum Id (see Figure 49 through Figure 52). The wall remnant was documented at the *makai* (southwest) end of T-2, extending roughly east-west from the southwest endwall into the southeast sidewall. It was documented between 37 and 70 cmbs. The exposed portion is 3.1 m long with a maximum width of 20 cm. The hollow tile portion comprises a single course and is approximately 20 cm thick. The underlying concrete base is 15 cm thick. No associated builder’s pit was observed; rather, it appeared the wall was founded on Stratum IIa prior to the deposition of the Stratum Id fill. Other portions of this structural remnant were documented in nearby T-2b (see Section 4.3.3) and possibly also in T-4 (see Section 4.3.6).

A review of historical maps suggests SIHP # -8840 Component 3, Feature 2, may have served as a boundary marker between dwellings in the southeastern portion of the AIS study area and tenements in the central portion of the AIS study area, indicated with a solid line on the 1906 Dakin map (see Figure 18 and Figure 163) and the 1914, 1927, and 1950 Sanborn maps (see Figure 20, Figure 23, Figure 27, and Figure 164 through Figure 166). Although Feature 2 lines up quite well with the boundary as depicted on the 1950 Sanborn map, it appears to be several meters to the east on the earlier maps. It is possible the boundary shifted over time, or that the margin of error is greater for older maps; alternatively, Feature 2, which was likely constructed after 1910 (see T-2B discussion in Section 4.3.3 below), may not be associated with this boundary.

Stratum II (a–d) is naturally deposited alluvium, although the upper portion of Stratum IIa has been disturbed or reworked. Stratum IIa contains charcoal flecking, red brick fragments, and two pit features (Features 5 and 6), one of which contains human skeletal remains (Feature 6); hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. While the upper boundary of Feature 5 may have been truncated, based on its matrix, it appears to originate within Stratum IIa; its position at the upper boundary of the layer indicates it is more recent than (i.e., post-dates) Feature 6, which extends from the lower boundary of the stratum. In addition, a concentration of metal, basalt, and charcoal was noted within Stratum IIa/SIHP # -8840 Component 2 in the northwest wall but was not designated as a feature (Figure 53). Features 5 and 6 are described below.

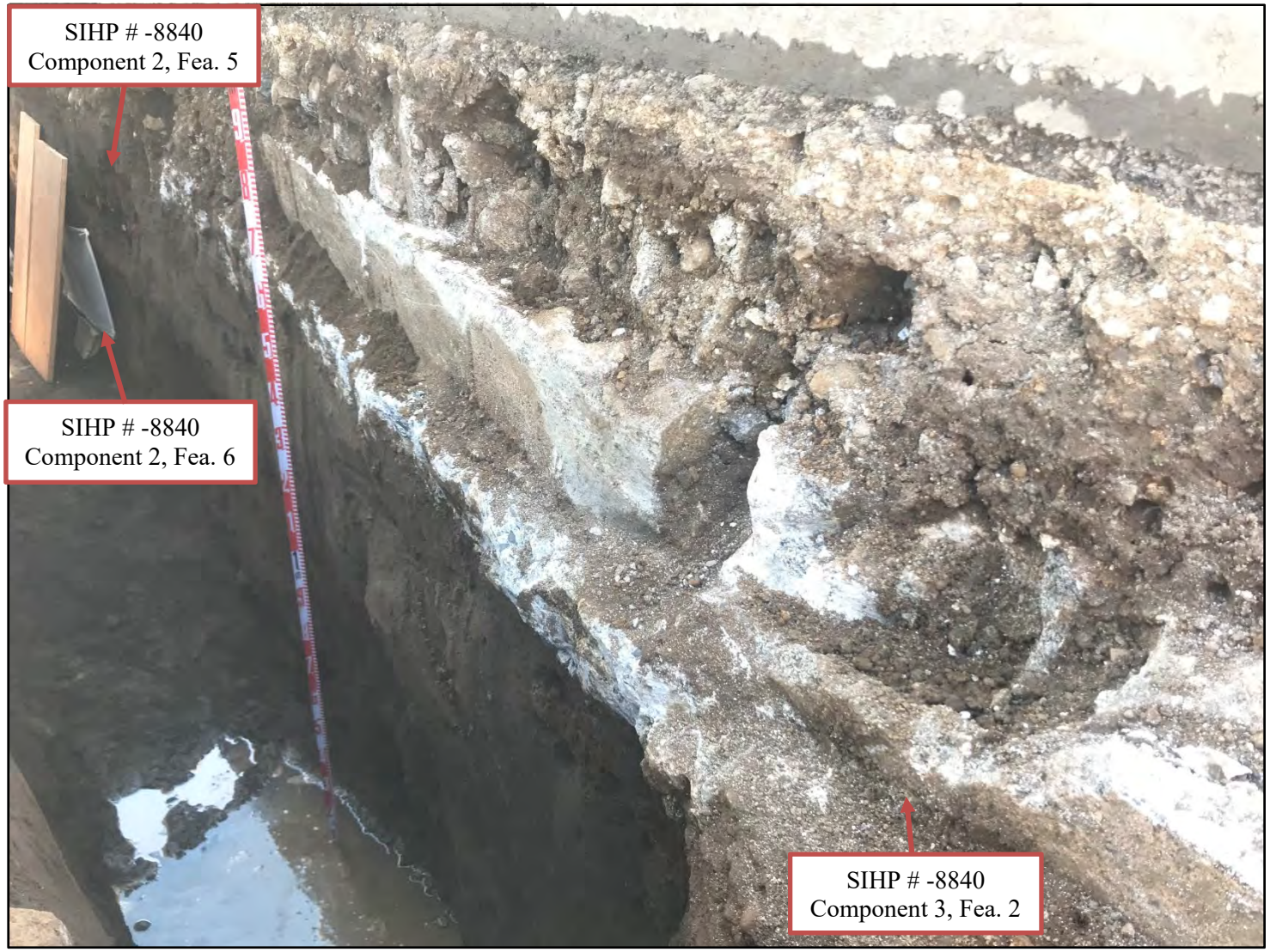

Figure 45. T-2 southeast wall, view to east

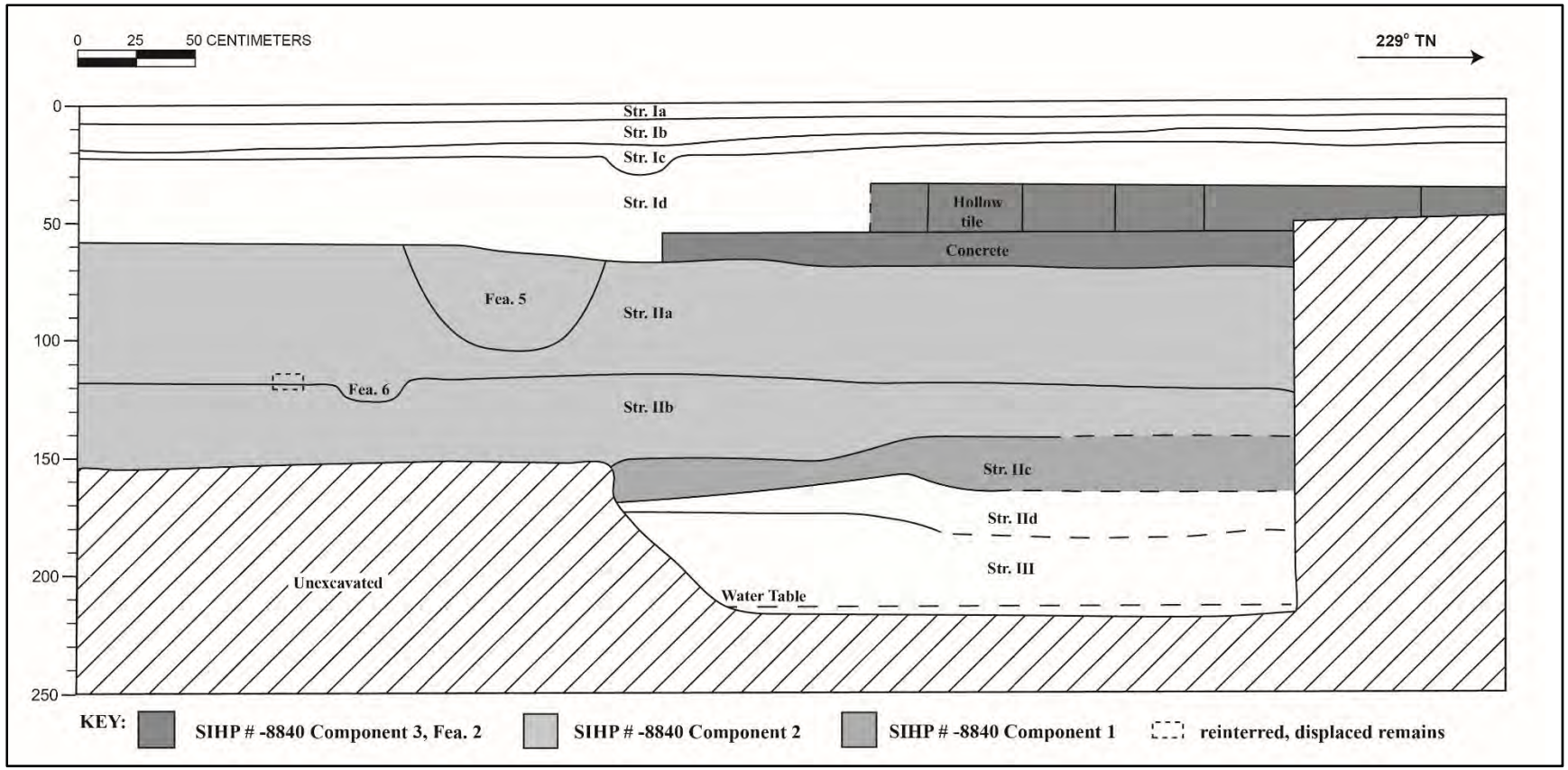

Figure 46. Profile of T-2 southeast wall

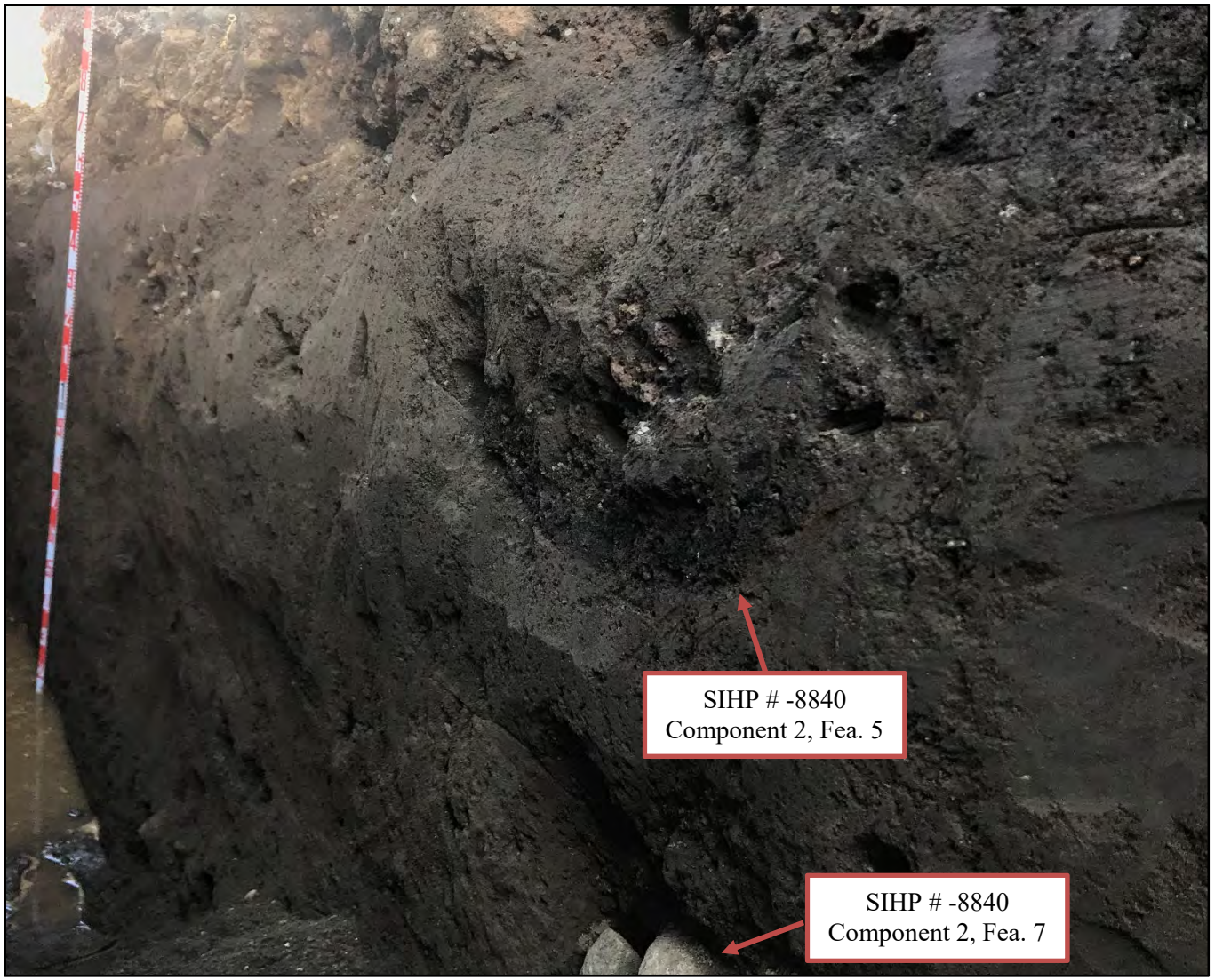

Figure 47. T-2 northwest wall, view to west

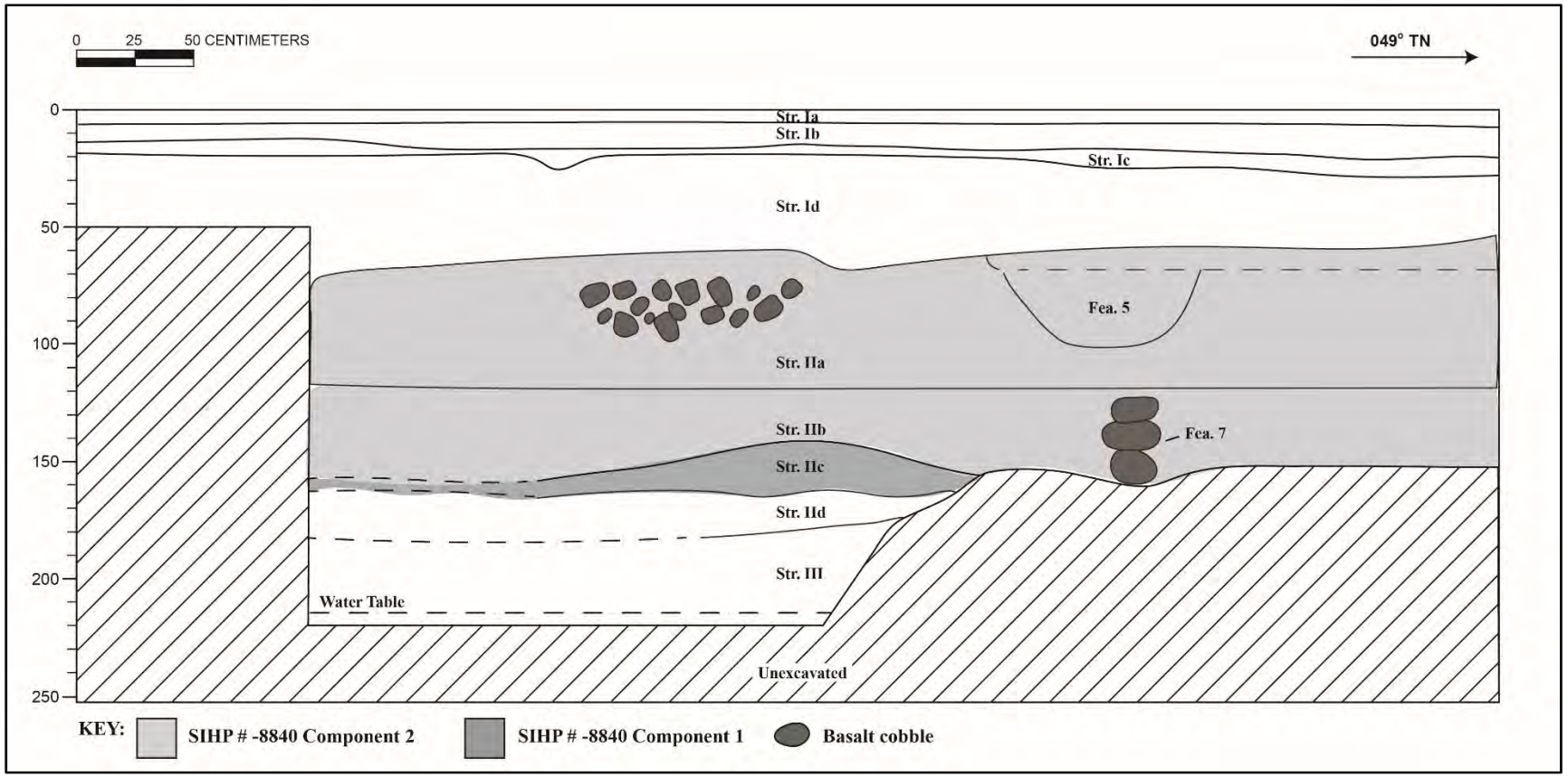

Figure 48. Profile of T-2 northwest wall



Figure 49. Plan view of T-2

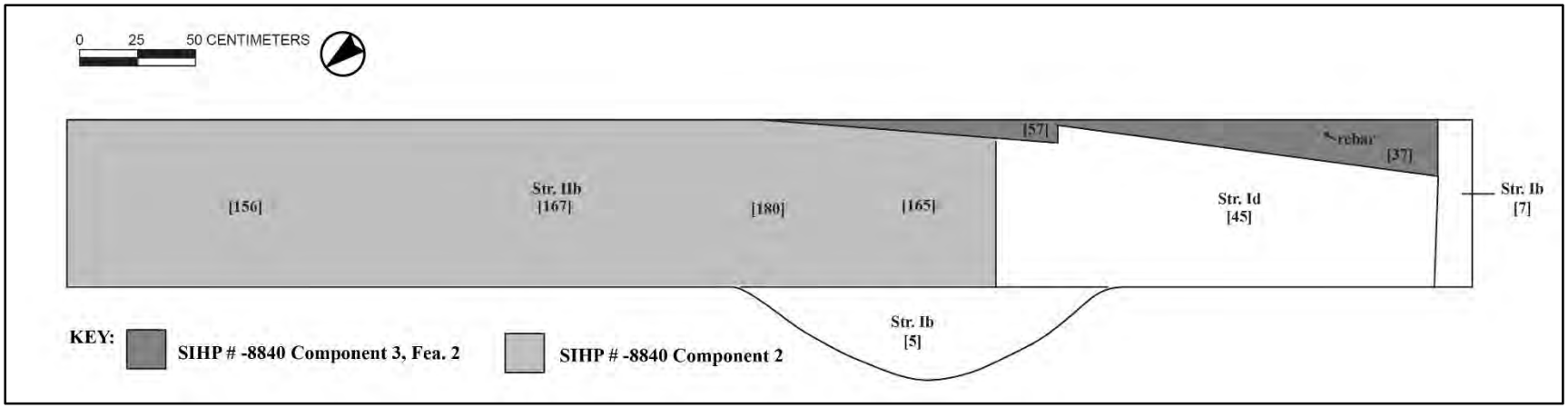

Figure 50. Plan map of T-2

Table 5. T-2 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	7–20	Base course; 10YR 3/1, very dark gray; extremely gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	14–27	Base course; 10YR 6/4, light yellowish brown; very gravelly loamy sand; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; abrupt, smooth lower boundary; no roots observed; mixed crushed coral base course
Id	19–70	Fill; 10YR 2/2, very dark brown; very cobbly sandy clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; demolition fill containing basalt cobbles, glass and ceramic fragments, and pig bone
SIHP # -8840 Comp. 3, Fea. 2	37–70	SIHP # -8840 Component 3, Feature 2; hollow tile wall with concrete base; possibly a boundary wall
IIa	55–127	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; habitation layer with charcoal flecking and pit features (Features 5 and 6)
	60–103	SIHP # -8840 Component 2, Feature 5; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; pit feature containing red brick, glass, metal, charcoal, FAR, and coral gravel
	120–127	SIHP # -8840 Component 2, Feature 6; 10YR 3/2, very dark grayish brown; silty clay loam; small pit feature containing human skeletal remains
IIb	115–160	SIHP # -8840 Component 2; 10YR 3/4, dark yellowish brown; sandy loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; clear, smooth lower boundary; no roots observed; habitation layer containing sparse basalt and coral gravel, and small marine shell fragments, and a stacked basalt feature (Feature 7)
	124–160	SIHP # -8840 Component 2, Feature 7; stacked basalt cobbles of an unknown function

Stratum	Depth (cmbs)	Description
IIc	140–164	SIHP # -8840 Component 1; 7.5YR 3/2, dark brown; silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; agricultural layer containing cinder and oxidized (red) mottling
IId	160–182	Natural; 7.5YR 3/4, dark brown; sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited sand
III	175–220 (BOE)	Natural; 7.5YR 2.5/2, very dark brown; very cobbly sandy clay; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; lower boundary not observed; no roots observed; streambed with waterworn basalt cobbles and gravel



Figure 51. Plan view of SIHP # -8840 Component 3, Feature 2, hollow tile wall remnant with concrete base, in T-2

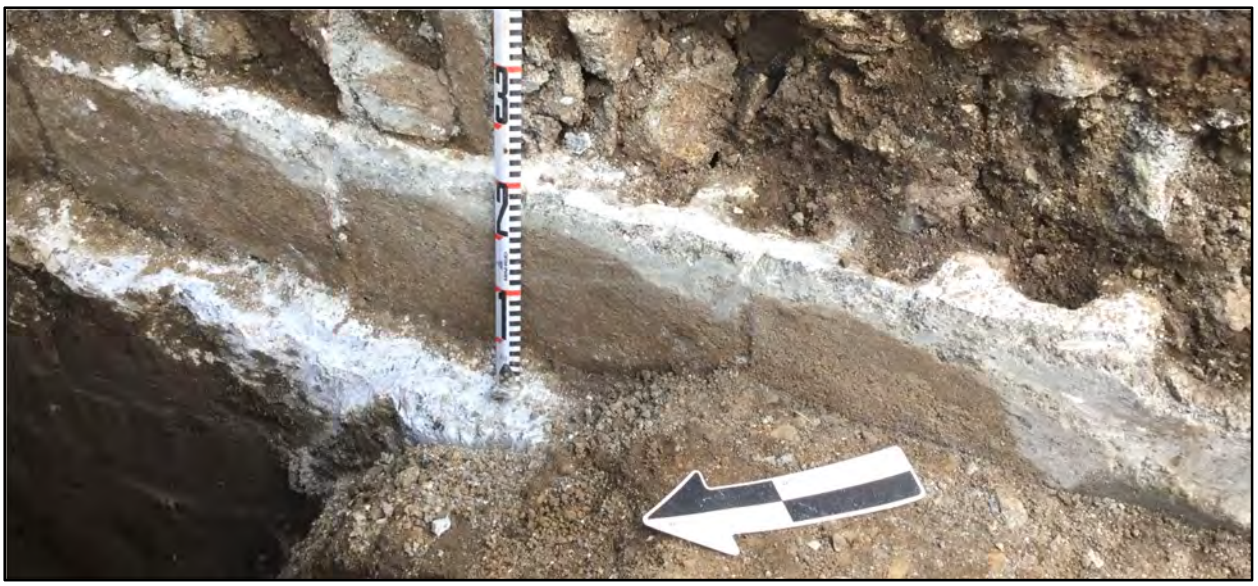

Figure 52. SIHP # -8840 Component 3, Feature 2, hollow tile wall remnant with concrete base, in T-2 southeast wall, view to east



Figure 53. Concentration of metal, basalt, and charcoal within Stratum IIa/SIHP # -8840 Component 2 in T-2 northwest wall

Feature 5 is a basin-shaped pit feature identified at/near the upper boundary of Stratum IIa/SIHP # -8840 Component 2 within both sidewalls of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 60 and 103 cmbs and measures 85 cm across. The exposed portion is 76 cm wide, spanning the width of the trench. The feature contains red brick, glass, metal, charcoal, FAR, and coral gravel (not collected). Its function is indeterminate.

Feature 6 is a small pit feature containing human skeletal remains (see Figure 45, Figure 46, Figure 55, and Figure 56). It was documented between 120 and 127 cmbs within the southwest wall of T-2, near the southeast end of the excavation. It originates at the base of Stratum IIa/SIHP # -8840 Component 2 and terminates in the underlying Stratum IIb/SIHP # -8840 Component 2. The pit measures 26 cm across and contains the remains of a single fetal individual (at or near birth). Observed skeletal elements comprise the lower limbs; the upper body likely remains in situ within the southwest sidewall (see Figure 56). The remains are in good condition, and the individual is approximately 85% complete.

The human remains were identified during cleaning of the sidewall, when the trench was excavated to approximately 150 cmbs; this portion of the trench was benched and was not excavated further (see Figure 46). The archaeologists troweled through the loose sediment within the trench and recovered several displaced fragments; these were wrapped in muslin. Troweling through portions of the backdirt pile did not yield any additional remains.

A sheet of muslin was nailed over the exposed portion of the burial (see Figure 45 and Figure 55). A small pit measuring 10 cm high by 12 cm across was dug into the sidewall approximately 15 cm northeast of Feature 6, and the muslin-wrapped, displaced remains were placed into the pit. A second sheet of muslin was then nailed over the pit (Figure 57). Afterwards, a plywood board measuring 2.5 by 2.5 ft was placed over the wall, covering both Feature 6 and the pit with the displaced remains. Following documentation of the excavation, the trench was backfilled to a depth of 90 cmbs. Four plywood boards, each approximately 1 by 2.5 ft, were placed on the excavation floor above the burial find location. The remainder of the trench was then backfilled.

The underlying Stratum IIb contains sparse basalt and coral gravel and small marine shell fragments, as well as a stacked basalt feature. Hence, Stratum IIb is also designated as part of SIHP # -8840 Component 2. The feature, designated as Feature 7, is described below.

Feature 7 comprises three stacked basalt cobbles identified within Stratum IIb/SIHP # -8840 Component 2 in the northwest wall of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 124 and 160 cmbs and measures 25 cm across. Its function is indeterminate.

Beneath the SIHP # -8840 Component 2 (Strata IIa and IIb) habitation layers is Stratum IIc, interpreted as an agricultural deposit. Stratum IIc contains cinder gravel and oxidized (red) mottling and is designated as part of SIHP # -8840 Component 1. The underlying Stratum III contains abundant waterworn basalt cobbles and gravel and is interpreted as a streambed.



Figure 54. SIHP # -8840 Component 2, Feature 5 (pit feature, above), and Feature 7 (stacked basalt cobbles, below) in T-2 northwest wall, view to north



Figure 55. SIHP # -8840 Component 2 Feature 5, fire-related feature, in T-2 southeast wall (center), view to east; the Feature 6 human burial is covered by muslin

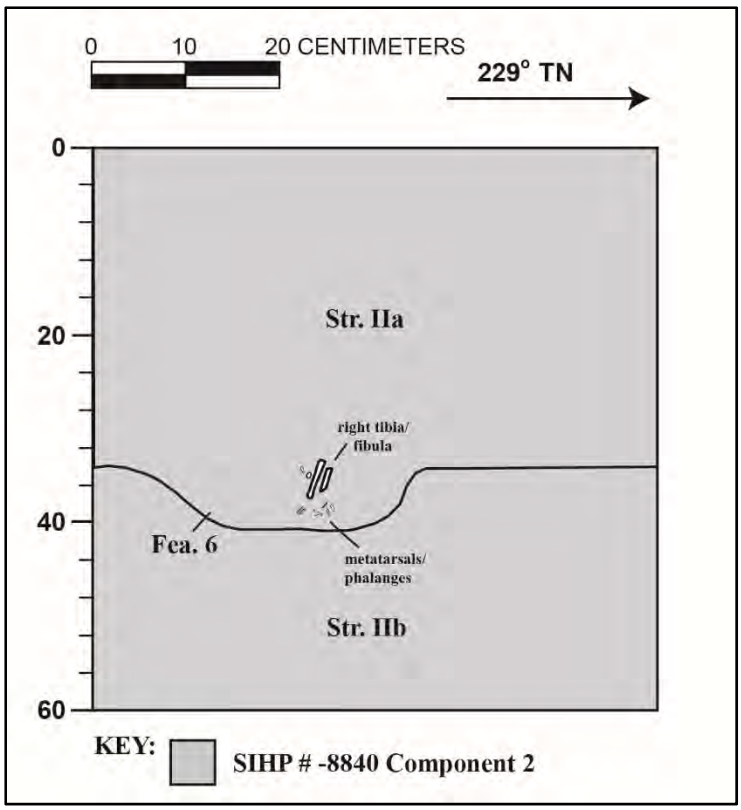

Figure 56. Profile of a portion of T-2 southeast wall, showing SIHP # -8840 Component 2, Feature 6, pit feature with human skeletal remains



Figure 57. Two pieces of cloth covering SIHP # -8840 Component 2, Feature 6 (right) and reinterred displaced remains (left)

4.3.3 Test Excavation 2B (T-2B)

Test Excavation 2B (T-2B) is an exterior excavation, just east of T-2, excavated to investigate the presence of a potential burial cluster and to delineate the burial site boundaries for SIHP # -8840 Component 2, Feature 6 (see Section 4.3.2 above); however, no human remains were identified in T-2B. T-2B is oriented northeast-southwest and measures 6.1 m long by 0.73 m wide, with a maximum depth of 225 cmbs. The water table was encountered at 222 cmbs.

The observed stratigraphy includes three layers of asphalt comprising the parking lot surface (Strata Ia–Ic) and associated very gravelly sand (crushed coral) base course (Stratum Id), gravelly (basalt) silty clay loam fill (Stratum Ie), very gravelly (basalt) sandy clay loam fill (Stratum If; demolition fill), and a hollow tile wall with concrete base (SIHP # -8840 Component 3, Feature 2), overlying two layers of silty clay loam (Strata IIa and IIb; SIHP # -8840 Component 2), gravelly (cinder) loam (Stratum IIc; SIHP # -8840 Component 1), and extremely gravelly (basalt) sand (Stratum III) (Figure 58 through Figure 60 and Table 6). A saw-cut cow (*Bos taurus*) bone recovered from the spoils pile was collected; its exact provenience is unknown.

The Stratum Ib and Ic asphalt layers were highly degraded/crumbly. The Stratum Ie fill contains historical trash, including a small lens of burnt trash; a grab sample of metal, glass, and ceramics as well as a bone artifact were collected. The bone artifact (Acc. # 26), likely part of a folding personal hygiene tool, dates to post-1926, indicating deposition of Stratum Ie after that time. Stratum If is a demolition fill containing basalt gravel and metal and glass debris.

At the lateral interface of Strata Ie and If, resting atop Stratum IIa, is a hollow tile wall with a concrete base (see Figure 58 through Figure 61 and Figure 62). This structural remnant, designated as SIHP # -8840 Component 3, Feature 2, was documented between 22 and 73 cmbs, extending roughly east-west from near the east corner of the trench into the northwest sidewall. The exposed portion is approximately 2.5 m long with a maximum width of 35 cm. No associated builder's pit was observed; rather, it appeared the wall was founded on Stratum IIa prior to the deposition of the Strata Ie and If fills. As the wall overlies and therefore post-dates SIHP # -8840 Component 2, Feature 8 (historical trash pit, discussed below), it was constructed no earlier than 1910. Other portions of this structural remnant were documented in nearby T-2 (see Section 4.3.2) and possibly also in T-4 (see Section 4.3.6).

The underlying Stratum II (a–c) is natural alluvium. Because Strata IIa and IIb contain pit features, they are designated as part of SIHP # -8840 Component 2, habitation layers. The features, designated as Features 8–10, are described below.

Feature 8 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 70 and 145 cmbs at the upper boundary of Stratum IIa/SIHP # -8840 Component 2. Glass, metal, ceramic, and bone artifacts were collected from this feature, which is interpreted as a historical trash pit; a grab sample was collected. Diagnostic artifacts are Euro-American and Asian in origin. A machine-made glass marble (Acc. # 37), a bottle glass fragment (Acc. # 41), and a Dutch gin bottle date to post-1910, 1910-1919, and ca. 1910, respectively, indicating use of the feature after that date. Feature 8 overlies and therefore post-dates Feature 9, discussed below. Feature 8 underlies and therefore pre-dates SIHP # -8841 Component 3, Feature 2 (hollow tile wall), discussed above.

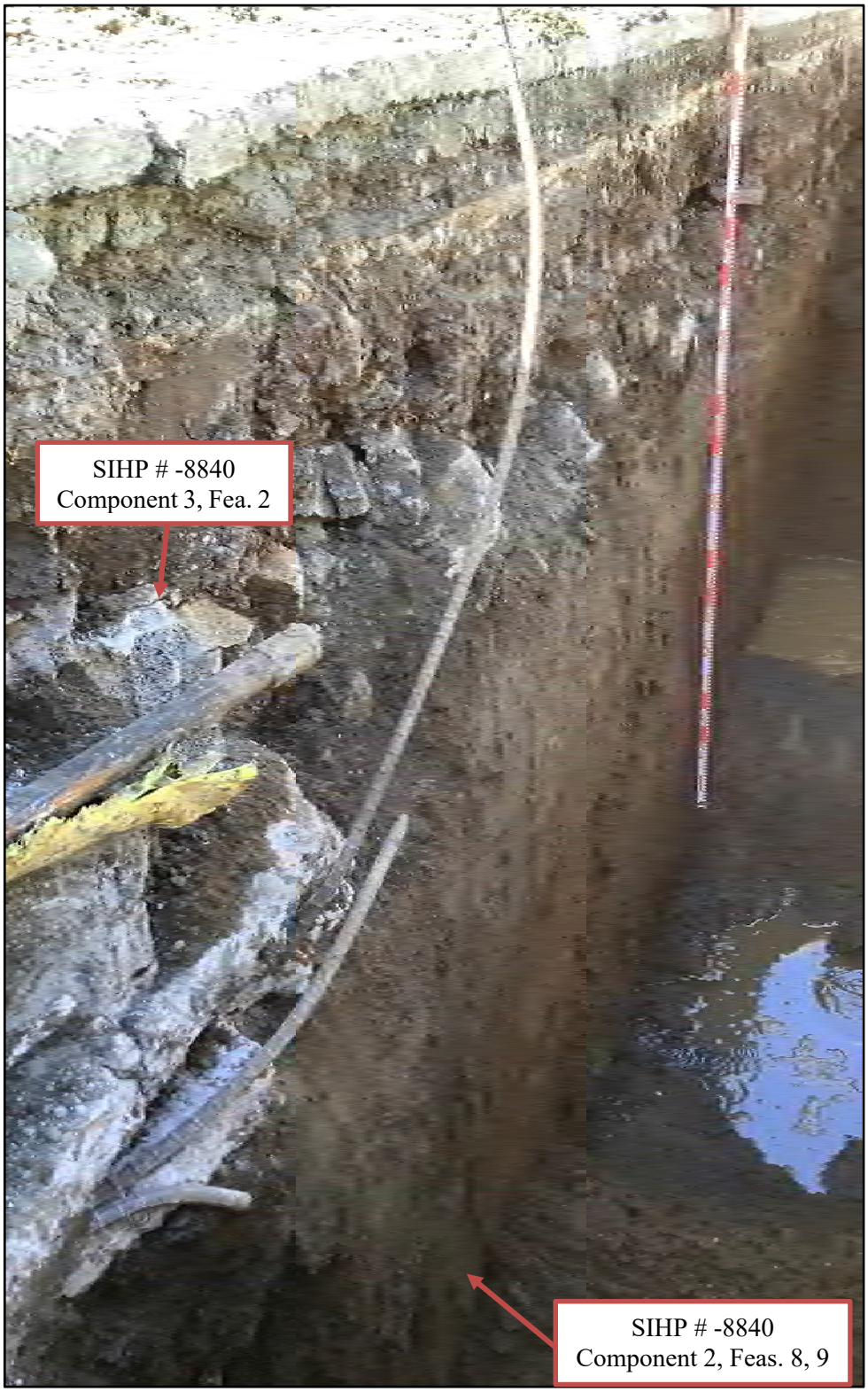

Figure 58. T-2B southeast wall, view to south

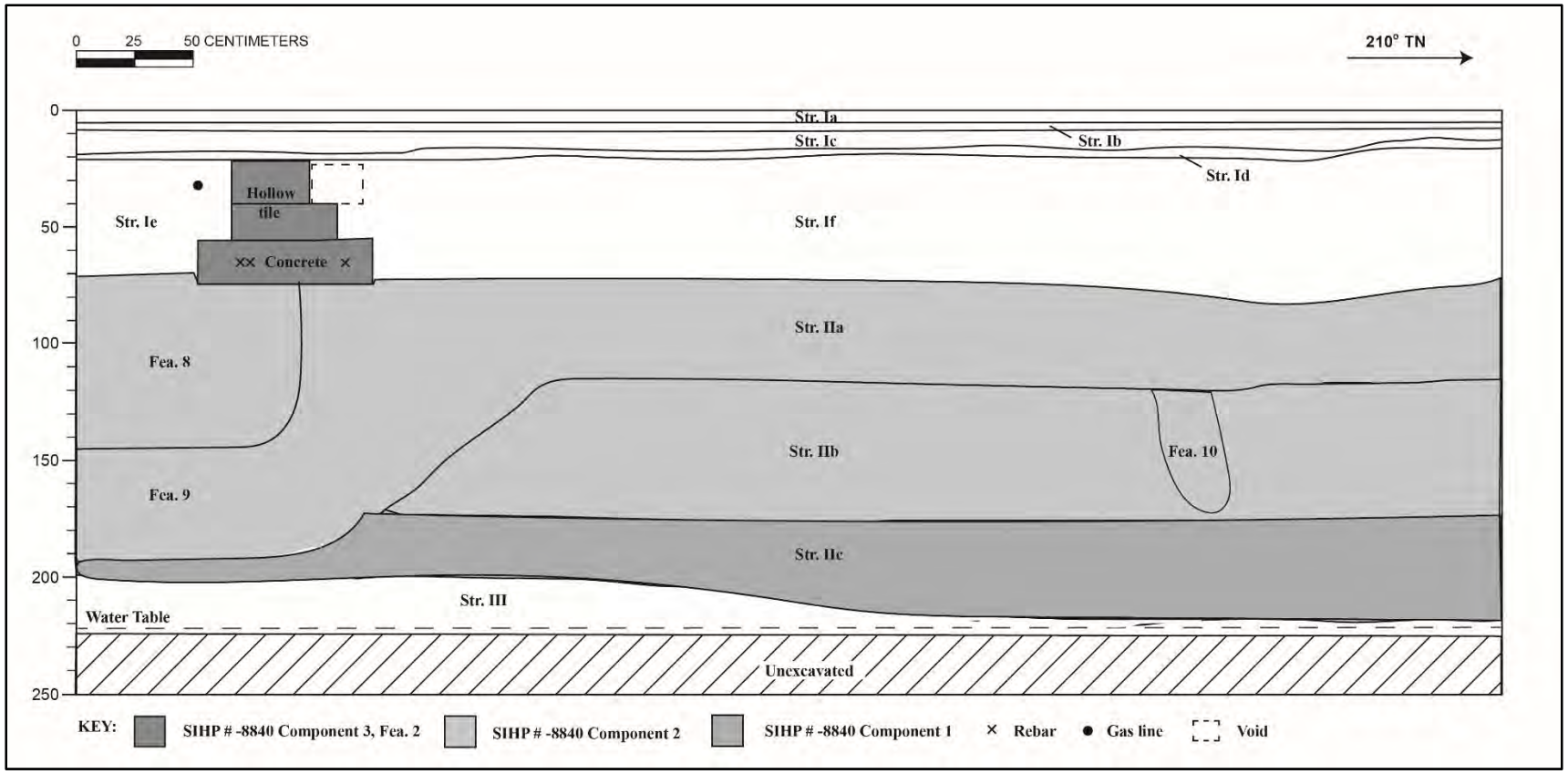

Figure 59. Profile of T-2B southeast wall

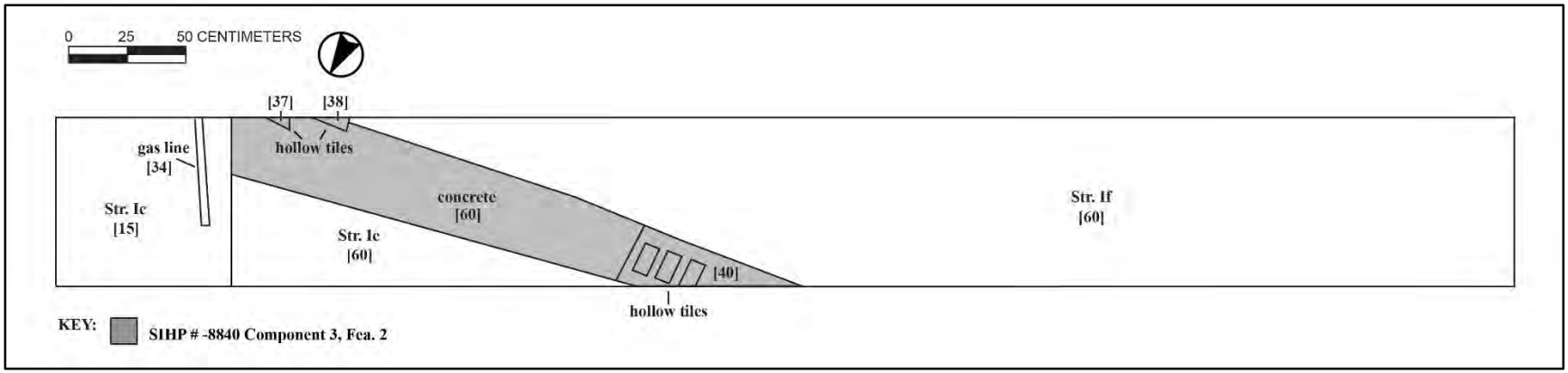

Figure 60. Plan map of T-2B

Table 6. T-2B stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–5	Asphalt; parking lot surface
Ib	5–10	Second layer of asphalt
Ic	10–19	Third layer of asphalt
Id	12–22	Base course; 10YR 8/2, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ie	21–70	Fill; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; fill derived from alluvium, containing basalt gravel
SIHP # -8840 Comp. 3, Fea. 2	22–73	SIHP # -8840 Component 3, Feature 2; hollow tile wall with concrete base; possibly a boundary wall
If	16–79	Fill; 10YR 5/6, yellowish brown; very gravelly sandy clay loam; moderate, medium, blocky structure; moist, friable consistence; no cementation; slightly plastic; mixed origin; clear, discontinuous lower boundary; no roots observed; demolition fill containing basalt gravel and metal and glass debris
IIa	70–191	SIHP # -8840 Component 2; 10YR 3/1, very dark gray; silty clay loam; moderate, fine, blocky structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing pit features (Features 8 and 9)
	70–145	SIHP # -8840 Component 2, Feature 8; 10YR 3/1, very dark gray; silty clay loam; historical trash pit containing glass, metal, ceramic, and bone artifacts
	115–191	SIHP # -8840 Component 2, Feature 9; 10YR 3/1, very dark gray; silty clay loam; pit feature of indeterminate function
IIb	112–176	SIHP # -8840 Component 2; 10YR 3/6, dark yellowish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; habitation layer containing a pit feature (Feature 10)
	117–171	SIHP # -8840 Component 2, Feature 10; 10YR 3/6, dark yellowish brown; silty clay loam; pit feature of indeterminate function

Stratum	Depth (cmbs)	Description
IIc	175–216	SIHP # -8840 Component 1; 10YR 2/2, very dark brown; gravelly loam; weak, very fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; clear, wavy lower boundary; no roots observed; agricultural deposit containing cinder gravel, oxidized (red) mottling, reddish-orange concretions and nodules, and several tubular root casts
III	197–225 (BOE)	Natural; GLEY 10Y 2.5/1, greenish black; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 61. Plan view of SIHP # -8840 Component 3, Feature 2, hollow tile wall with concrete base, in T-2B



Figure 62. Northeast end of T-2B southeast wall, showing SIHP # -8840 Component 3, Feature 2 (hollow tile wall remnant) overlying SIHP # -8840 Component 2 Features 8 and 9, pit features, view to east

Feature 9 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 115 and 191 cmbs, extending from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrusive through Stratum IIb, and terminating in Stratum IIc. It underlies Feature 8 (described above), which it therefore pre-dates. The exposed portion of the feature is approximately 2 m long. No cultural materials were identified wihtin the feature; its function is indeterminate.

Feature 10 is an oblong pit feature identified in the southeast wall of T-2B (see Figure 58, Figure 59, and Figure 63). It was documented at the upper boundary of Stratum IIb/SIHP # -8840 Component 2, between 117 and 171 cmbs and measures 25 cm across. No cultural materials were identified within the feature; its function is indeterminate.

Stratum IIc contains basalt gravel and oxidized (red) mottling and is interpreted as an agricultural deposit; hence, it is designated as part of SIHP # -8840 Component 1. A bulk sample of Stratum IIc was collected from the excavator bucket. Wet screening of the sample yielded reddish-orange concretions and nodules and several tubular root casts; based on previous archaeological studies (see Section 5.1.1), these are interpreted as evidence of agricultural use. The underlying Stratum III contains abundant waterworn basalt gravel and cobbles and is interpreted as a streambed.



Figure 63. SIHP # -8840 Component 2 Feature 10, pit feature, in T-2B southeast wall, view to south

4.3.4 Test Excavation 2C (T-2C)

Test Excavation 2C (T-2C) is an exterior excavation, just north of T-2, excavated to investigate the presence of a potential burial cluster and to delineate the burial site boundaries of SIHP # -8840 Component 2, Feature 6 (see Section 4.3.2 above); however, no human remains were identified in T-2C. T-2C is oriented northeast-southwest and measures 6.1 m long by 0.76 m wide, with a maximum depth of 225 cmbs. The water table was not encountered.

The observed stratigraphy includes three layers of asphalt (Strata Ia–Ic) and associated very gravelly sand (crushed coral) base course (Stratum Id), very gravelly (basalt) sandy clay loam base course (Stratum Ie), and gravelly silty clay loam fill (Stratum If; demolition fill), overlying two layers of silty clay loam (Strata IIa/SIHP # -8840 Component 2 and IIb) and very gravelly (basalt) sandy clay (Stratum III) (Figure 64, Figure 65, and Table 7).

The Strata Ib and Ic asphalt layers were highly degraded/crumbly. Stratum If is a demolition fill containing medium mammal bone (inconsistent with human) and ceramic, metal, and glass artifacts. The mammal bone and a grab sample of artifacts were collected. Diagnostic artifacts are Hawaiian, Euro-American, and Japanese in origin. One machine-made bottle (Acc. # 161) dates to 1935, indicating the fill was deposited after that date.

Stratum II (a and b) is naturally deposited alluvium, while the underlying Stratum III contains abundant waterworn basalt gravel and cobbles and is interpreted as a streambed. Because Stratum IIa contains charcoal flecking and a pit feature, it is designated as part of SIHP # -8840 Component 2, habitation layers. The feature, designated as Feature 11, is described below.

Feature 11 is a small pit feature identified in the southeast sidewall of T-2C (see Figure 65 and Figure 66). It was documented between 137 and 152 cmbs, extending from the lower boundary of Stratum IIa/SIHP # -8840 Component 2 and terminating in Stratum IIb. It measures 30 cm across. No cultural materials were observed within the feature; its function is indeterminate.



Figure 64. T-2C southeast wall, view to south

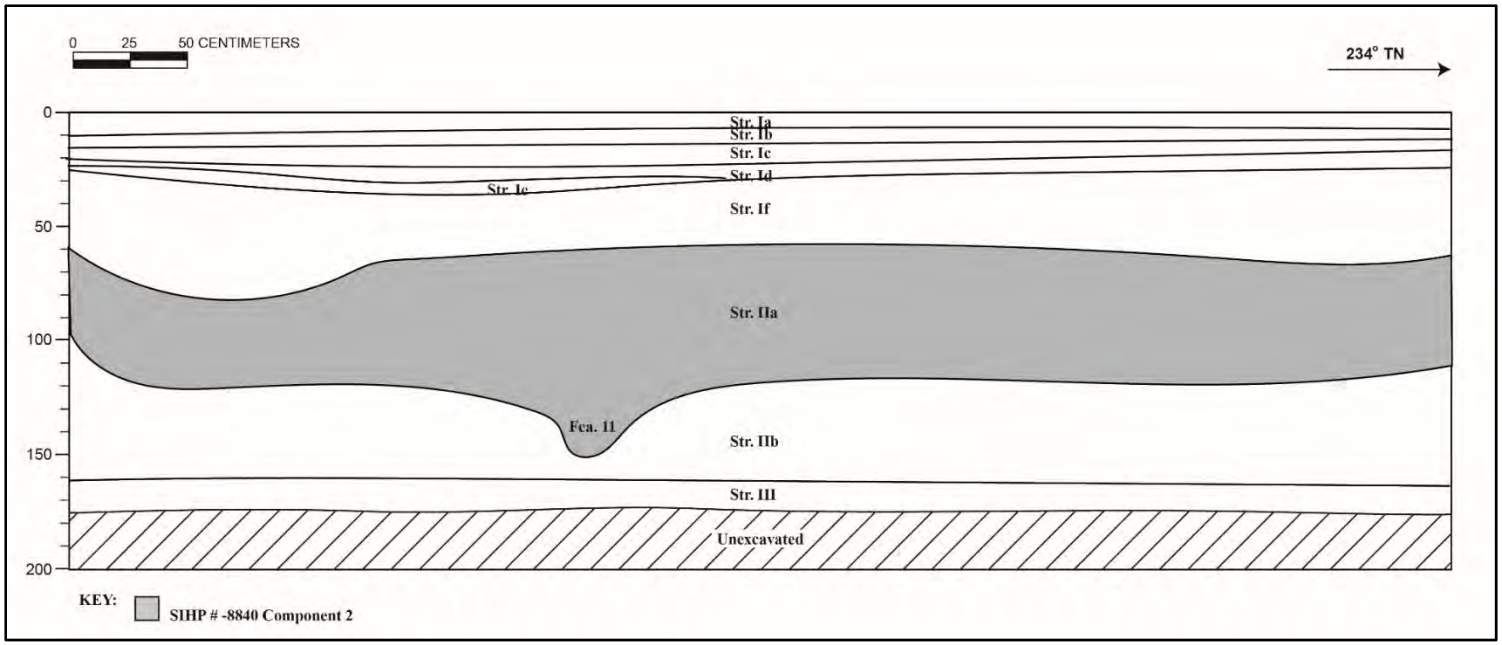

Figure 65. Profile of T-2C southeast wall



Figure 66. SIHP # -8840 Component 2, Feature 11, pit feature of indeterminate function, in T-2C southeast sidewall, view to southeast

Table 7. T-2C stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–8	Asphalt; parking lot surface
Ib	6–16	Second layer of asphalt
Ic	12–26	Third layer of asphalt
Id	25–29	Base course; 10YR 7/3, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ie	29–37	Base course; 10YR 3/1, very dark gray; very gravelly sandy clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course
If	27–64	Fill; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, wavy lower boundary; no roots observed; demolition fill, containing basalt gravel and cobbles, medium mammal bone, and glass, metal, and ceramic artifacts
IIa	55–152	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing charcoal flecking and a pit feature (Feature 11)
	137–152	SIHP # -8840 Component 2, Feature 11; 10YR 2/2, very dark brown; silty clay loam; pit feature of indeterminate function
IIb	100–161	Natural; 10YR 3/3, dark brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
III	161–174 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy clay; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; lower boundary not observed; no roots observed; streambed containing abundant waterworn basalt gravel and cobbles

4.3.5 Test Excavation 3 (T-3)

Test Excavation 3 (T-3) is an exterior excavation near the south corner of the AIS study area. It is oriented northwest-southeast and is 6.15 m long by 0.8 m wide, with a maximum depth of 160 cmbs. The water table was not encountered.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly (basalt) sandy clay loam base course (Stratum Ib), very gravelly sand (crushed coral) base course (Stratum Ic), very gravelly (basalt) sandy clay loam fill (Stratum Id), and gravelly (basalt) sandy clay loam fill (Stratum Ie; demolition fill), overlying gravelly (basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2) and two layers of silty clay loam (Strata IIb and IIc/SIHP # -8840 Component 1) (Figure 67 through Figure 69, and Table 8).

Stratum Ie is a demolition fill containing concrete and metal debris. Large pieces of concrete at either end of the excavation within Stratum Ie threatened to destabilize the sidewalls if removed; hence, only the central portion of the trench was excavated fully (see Figure 69).

The underlying Stratum II (a–c) is naturally deposited alluvium. The upper portion of Stratum IIa has been disturbed or reworked and contains charcoal flecking and red brick fragments (not collected); hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. Stratum IIc contains oxidized (red) mottling and is interpreted as an agricultural deposit; it is designated as part of SIHP # -8840 Component 1.



Figure 67. Southeast end of T-3 southwest wall, showing concrete debris within Stratum Ie, demolition fill, which prevented full excavation, view to south



Figure 68. T-3 southwest wall, central portion, view to southwest

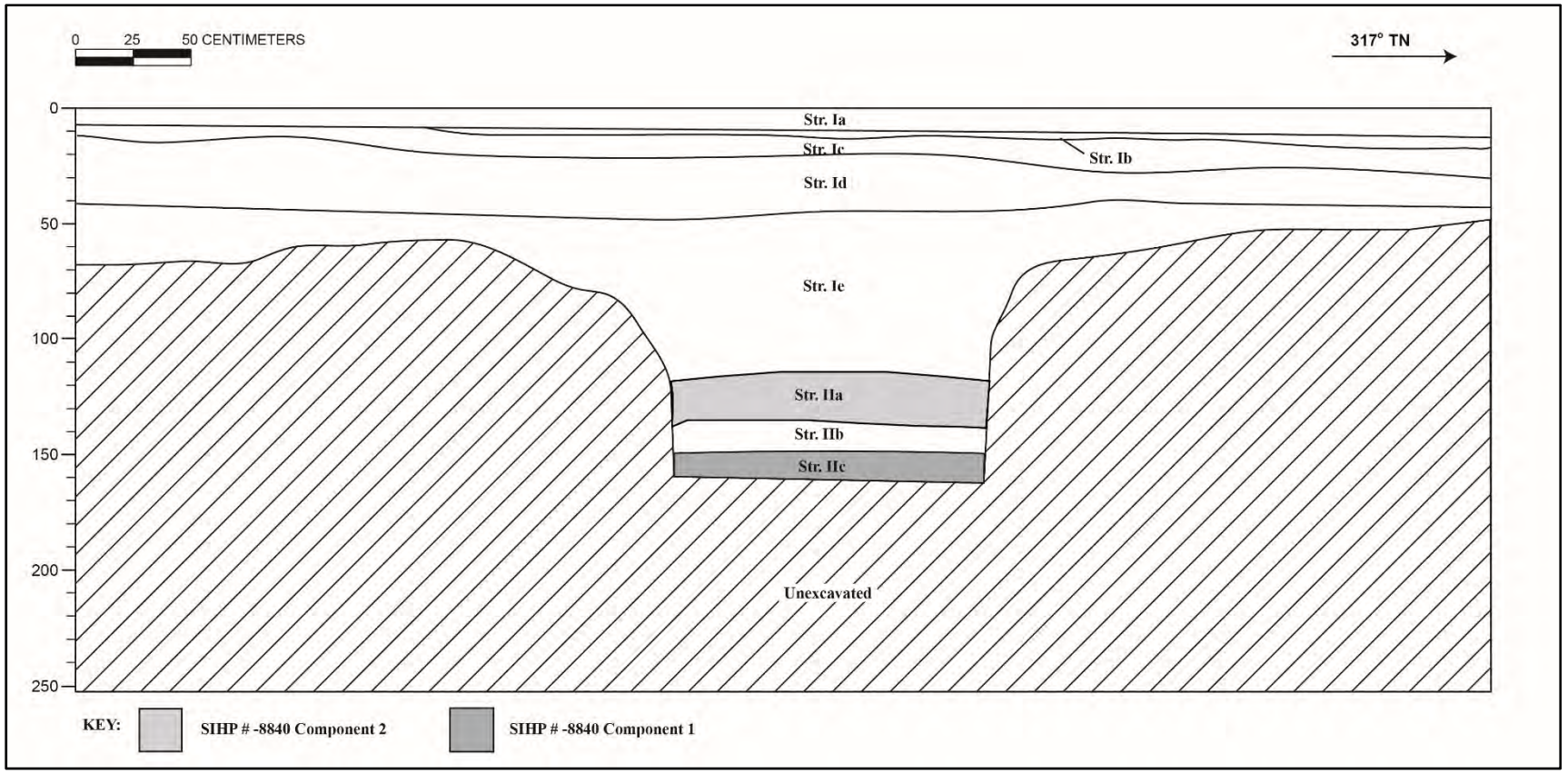

Figure 69. Profile of T-3 southwest wall

Table 8. T-3 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	7–12	Base course; 10YR 4/2, dark grayish brown; extremely gravelly sandy clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course
Ic	7–35	Base course; 10YR 7/3, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Id	12–45	Fill; 2.5YR 3/2, dusky red; very gravelly sandy clay loam; terrigenous origin; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; contains basalt gravel
Ie	35–110	Fill; 10YR 3/3, dark brown; gravelly sandy clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; demolition fill containing basalt gravel and metal and concrete debris
IIa	110–133	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; habitation layer with basalt gravel, charcoal, and red brick in its upper portion
IIb	136–148	Natural; 10YR 3/3, dark brown; silty clay loam; weak, very fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIc	146–160 (BOE)	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; agricultural deposit with oxidized (red) mottling

4.3.6 Test Excavation 4 (T-4)

Test Excavation 4 (T-4) is an exterior excavation in the southeastern portion of the AIS study area. It is oriented northwest-southeast and is 6.1 m long by 0.8 m wide, with a maximum depth of 229 cmbs. The water table was encountered at 223 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly sand (crushed coral) base course (Stratum Ib), very gravelly (basalt) sandy clay loam fill (Stratum Ic; demolition fill), and a concrete footing (SIHP # -8840 Component 3, Feature 3), overlying gravelly (basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2), three layers of silty clay loam (Strata IIb, IIc/SIHP # -8840 Component 1, and IId), and a second layer of gravelly (basalt) silty clay loam (Stratum IIe; SIHP # -8840 Component 1) (Figure 70 through Figure 75 and Table 9). A saw-cut cow (*Bos taurus*) bone and a small mammal bone fragment were collected from the spoils pile; their exact provenience is unknown.

Stratum Ic is a demolition fill containing concrete, brick, hollow tile, and metal debris, as well as a concrete footing (see Figure 72 through Figure 75). A strong odor of petroleum indicated Stratum Ic was contaminated in the ‘Ewa (northwest) portion of the trench; hence, that portion was not fully excavated (see Figure 73). The concrete footing is designated as SIHP # -8840 Component 3, Feature 3. The exposed portion is 85 cm long by 45 cm wide and 15 cm thick, documented between 43 and 58 cmbs within the trench floor and both sidewalls. It may represent the concrete base of the hollow tile wall (SIHP # -8840 Component 3, Feature 2) identified in T-2 and T-2B (see Sections 4.3.2 and 4.3.3 above), as it is of approximately the same thickness, width, and orientation (roughly east-west). Furthermore, the presence of hollow tile debris in the surrounding Stratum Ic fill material supports this hypothesis, suggesting the upper hollow tile portion was once present but has been demolished. Like Feature 2, Feature 3 appeared to be founded upon Stratum IIa and to pre-date the deposition of the surrounding fill layer.

Stratum II (a–e) is natural alluvium. The upper portion of Stratum IIa has been disturbed or reworked and contains charcoal flecking and red brick fragments; hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. Strata IIc and IIe contain oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1 (Figure 76). A bulk sample of Stratum IIe was collected from the spoils pile.



Figure 70. T-4 southwest wall, southeast end, view to south



Figure 71. Lower portion of T-4 southwest wall, showing Stratum II (a–e), view to south



Figure 72. T-4 southwest wall, northwest end, view to west

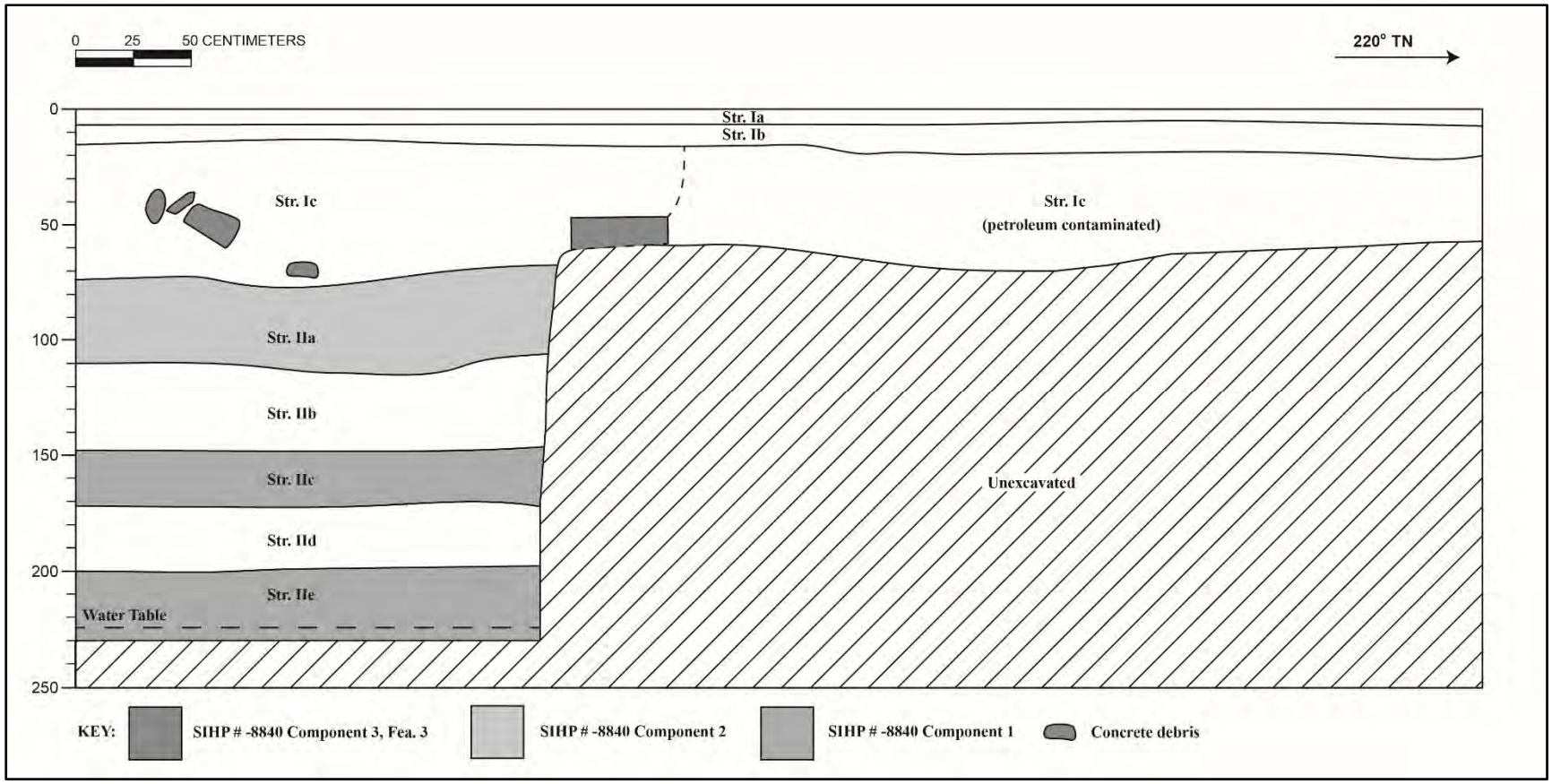

Figure 73. Profile of T-4 southwest wall



Figure 74. Plan view of T-4

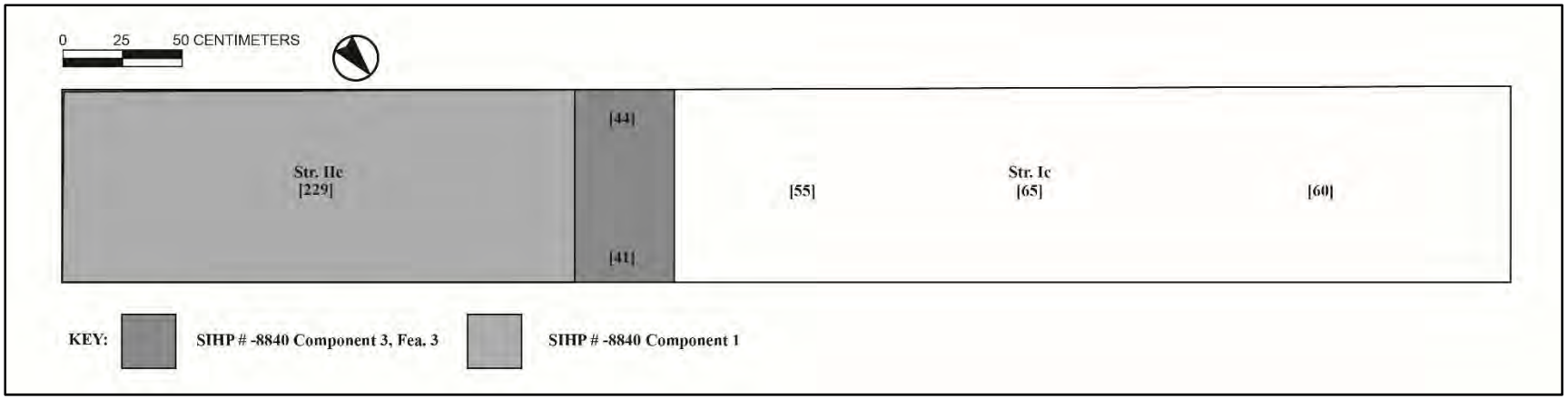

Figure 75. Plan map of T-4

Table 9. T-4 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–6	Asphalt; parking lot surface
Ib	6–20	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	14–74	Fill; 2.5YR 3/2, dusky red; very gravelly sandy clay loam; terrigenous origin; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; demolition fill containing basalt gravel and concrete, hollow tile, brick, and metal debris
SIHP # -8840 Comp. 3, Feature 3	43–58	SIHP # -8840 Component 3, Feature 3; concrete footing; possibly the base of a former hollow tile wall
IIa	71–115	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with basalt gravel, charcoal flecking, and red brick fragments in its upper portion
IIb	105–148	Natural; 10YR 4/3, brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIc	145–165	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural deposit with oxidized (red) mottling
IId	158–200	Natural; 10YR 4/3, brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIe	196–229 (BOE)	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; agricultural deposit with abundant oxidized (red) mottling



Figure 76. Stratum IIe/SIHP # -8840 Component 1 sediment, showing abundant oxidized (red) mottling

4.3.7 Test Excavation 5 (T-5)

Test Excavation 5 (T-5) is an exterior excavation in the southeastern portion of the AIS study area. It is oriented northwest-southeast and is 6.1 m long by 0.75 m wide, with a maximum depth of 224 cmbs. The water table was encountered at 220 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly sand (crushed coral) base course (Stratum Ib), very gravelly (basalt) sandy clay loam fill (Stratum Ic), and very gravelly (basalt) silty clay loam fill (Stratum Id), overlying gravelly (basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2) and five layers of silty clay loam (Strata IIb, IIc/SIHP # -8840 Component 1, IId, IIe, and IIf/SIHP # -8840 Component 1) (Figure 77 through Figure 79 and Table 10). Due to petroleum contamination within Stratum Id, minimal cleaning of the sidewalls was conducted, and a 1-m profile drawing was documented at the center of the trench to minimize the archaeologists' exposure to the contaminated sediment.

A corroded metal spike or nail and a small, non-diagnostic ceramic fragment were identified in Stratum Id; these were photographed but not collected (Figure 80). The underlying Stratum II (a–f) is natural alluvium. The upper portion of Stratum IIa has been disturbed or reworked and contains an abandoned utility pipe as well as glass, metal, and ceramic fragments; hence, Stratum IIa is designated as part of SIHP # -8840 Component 2, habitation layers. Artifacts associated with Stratum IIa were photographed but not collected (Figure 81). Strata IIc and IIf contain oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1. A bulk sample of Stratum IIf was collected from the spoils pile.



Figure 77. T-5 northeast wall, view to north (no photo available at full depth)



Figure 78. Close-up of the profiled (central) portion of T-5 northeast wall, view to north, at 160 cmbs (no photo available at full depth)

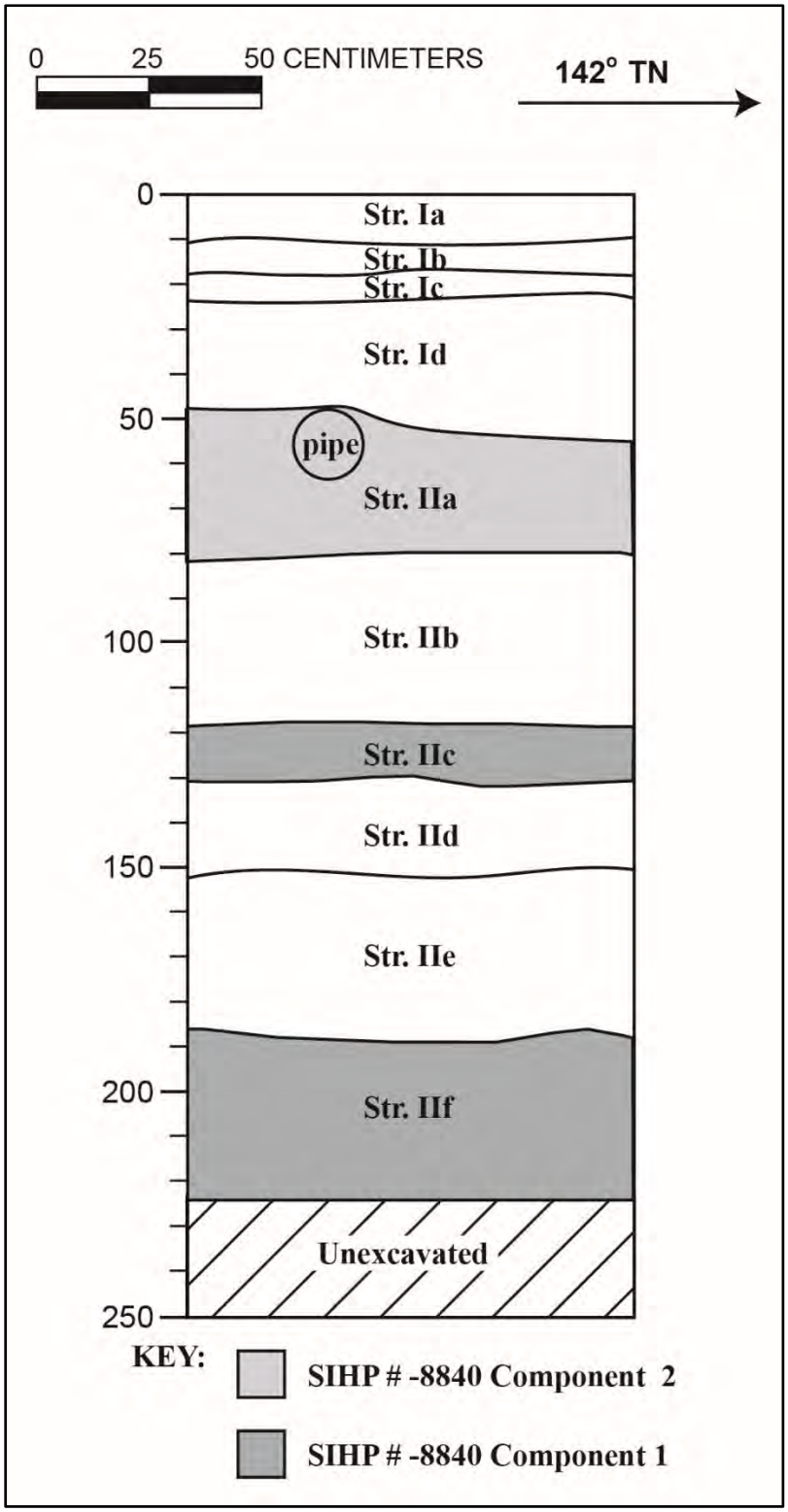

Figure 79. Profile of the central portion of T-5 northeast wall

Table 10. T-5 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	10–18	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	17–24	Fill; 2.5YR 3/2, dusky red; very gravelly sandy clay loam; terrigenous origin; moderate, medium, granular structure; moist, firm consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed contains basalt gravel
Id	23–55	Fill; 10YR 3/2, very dark grayish brown; very gravelly silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; contaminated with petroleum, mottled with 10YR 2/1, black, containing a corroded metal spike or nail and a small, non-diagnostic ceramic fragment
IIa	48–80	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with basalt gravel, an abandoned utility pipe, and glass, metal, and ceramic fragments in its upper portion
IIb	80–118	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIc	118–130	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural deposit with oxidized (red) mottling
IId	130–150	Natural; 10YR 4/3, brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIe	150–187	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium

Stratum	Depth (cmbs)	Description
IIf	187–224 (BOE)	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; agricultural deposit with oxidized (red) mottling



Figure 80. A metal spike or nail (too corroded to analyze) and a non-diagnostic ceramic fragment from T-5 Stratum Id, fill (not collected)



Figure 81. Post-Contact artifacts and utility pipe fragments identified in the upper portion of T-5 Stratum IIa/SIHP # -8840 Component 2 (not collected; no diagnostic elements could be discerned from the photograph)

4.3.8 Test Excavation 6 (T-6)

Test Excavation 6 (T-6) is an exterior excavation in the east corner of the AIS study area. It is oriented northeast-southwest and is 6 m long by 0.7 m wide, with a maximum depth of 213 cmbs. The water table was encountered at 210 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly sand (crushed coral) base course (Stratum Ib), gravelly (basalt) sandy clay loam fill (Stratum Ic; demolition fill), and two layers of silty clay loam fill (Strata Id and Ie), overlying three layers of silty clay loam (Strata IIa, IIb, and IIc/SIHP # -8840 Component 1) and clay loam (Stratum IId) (Figure 82 through Figure 84 and Table 11).

Stratum Ic is a demolition fill layer containing basalt gravel, fish (Osteichthyes) bone, brick, hollow tiles, and concrete (Figure 85); two brick fragments were collected. Both are Euro-American in origin, and one (Acc. # 158) post-dates 1916, indicating the layer was deposited after that date. A large piece of concrete within Stratum Ic near the *mauka* (northeast) end of the trench prevented full excavation in that area (see Figure 84 and Figure 86).

Strata Id and Ie are fills derived from alluvium. Stratum Ie contains red brick, a coral construction block, glass, ceramic, metal, *Sphyraenidae* sp. (barracuda) dentary, slate, and concrete, as well as a carbon graphite rod for a dry-cell battery; a grab sample was collected. Diagnostic artifacts are mainly Japanese and Euro-American in origin. The carbon graphite rod (Acc. # 77) post-dates 1912, indicating the layer was deposited after that date.

The underlying Stratum II (a–d) is naturally deposited alluvium. Stratum IIa contains sparse charcoal flecking but no other potentially cultural materials; hence, it is not designated as part of SIHP # -8840 Component 2, habitation layers. Stratum IIc contains oxidized (red) mottling and is interpreted as an agricultural deposit; it is designated as part of SIHP # -8840 Component 1. Bulk samples were collected from Strata IIa–IId from the northwest wall (see Figure 84).



Figure 82. T-6 northwest wall, *mauka* (northeast) end, excavated to ca. 150 cmbs, view to north



Figure 83. Close-up of the lower portion of the *makai* (southwest) end of T-6 northwest wall, showing Stratum II (a–d), view to west

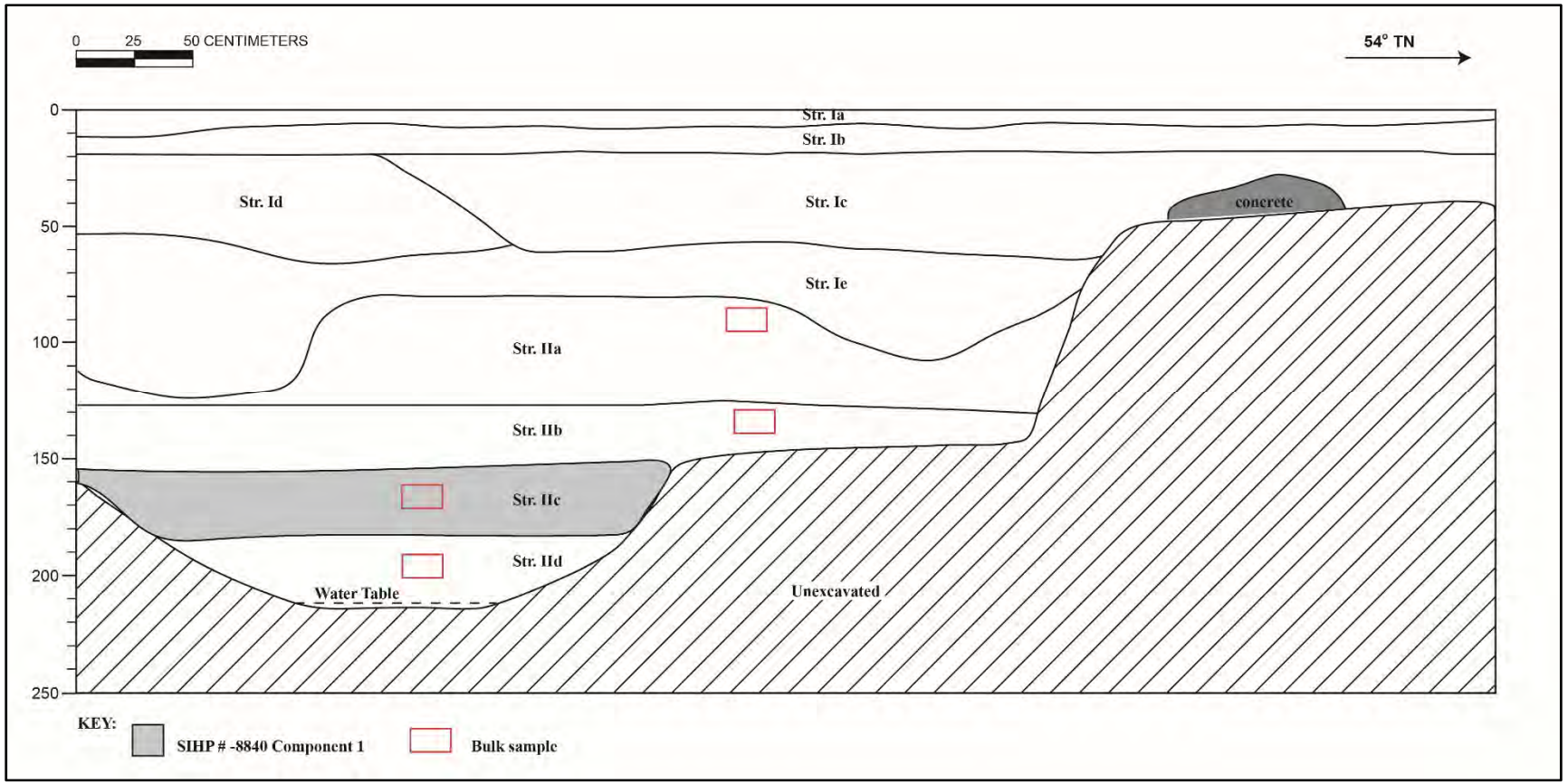

Figure 84. Profile of T-6 northwest wall

Table 11. T-6 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	7–19	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	17–60	Fill; 10YR 4/2, dark grayish brown; gravelly sandy clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; demolition fill containing basalt gravel, fish bone, brick, hollow tiles, and concrete
Id	17–65	Fill; 10YR 4/3, brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; fill derived from alluvium
Ie	51–125	Fill; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; abrupt, irregular lower boundary; no roots observed; contains yellow and red brick, glass, ceramic, metal, marine shell, *Sphyraenidae* sp. (barracuda) dentary, and concrete
IIa	79–130	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with charcoal flecking
IIb	125–155	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium
IIc	150–182	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, medium granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; agricultural deposit with oxidized (red) mottling
IId	180–213 (BOE)	Natural; 10YR 4/2, dark grayish brown; clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; very plastic; terrigenous origin; lower boundary not observed; few, fine roots; naturally deposited alluvium



Figure 85. Concrete debris from T-6 Stratum Ic, demolition fill (not collected)



Figure 86. North corner of T-6, showing large piece of concrete within Stratum Ic, demolition fill, which prevented further excavation in that area

4.3.9 Test Excavation 7 (T-7)

Test Excavation 7 (T-7) is an exterior excavation in the northeastern portion of the AIS study area. It is oriented northeast-southwest and is 6 m long by 0.7 m wide, with a maximum depth of 218 cmbs. The water table was encountered at 204 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly sand (crushed coral) base course (Stratum Ib), and very gravelly (basalt) silty clay loam fill (Stratum Ic), overlying gravelly (coral and basalt) silty clay loam (Stratum IIa), silty clay loam (Stratum IIb), gravelly (cinder) silty clay loam (Stratum IIc; SIHP # -8840 Component 1), and three additional layers of silty clay loam (Strata IId/SIHP # -8840 Component 1, IIe, and IIf) (Figure 87, Figure 88, and Table 12).

Stratum Ic is fill derived from alluvium, containing coral and basalt gravel and a utility pipe. Stratum II (a–f) is natural alluvium. Strata IIc and IId contain charcoal flecking and oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1. A column sample collected from Stratum II (a–f) was submitted to BGP Consulting (Phillips 2019) for pollen analysis (see Figure 88 and Section 5.4.1).

The Strata IIa, IIb, and IIf samples contain no pollen and therefore could not be assessed. Asteraceae and Cheno-Ams dominate the Stratum IIe sample, suggesting a shrubland environment. Grass pollen gradually increases over time (i.e., increases up the sample column), becoming dominant in Stratum IIc. A single large grass grain identified in Stratum IIc may represent rice (*laiki*; *Oryza sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*Heteropogon contortus*) grass. In addition, a high proportion of fern spores in Stratum IIc might reflect increased input from upslope and/or overbank flooding.

Taken at face value, the pollen data from T-7 suggests a change over time from shrubland to grassland; sedge family pollen, representing wetlands (including *loʻi*), is present but found in relatively low percentages. However, as the percentages of degraded grains within the samples are very high, and the total pollen concentrations are very low, Phillips (2019) cautions that the data is likely not an accurate reflection of the original pollen assemblage. Hence, the lack of evidence for past agriculture is very likely a product of taphonomy (i.e., the very poor pollen preservation).



Figure 87. T-7 southeast wall, view to south

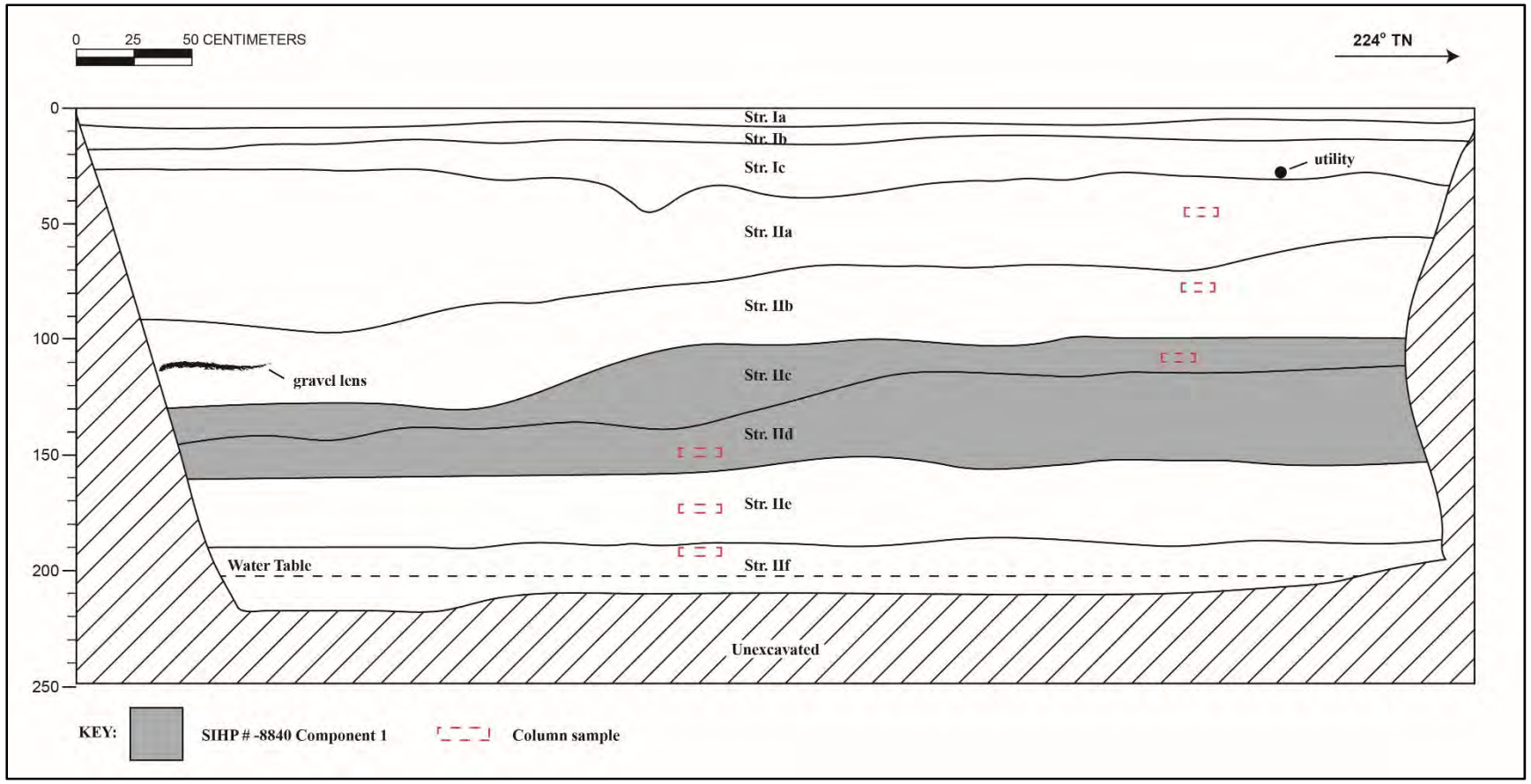

Figure 88. Profile of T-7 southeast wall

Table 12. T-7 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	5–17	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	15–45	Fill; 10YR 4/3, brown; very gravelly silty clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; few, fine to medium roots; derived from alluvium and contains coral and basalt gravel and a utility pipe
IIa	28–100	Natural; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; common, fine roots; naturally deposited alluvium with sparse charcoal flecking
IIb	56–130	Natural; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; common, fine roots; naturally deposited alluvium
IIc	99–148	SIHP # -8840 Component 1; 5YR 3/2, dark reddish brown; gravelly silty clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; agricultural layer with cinder gravel, charcoal flecking, and oxidized (red) mottling
IId	112–160	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; agricultural layer with charcoal flecking and oxidized (red) mottling
IIe	151–188	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, medium, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIf	188–218 (BOE)	Natural; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, granular structure; moist, firm consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; no roots observed; naturally deposited alluvium

4.3.10 Test Excavation 8 (T-8)

Test Excavation 8 (T-8) is an exterior excavation in the northeastern portion of the AIS study area. It is oriented northwest-southeast and is 6.1 m long by 0.72 m wide, with a maximum depth of 225 cmbs. The water table was encountered at 198 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) loamy sand base course (Stratum Ib), and extremely gravelly sand (crushed coral) base course (Stratum Ic), overlying gravelly (cinder, basalt) silty clay loam (Stratum IIa; SIHP # -8840 Component 2), four layers of silty clay loam (Strata IIb, IIc/SIHP # -8840 Component 1, IId/SIHP # -8840 Component 1, and IIe), sandy clay loam (Stratum IIf) and sandy clay (Stratum IIg; SIHP # -8840 Component 1) (Figure 89, Figure 90, and Table 13).

Stratum II (a–g) is natural alluvium (Figure 91). The upper portion of Stratum IIa is disturbed or reworked and contains charcoal, red brick fragments, and fish bone; hence, it is designated as part of SIHP # -8840 Component 2, habitation layers. Strata IIc, IId, and IIg contain charcoal flecking and oxidized (red) mottling and are interpreted as agricultural deposits; they are designated as part of SIHP # -8840 Component 1. Stratum IIg was documented below the water table via excavation of a pot hole (see Figure 90).



Figure 89. T-8 southwest wall, view to west

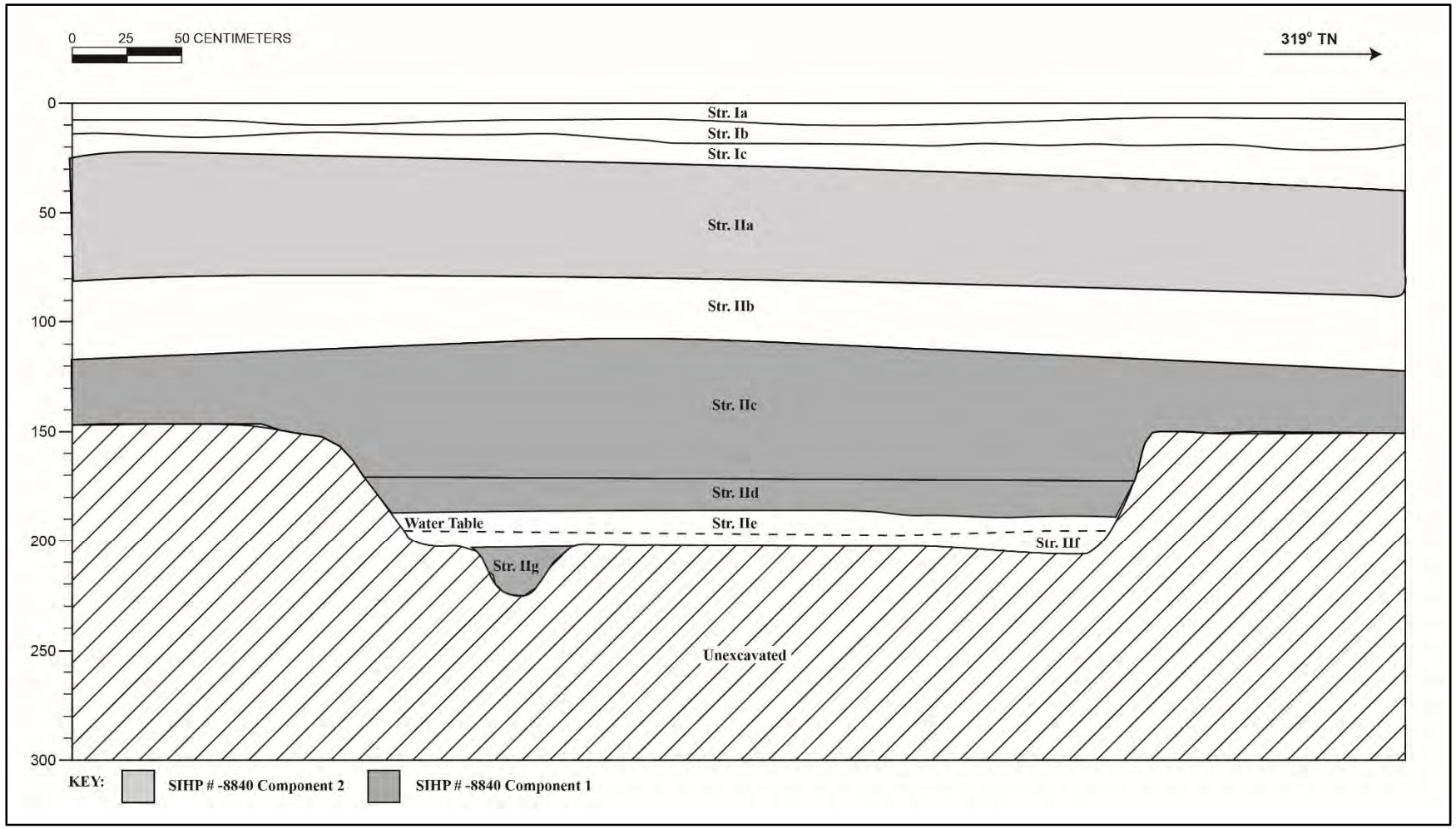

Figure 90. Profile of T-8 southwest wall

Table 13. T-8 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–6	Asphalt; parking lot surface
Ib	6–20	Base course; 10YR 5/1, gray; extremely gravelly loamy sand; moderate, fine, granular structure; moist, firm consistence; no cementation; non-plastic; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	12–40	Base course; 10YR 6/3, pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
IIa	22–85	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; habitation layer containing cinder and basalt gravel in its lower portion and red brick, charcoal, and fish bone in its upper portion
IIb	76–120	Natural; 10YR 3/3, dark brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIc	107–170	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural deposit with charcoal flecking and oxidized (red) mottling
IId	168–185	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; agricultural deposit with charcoal flecking and oxidized (red) mottling
IIe	185–193	Natural; 10YR 4/2, dark grayish brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium
IIf	193–205	Natural; 10YR 4/4, dark yellowish brown; sandy clay loam; weak, fine, granular structure; wet, slightly sticky consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium

Stratum	Depth (cmbs)	Description
IIg	205–225 (BOE)	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; sandy clay; weak, fine, granular structure; wet, slightly sticky consistence; no cementation; plastic; terrigenous origin; lower boundary not observed; few, fine roots; agricultural deposit with charcoal flecking and oxidized (red) mottling



Figure 91. Close-up of Strata IIa (SIHP # -8840 Component 2), IIb, and IIc (SIHP # -8840 Component 1), within T-8 southwest wall, view to south

4.3.11 Test Excavation 9 (T-9)

Test Excavation 9 (T-9) is an exterior excavation in the central portion of the AIS study area. It is oriented northeast-southwest and is 6 m long by 0.8 m wide, with a maximum depth of 196 cmbs. The water table was encountered at 193 cmbs.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) silt loam base course (Stratum Ib), and very gravelly loamy sand (crushed coral) base course (Stratum Ic), overlying five deposits of silty clay loam (Strata IIa/SIHP # -8840 Component 2, IIb, and IIc–IIe/SIHP # -8840 Component 1), gravelly (basalt) silty clay (Stratum IIf; SIHP # -8840 Component 1), and very gravelly (basalt) sandy loam (Stratum III) (Figure 92 through Figure 95 and Table 14).

Stratum II (a–e) is natural alluvium. Stratum IIa contains three pit features, interpreted as historical trash pits, and is designated as part of SIHP # -8840 Component 2, habitation layers. Although the upper boundary of Feature 14 is truncated, and the upper boundaries of Features 12 and 13 may also be truncated, based on their matrices, they appear to originate in Stratum IIa. Features 12–14 and are described below.

Feature 12 is a historical trash pit identified in both sidewalls of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIb–III, and continuing beyond the base of excavation (see Figure 92 through Figure 96). It was documented between 45 and 196 cmbs and ranges between 65 and 100 cm across (*mauka-makai*). The exposed portion of the feature is 80 cm wide, spanning the width of the trench. Feature 12 contains abundant bottle glass and ceramics, as well as marine shell midden (*Periglypta reticulata*), bird (Aves) and saw-cut mammal (inconsistent with human) bone, charcoal, and fire-affected basalt cobbles. The faunal bone and a grab sample of glass, ceramics, and shell midden were collected. Diagnostic artifacts are mainly of European and Euro-American origin and date from the late nineteenth to possibly early twentieth century. One item, a Dutch glass gin bottle (Acc. # 55), dates between 1890 and 1910, indicating use of the feature post-1890. Similarly, the completeness, lack of damage, and consistent size of the collected shells indicate the midden is likely historical (i.e., post-Contact).

Feature 13 is a historical trash pit identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northwest sidewall of T-9 (see Figure 93, Figure 95, and Figure 97). It was documented between 45 and 67 cmbs and measures 1.7 m across. It truncates and therefore post-dates the underlying Feature 14 (see description below). Feature 13 contains metal, glass, ceramic, bird (Aves) and cow (*Bos taurus*) bone, and charcoal. The faunal bone was collected.

Feature 14 is a historical trash pit identified in the northwest sidewall of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIb–IId, and terminating in Stratum IIe (see Figure 93, Figure 95, and Figure 97). It was documented between 44 and 137 cmbs and measures 1.8 m across. It is truncated by the overlying Feature 13 (see description above), which it therefore pre-dates. Feature 14 contains metal, ceramic, glass, goat (*Capra hircus*) bone, charcoal, and fire-affected basalt cobbles. The faunal bone and a grab sample of metal, glass, and ceramics were collected. Diagnostic artifacts are Euro-American in origin, dating from the late nineteenth to possibly the early twentieth century. One glass bottle fragment (Acc. # 159) dates between 1880 and 1920, indicating use of the feature post-1880.



Figure 92. T-9 southeast wall, view to east



Figure 93. T-9 northwest wall, view to west

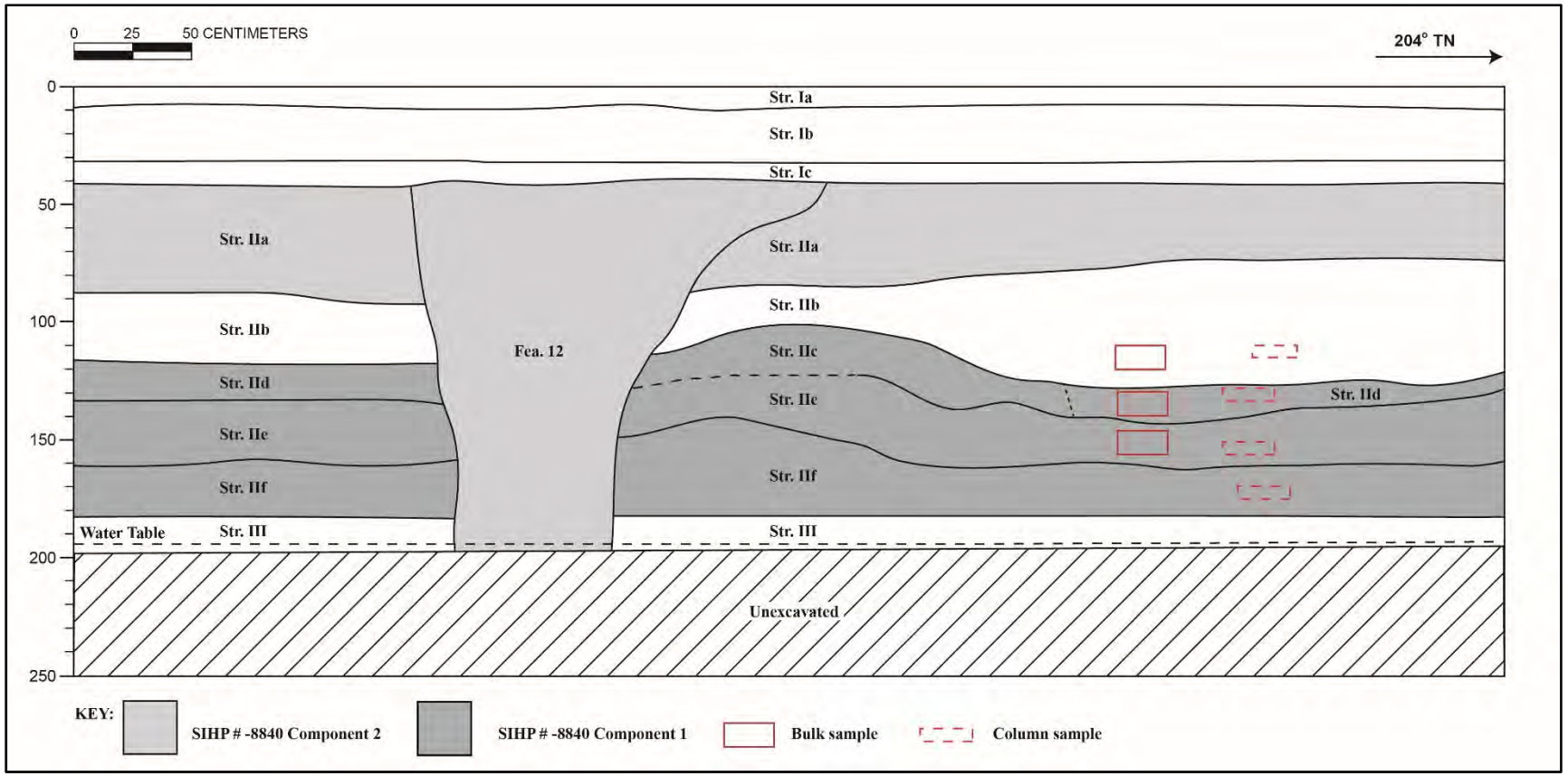

Figure 94. Profile of T-9 southeast wall; note the Stratum IIf bulk sample is not indicated, as it was collected from the trench floor

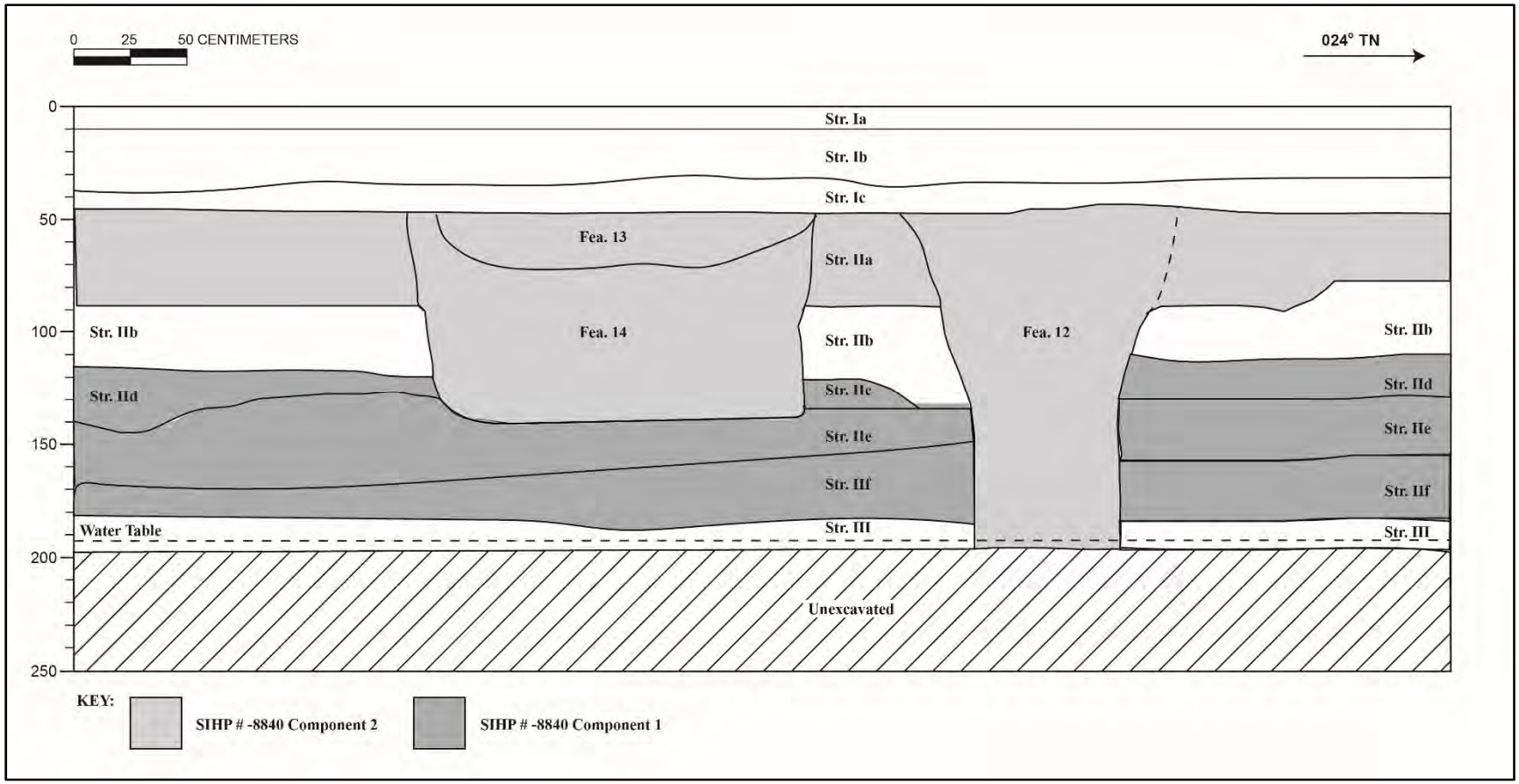

Figure 95. Profile of T-9 northwest wall

Table 14. T-9 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	10–30	Base course; 10YR 2/1, black; extremely gravelly silt loam; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	30–40	Base course; 10YR 7/3, very pale brown; very gravelly loamy sand; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
IIa	45–90	SIHP # -8840 Component 2; 10YR 3/2, very dark grayish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; habitation layer with pit features (Features 12–14)
	45–196 (BOE)	SIHP # -8840 Component 2, Feature 12; 10YR 3/2, very dark grayish brown; silty clay loam; historical trash pit containing bottle glass, ceramic, shell midden, bird and saw-cut mammal bone, charcoal, and FAR
	45–67	SIHP # -8840 Component 2, Feature 13; 2.5Y 3/3, dark olive brown; silty clay loam; historical trash pit containing metal, ceramic, bird and cow bone, and charcoal
	44–137	SIHP # -8840 Component 2, Feature 14; 10YR 3/3, dark brown; silty clay loam; historical trash pit containing metal, ceramic, goat bone, charcoal, and FAR
IIb	72–122	Natural; 10YR 3/3, dark brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
IIc	100–138	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; possible agricultural berm
IId	115–145	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with abundant oxidized (red) mottling

Stratum	Depth (cmbs)	Description
IIe	115–160	SIHP # -8840 Component 1; 10YR 4/3, brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; very plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with abundant oxidized (red) mottling
IIf	125–185	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; gravelly silty clay; strong, fine, blocky structure; moist, extremely firm consistence; no cementation; very plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with abundant oxidized (red) mottling and basalt gravel
III	181–196 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy loam; weak, fine, granular structure; west, slightly sticky consistence; no cementation; non-plastic; terrigenous origin; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 96. SIHP # -8840 Component 2, Feature 12, historical trash pit, in T-9 southeast wall, view to south



Figure 97 SIHP # -8840 Component 2, Features 13 (above) and 14 (below), historical trash pits, in T-9 northwest wall, view to northwest

Strata IIc–IIf are interpreted as agricultural deposits and are designated as part of SIHP # -8840 Component 1. Strata IId–IIf contain abundant oxidized (red) mottling. Stratum IIc does not contain mottling but, based on morphology, is interpreted as a possible berm. Stratum IIc measures approximately 2 m across and 25 cm tall in the southeast sidewall. In the northwest sidewall, it measures only 50 cm across, as it appears to be truncated by SIHP # -8840 Component 2, Feature 14. (Note: it is very difficult to distinguish the T-9 berm in photographs; see Figure 102 for a photograph of a berm in nearby T-9B). The underlying Stratum III contains waterworn basalt gravel and cobbles and is interpreted as a streambed (Figure 98).

Column and bulk samples were collected from Strata IIb and IId–IIf from the southeast wall (see Figure 94; note the Stratum IIf bulk sample was collected from the trench floor and is therefore not depicted on the profile drawing). The column sample was submitted to BGP Consulting (Phillips 2019) for pollen analysis (see Section 5.4.1 for full results). The Stratum IIe sample contained no pollen and therefore could not be assessed.

The T-9 assemblage is more diverse than the T-7 assemblage, with a greater number of types identified in all productive samples. No distinct temporal trends are apparent; rather, the assemblage is characterized by less common types, particularly the spurge and madder families. Normally, this data would be interpreted as reflecting local stands of shrubs and herbs. However, as the percentages of degraded grains within the samples are very high, and the total pollen concentrations are very low, Phillips (2019) cautions that the data is likely not an accurate reflection of the original pollen assemblage. The fact that sedge pollen, indicative of a wetland environment such as a *lo‘i*, is unexpectedly scarce is likely also a product of the very poor pollen preservation within the samples.

Wet screening of the bulk samples yielded reddish nodules within Strata IId and IIe, as well as reddish-orange concretions and nodules and several tubular root casts within Stratum IIf; based on previous archaeological studies (see Section 5.1.1), these are interpreted as evidence of agricultural use.

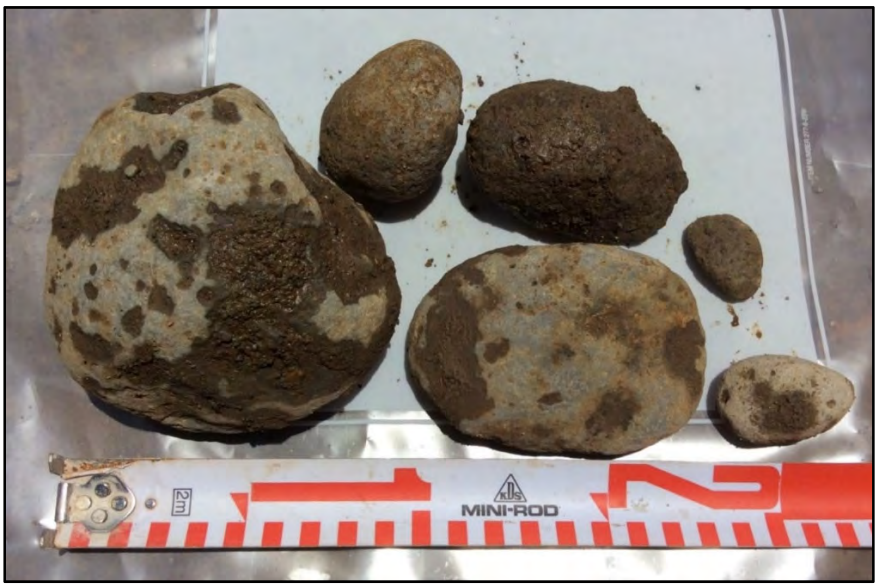

Figure 98. Waterworn basalt cobbles from Stratum III, streambed

4.3.12 Test Excavation 9B (T-9B)

Test Excavation 9B (T-9B) is an exterior excavation, just east of T-9, excavated to investigate a potential agricultural berm feature identified in T-9 (see Section 4.3.11 above). It is oriented northeast-southwest and is 6.1 m long by 0.73 m wide, with a maximum depth of 212 cmbs. The water table was not encountered.

The observed stratigraphy includes the asphalt parking lot surface (Stratum Ia), associated extremely gravelly (basalt) silt loam base course (Stratum Ib), and very gravelly loamy sand (crushed coral) base course (Stratum Ic), overlying gravelly (basalt) loam (Stratum IIa; SIHP # -8840 Component 2), loam (Stratum IIb), three layers of silty clay loam (Strata IIc–IIe; SIHP # -8840 Component 1), and very gravelly (basalt) sandy loam (Stratum III) (Figure 99, Figure 100, and Table 15). A large pocket of modern disturbance truncates Stratum II (a–e) at the *makai* (southwest) end of the excavation (see Figure 100).

Stratum II (a–e) is natural alluvium. Because Stratum IIa contains a pit feature, it is designated as part of SIHP # -8840 Component 2, habitation layers. The pit feature, designated as Feature 15, is described below.

Feature 15 is an oblong pit feature identified in the southeast wall of T-9B. It originates in Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum IIe (see Figure 100 and Figure 101). It was documented between 65 and 150 cmbs and measures 35–45 cm across. No cultural materials were identified within the feature; its function is indeterminate.

Strata IIc through IIe are interpreted as agricultural deposits and are designated as part of SIHP # -8840 Component 1. Strata IId and IIe contain abundant oxidized (red) mottling. Stratum IIc, which does not contain mottling, represents possible agricultural berms identified at both ends of the excavation. The berm at the *mauka* (northeast) end measures approximately 1.7 m across by 35 cm tall (Figure 102). The berm at the *makai* (southwest) end measures approximately 1.5 m across by 30 cm tall, although it is bisected by SIHP # -8840 Component 2, Feature 15. As these berms do not align with the potential berm identified in T-9, this area may represent the convergence of multiple agricultural plots.

Bulk samples were collected from Strata IIc–IIe, and a column sample was collected from Strata IIc and IIe from the southeast wall (see Figure 100). The underlying Stratum III contains abundant waterworn basalt gravel and cobbles and is interpreted as a streambed.



Figure 99. T-9B southeast wall, view to east

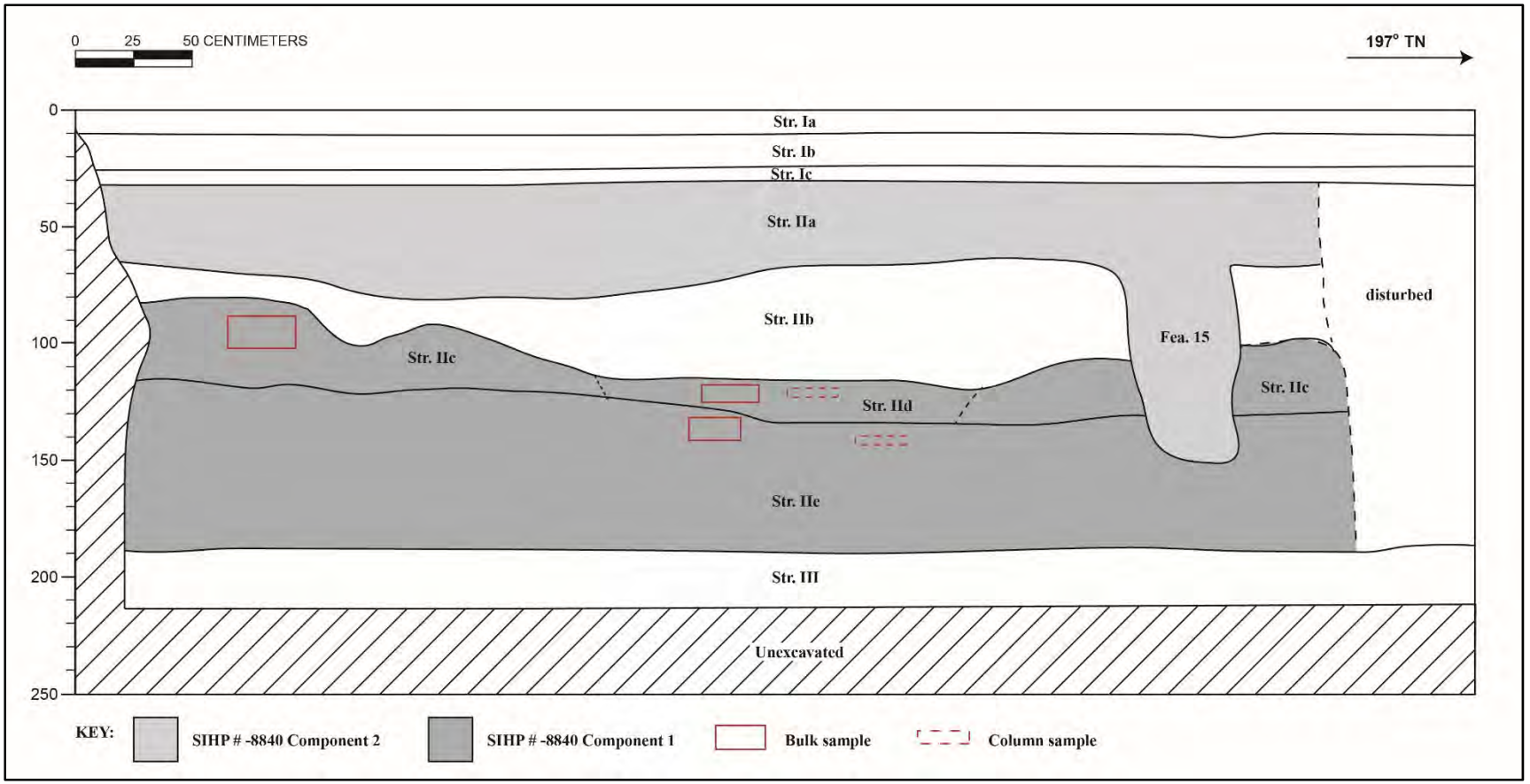

Figure 100. Profile of T-9B southeast wall

Table 15. T-9B stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; parking lot surface
Ib	9–24	Base course; 10YR 2/1, black; extremely gravelly silt loam; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; basalt gravel base course
Ic	23–31	Base course; 10YR 7/3, very pale brown; very gravelly loamy sand; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
IIa	30–149	SIHP # -8840 Component 2; 10YR 3/3, dark brown; gravelly loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing basalt gravel and a pit feature (Feature 15)
	65–150	SIHP # -8840 Component 2, Feature 15; 10YR 3/3, dark brown; cobbly loam; pit feature of indeterminate function containing several waterworn basalt cobbles
IIb	60–118	Natural; 10YR 3/4, dark yellowish brown; loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
IIc	79–123	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; possible agricultural berm
IId	106–134	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, blocky structure; moist, firm consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit with oxidized (red) mottling
IIe	115–188	SIHP # -8840 Component 1; 10YR 3/4, dark yellowish brown; silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; agricultural layer with oxidized (red) mottling
III	188–212 (BOE)	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy loam; weak, fine, granular structure; west, slightly sticky consistence; no cementation; non-plastic; terrigenous origin; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 101. SIHP # -8840 Component 2, Feature 15, pit feature of indeterminate function, in T-9B southeast wall, view to south



Figure 102. Close-up of the *mauka* (northeast) end of T-9B southeast wall, view to east; red arrow indicates possible agricultural berm

4.3.13 Test Excavation 10 (T-10)

Test Excavation 10 (T-10) is an interior excavation inside the central portion of the John R. Gilliland Sr. Building. It is oriented northwest-southeast and is 3.05 m long by 0.89 m wide, with a maximum depth of 180 cmbs. The water table was not encountered.

The observed stratigraphy includes the concrete floor (Stratum Ia), gravelly (basalt) sandy clay loam fill (Stratum Ib), an etched concrete surface (Stratum Ic; SIHP # -8840 Component 3, Feature 4), very gravelly sand (crushed coral) fill (Stratum Id), gravelly (basalt) clay loam construction fill (Stratum Ie), and a mortared brick structural remnant with a concrete foundation (SIHP # -8840 Component 3, Feature 5), overlying three layers of gravelly (basalt or cinder) silty clay loam (Strata IIa/SIHP # -8840 Component 2, IIb, and IIc/SIHP # -8840 Component 1) and cobbly (basalt) silty clay loam (Stratum III) (Figure 103 through Figure 105 and Table 16). Small mammal and saw-cut cow (*Bos taurus*) bone was collected from the spoils pile; the exact provenience is unknown.

Stratum Ib contains concrete debris. The underlying etched concrete surface (Stratum Ic) is designated as SIHP # -8840 Component 3, Feature 4 (see Figure 103 through Figure 106). It is 10–15 cm thick, documented between 28 and 43 cmbs, and extended across the entire excavation prior to be being removed. It overlies crushed coral fill (Stratum Id) and construction fill (Stratum Ie), which contain utility pipes that prevented full excavation in the southeast portion of the trench (see Figure 105). A review of historical maps suggests SIHP # -8840 Component 3, Feature 4, is associated with a former unspecified store fronting River Street, indicated on the 1950 Sanborn map as having a “CONC FL” (concrete floor) (see Figure 27 and Figure 166).

A second infrastructure remnant, designated as SIHP # -8840 Component 3, Feature 5, was identified below the Stratum Id crushed coral fill in the southern corner of the excavation, between 60 and 110 cmbs. It is composed of mortared brick atop a concrete foundation (see Figure 104, Figure 105, and Figure 107). Each brick is 13 cm long by 10 cm wide and 6 cm tall; no maker’s mark was observed. The concrete base is approximately 10 cm thick. A maximum of seven courses was observed within the exposed portion of the feature (adjacent to the southwest sidewall, not depicted in the stratigraphic profile), which comprises two walls at right angles, representing the northern corner of a former building/structure. The exposed portion of the feature is 50 cm long (northeast-southwest) by 45 cm wide (northwest-southeast) and 50 cm tall. It was not possible to extend the excavation in order to expose the feature further, due to the presence of an active subsurface electrical line.

SIHP # -8840 Component 3, Feature 5, appeared to be founded on Stratum IIb, natural alluvium, as no builder’s pit was identified within the surrounding Stratum IIa (SIHP # -8840 Component 2, habitation layer), suggesting Feature 5 pre-dates Stratum IIa. However, according to Lebo (1997:106–107), the first brick structure was built in Honolulu in 1847. As radiocarbon dating (see Section 5.4.3) indicates use of Stratum IIa by 1810, Feature 5 therefore post-dates at least the older portions of Stratum IIa (the Stratum IIa sediment likely accumulated over a relatively long period of time, with multiple episodes of deposition). A review of historical maps dating from 1906 to 1950 (see Figure 163 through Figure 166) depict no brick structure or building in this location, suggesting Feature 5 pre-dates 1906. In addition, glass, metal, and ceramic fragments collected from the spoils pile likely originate from the Stratum Ie fill, which overlies and therefore



Figure 103. T-10 northeast wall, view to east



Figure 104. T-10 southeast wall, view to southeast

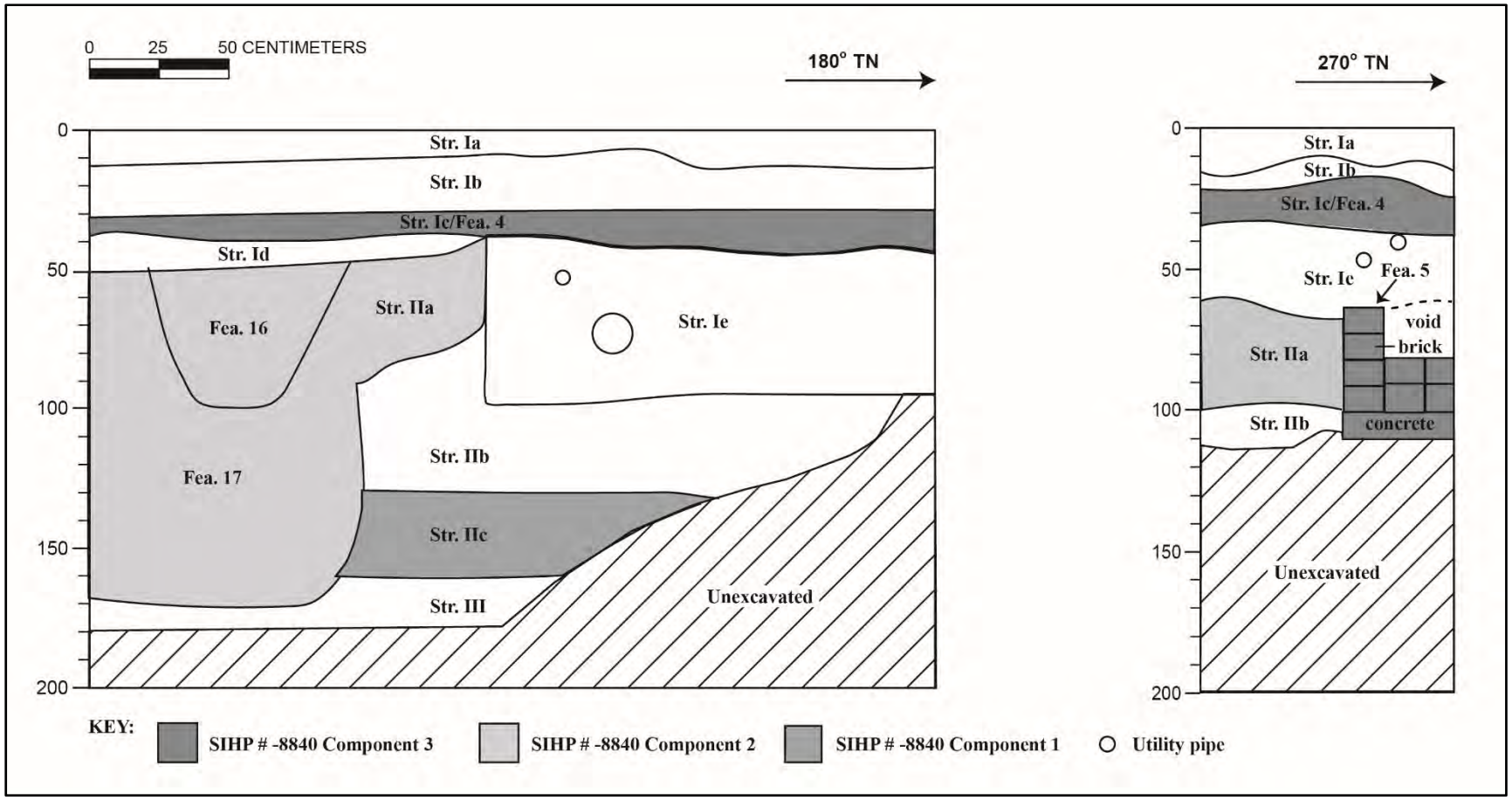

Figure 105. Profile of T-10 northeast (left) and southeast (right) walls

Table 16. T-10 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–14	Concrete; John R. Gilliland Sr. Building floor
Ib	11–29	Fill; 10YR 4/4, dark yellowish brown; gravelly sandy clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; abrupt, smooth lower boundary; no roots observed; contains basalt gravel and concrete debris
Ic	28–43	SIHP # -8840 Component 3, Feature 4; etched concrete surface, likely associated with a former unspecified store on River Street
Id	37–49	Fill; 10YR 7/4, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; marine origin; abrupt, discontinuous lower boundary; no roots observed; crushed coral fill containing two utility pipes
Ie	37–100	Construction fill; 10YR 3/2, very dark grayish brown; gravelly clay loam; moderate, medium, blocky structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; utility pit composed of fill derived from alluvium and containing two utility pipes
IIa	45–170	SIHP # -8840 Component 2; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; habitation layer containing basalt gravel and pit features
	46–99	SIHP # -8840 Component 2, Feature 16; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; pit feature of indeterminate function
	90–170	SIHP # -8840 Component 2, Feature 17; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; pit feature of indeterminate function containing sparse bottle glass and FAR
SIHP # -8840 Comp. 3, Feature 5	60–110	SIHP # -8840 Component 3, Feature 5; mortared brick structural remnant with concrete foundation
IIb	74–127	Natural; 10YR 2/2, very dark brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium with root voids

Stratum	Depth (cmbs)	Description
IIc	143–160	SIHP # -8840 Component 1; 10YR 3/2, very dark grayish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; agricultural deposit containing cinder gravel and oxidized (red) mottling
III	160–180 (BOE)	Natural; 10YR 3/1, very dark gray; cobbly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; streambed containing waterworn basalt gravel and cobbles



Figure 106. Plan view of SIHP # -8840 Component 3, Feature 4, etched concrete surface



Figure 107. SIHP # -8840 Component 3, Feature 5, mortared brick structural remnant with concrete foundation, in T-10 southern corner, view to south

post-dates Feature 5. These include items of U.S., Euro-American, and Asian (primarily Chinese) origin, dating from the mid-nineteenth to early twentieth century. One glass medicine bottle (Acc. # 110) dates to 1924-1940, indicating Stratum Ie was deposited after 1924. This is consistent with a late nineteenth or early twentieth century date for construction of Feature 5.

Stratum II (a–d) is natural alluvium. Because Stratum IIa contains two pit features, it is designated as part of SIHP # -8840 Component 2, habitation layers. Although the upper boundary of Feature 16 may be truncated, based on its matrix, it appears to originate in Stratum IIa. Its position at the upper boundary of the layer indicates it is more recent than (i.e., post-dates) the underlying Feature 17. Features 16 and 17 are described below.

Feature 16 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northeast wall of T-10 (see Figure 105 and Figure 108). It was documented between 46 and 99 cmbs and measures approximately 65 cm across. It overlies and

therefore post-dates Feature 17 (described below). No cultural materials were observed within the feature; its function is indeterminate.

Feature 17 is a large pit feature identified in the northeast wall of T-10, below Feature 16 (described above), which it therefore pre-dates (see Figure 105 and Figure 108). It extends from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum III. It was documented between 60 and 110 cmbs and measures 95 cm across. Several pieces of bottle glass and FAR were identified at the base of the feature. The bottle glass was collected; two diagnostic fragments (Acc. #s 74 and 76) date to 1800-1910, indicating use of the feature post-1800. The function of this feature is indeterminate.

Stratum IIc contains oxidized (red) mottling and is interpreted as an agricultural layer; it is designated as part of SIHP # -8840 Component 1. The underlying Stratum III contains waterworn basalt gravel and cobbles and is interpreted as a streambed.



Figure 108. Northwest end of T-10 northeast wall, showing remnant of SIHP # -8840 Component 3, Feature 4, etched concrete surface, above SIHP # -8840 Component 2, Features 16 and 17, pit features, view to north

4.3.14 Test Excavation 11 (T-11)

Test Excavation 11 (T-11) is an interior excavation, northeast of T-10 (discussed in Section 4.3.13 above). It is oriented northeast-southwest and is 2.96 m long by 0.71 m wide, with a maximum depth of 195 cmbs. The water table was not encountered.

The observed stratigraphy includes the concrete floor of the John R. Gilliland Sr. Building (Stratum Ia) and associated extremely gravelly (basalt) sand base course (Stratum Ib), an etched concrete surface (Stratum Ic; SIHP # -8840 Component 3, Feature 4), very gravelly (basalt) sandy loam construction fill (Stratum Id), very gravelly sand (crushed coral) fill (Stratum Ie), gravelly silty clay loam burnt trash fill (Stratum If; SIHP # -8840 Component 3, Feature 6), gravelly sandy loam fill (Stratum Ig), and very gravelly clay loam fill (Stratum Ih), overlying two layers of silty clay loam (Strata IIa/SIHP # -8840 Component 2 and IIb) and a layer of cobbly (basalt) silty clay loam (Stratum III) (Figure 109, Figure 110, and Table 17).

Beneath the current concrete floor and associated basalt gravel base course (Strata Ia and Ib) is an etched concrete surface (Stratum Ic), documented between 18 and 41 cmbs (see Figure 109 through Figure 111). Designated as SIHP # -8840 Component 3, Feature 4, it is 15–20 cm thick and extended across the entire excavation prior to being removed. The same concrete surface was documented in nearby T-10. As in T-10, it overlies construction fill (Stratum Id) and crushed coral fill (Stratum Ie). A review of historical maps suggests Feature 4 is associated with a former unspecified store fronting River Street, indicated on the 1950 Sanborn map as having a “CONC FL” (concrete floor) (see Figure 27 and Figure 166).

Below Stratum Ie is a thin burnt trash layer (Stratum If), approximately 5–10 cm thick, documented between 45 and 56 cmbs (see Figure 109, Figure 110, and Figure 112). Designated as SIHP # -8840 Component 3, Feature 6, it contains bottle glass, charcoal, and ceramics; a grab sample of glass and ceramics was collected. A saw-cut small mammal bone recovered from the backdirt pile may also be associated with the layer; however, its provenience is uncertain. Feature 6 underlies and therefore pre-dates the Feature 4 etched concrete surface (discussed above), which was likely in place by 1950. As the underlying Stratum IIa/SIHP # -8840 Component 2 habitation layer likely functioned as a surface until at least 1935 (see Section 5.2.4 discussion), Feature 6 was likely deposited sometime between 1935 and 1950. This timeline is supported by the associated artifacts. Although none of the collected artifacts were sufficiently diagnostic to be dated to a particular year or even decade, the date ranges for the items fall between the 1840s and 1930s (see Section 5.2 Artifact Analysis).

The underlying Strata Ig and Ih contain sparse red brick fragments. No maker’s mark was observed, and the fragments were not collected.

Stratum II (a and b) is naturally deposited alluvium. Stratum IIa contains charcoal flecking and pit features and is therefore designated as part of SIHP # -8840 Component 2. The two pit features, designated as Features 18 and 19, are described below.

Feature 18 is a basin-shaped pit feature identified in the western corner of T-11 (see Figure 109, Figure 110, and Figure 112). It was documented between 61 and 105 cmbs within the northwest sidewall and southwest endwall, originating in Stratum IIa/SIHP # -8840 Component 2, intruding through Stratum IIb, and terminating in Stratum III. The feature is 70 cm long

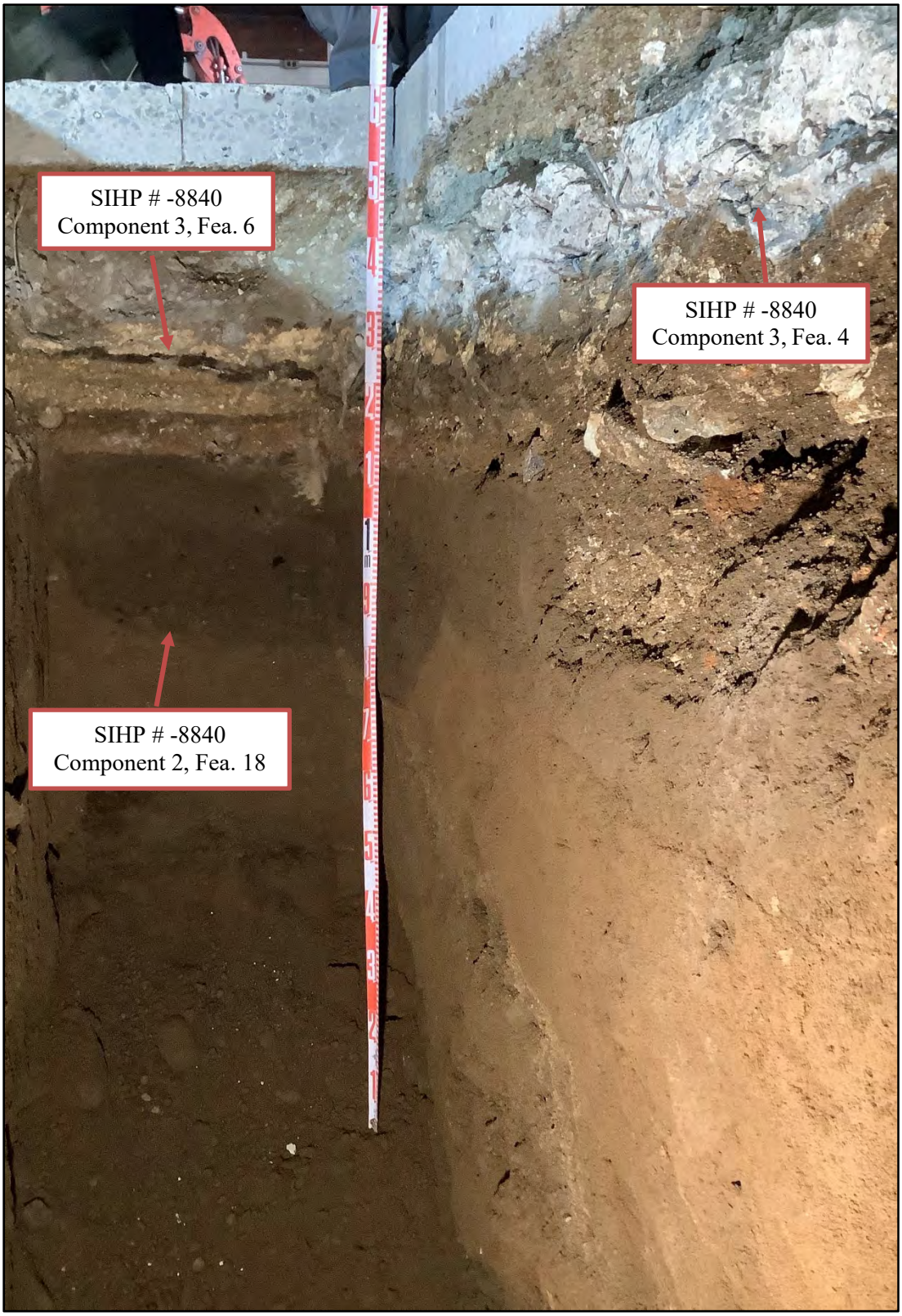

Figure 109. T-11 southwest (left) and northwest (right) walls, view to south

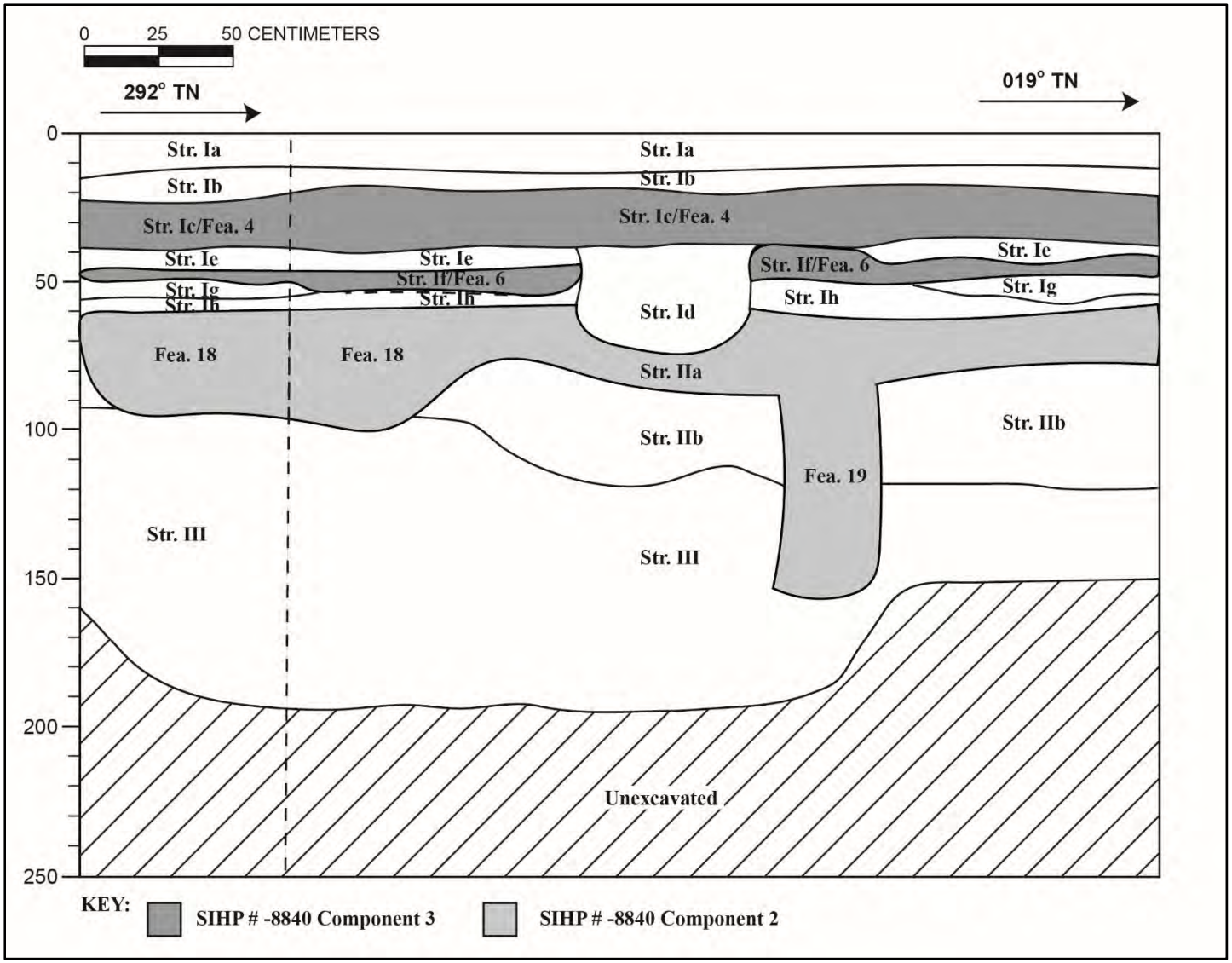

Figure 110. Profile of T-11 southwest (left) and northwest (right) walls

Table 17. T-11 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–13	Concrete; John R. Gilliland Sr. Building floor
Ib	13–19	Base course; 10YR 6/2, light brownish gray; extremely gravelly sand; structureless (single-grain); moist, loose consistence; no cementation; non-plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; basalt gravel base course
Ic	18–41	SIHP # -8840 Component 3, Feature 4; etched concrete surface, likely associated with a former unspecified store on River Street
Id	38–74	Fill; 10YR 2/2, very dark brown; very gravelly sandy loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; contains basalt gravel
Ie	35–46	Fill; 10YR 7/4, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; marine origin; abrupt, discontinuous lower boundary; no roots observed; crushed coral fill
If	45–56	SIHP # -8840 Component 3, Feature 6; 10YR 2/2, very dark brown; gravelly silty clay loam; moderate, fine, granular structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; burnt trash fill containing charcoal, bottle glass, and ceramics
Ig	47–58	Fill; 10YR 6/2, light brownish gray; gravelly sandy loam; weak, fine, granular structure; moist, friable consistence; no cementation; non-plastic; mixed origin; abrupt, discontinuous lower boundary; no roots observed; contains basalt gravel, a utility pipe, and red brick fragments
Ih	50-62	Fill; 5YR 4/4, reddish brown; very gravelly clay loam; moderate, medium, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; abrupt, discontinuous lower boundary; no roots observed; contains basalt gravel and red brick fragments
IIa	54–156	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay loam; weak, fine, blocky structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, irregular lower boundary; no roots observed; habitation layer containing charcoal flecking and pit features (Features 18 and 19)
	61–105	SIHP # -8840 Component 2, Feature 18; 10YR 2/2, very dark brown; sandy clay loam; pit feature of indeterminate function, containing charcoal flecking
	85–156	SIHP # -8840 Component 2, Feature 19; 10YR 2/2, very dark brown; sandy clay loam; pit feature interpreted as a post hole

Stratum	Depth (cmbs)	Description
IIb	74–118	Natural; 10YR 3/4, dark yellowish brown; silty clay loam; weak, fine, blocky structure; moist, friable consistence; no cementation; slightly plastic; terrigenous origin; clear, discontinuous lower boundary; no roots observed; naturally deposited alluvium
III	95–195 (BOE)	Natural; 10YR 4/4, dark yellowish brown; cobbly silty clay loam; very moist, friable consistence; no cementation; non-plastic; weak, medium, granular structure; lower boundary not observed; no roots observed; streambed containing waterworn basalt gravel and cobbles



Figure 111. SIHP # -8840 Component 3, Feature 4, etched concrete surface



Figure 112. Close-up of the western corner of T-11, upper portion, showing SIHP # -8840 Component 3, Feature 4 (etched concrete surface [after removal]) and Feature 6 (burnt trash layer), and Component 2, Feature 18 (pit feature of indeterminate function), view to southwest

(northwest-southeast) by 60 cm wide (northeast-southwest) and contains sparse charcoal; its function is indeterminate.

Feature 19 is a long, rectangular pit feature identified in the northwest wall of T-11 (see Figure 109, Figure 110, and Figure 113). It was documented between 85 and 156 cmbs, extending from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Stratum IIb, and terminating in Stratum III. Based on morphology, this feature is interpreted as a posthole. The darker, organic-stained portion at the center of the feature represents the location of the former post, while the surrounding pit matrix is lighter in color (see Figure 113). A small amount of charcoal was observed near the base of the feature.

The underlying Stratum III contains waterworn basalt gravel and cobbles (see Figure 114) and is interpreted as a streambed.



Figure 113. SIHP # -8840 Component 2, Feature 19, posthole, in T-11 northwest wall, view to north



Figure 114. Waterworn basalt gravel and cobbles from T-11 Stratum III, streambed

Test Excavation 12 (T-12)

Test Excavation 12 (T-12) is an exterior excavation in the northern corner of the AIS study area. It is oriented northwest-southeast and is 6.15 m long by 0.74 m wide, with a maximum depth of 252 cmbs. The water table was encountered at 247 cmbs.

The observed stratigraphy consists of the asphalt parking lot surface (Stratum Ia) and associated extremely gravelly sand (crushed coral) base course, gravelly (basalt) sandy clay fill (Stratum Ic), and cobbly (basalt) silty clay loam fill (Stratum Id), overlying silty clay (Stratum IIa; SIHP # -8840 Component 2), gravelly (basalt) silty clay loam (Stratum IIb), and silty clay loam (Stratum IIc; SIHP # -8840 Component 2), atop very gravelly (basalt) sandy clay (Stratum IIIa) and cobbly (basalt) sandy clay (Stratum IIIb) (Figure 115, Figure 116, and Table 18).

Stratum Id is a demolition fill layer containing cut basalt blocks, concrete, asphalt, bottle glass, ceramics, and brick; two glass bottles and a ceramic spoon fragment were collected. The bottles (Acc. #s 125 and 126) date to post-1921 and 1923-1956, respectively, indicating deposition of the layer post-1923. A pyramidal dressed basalt pillar with a square base was removed from Stratum Id within the southwest sidewall, near the southeast end of the trench. The pillar was photographed (Figure 117) but not collected, and the resulting void in the sidewall was documented in the profile drawing (see Figure 116). In addition, a large piece of concrete was removed from the southwest sidewall at the opposite end of the trench, from the Stratum Id/IIa interface; the resulting void was documented in the profile drawing (see Figure 116). Another large piece of concrete, approximately 5 cm thick, could not be removed from the southeast end of the trench without destabilizing the sidewalls; hence, this portion of the excavation was benched (see Figure 116).

Stratum II (a–c) is natural alluvium, although the upper portion of Stratum IIa has been disturbed or reworked and contains charcoal flecking and faunal material; hence, Stratum IIa is designated as part of SIHP # -8840 Component 2, habitation layers. The faunal material, identified as fish (Osteichthyes) bone, saw-cut cow (*Bos taurus*) bone, and possible baleen whale (*Mysteceti*), was collected.

Stratum IIc exhibited quite a bit of variation within this trench. In some places, the clay content was higher, and the sediment appeared mottled with oxidized (red) mottling; in other places, the silt content was higher, and the sediment appeared less mottled. Based on the presence of oxidized (red) mottling, Stratum IIc is interpreted as an agricultural deposit and is designated as part of SIHP # -8840 Component 1. Bulk samples were collected from Stratum IIc within the trench floor and from the spoils pile (an intact block, removed from a localized deposit indicated on the profile drawing with a dashed line). Wet screening of the sample from the trench floor yielded reddish nodules. Wet screening of the sample from the localized deposit revealed a pronounced tubule structure still intact, with reddish coloration on the interior of the broken open tubules. Based on previous archaeological studies (see Section 5.1.1), these are interpreted as evidence of agricultural use.

The underlying Stratum III (a and b) contains waterworn basalt gravel and cobbles and is interpreted as a streambed. A bulk sample of Stratum IIIa was collected from the excavator bucket.



Figure 115. T-12 southwest wall, view to west

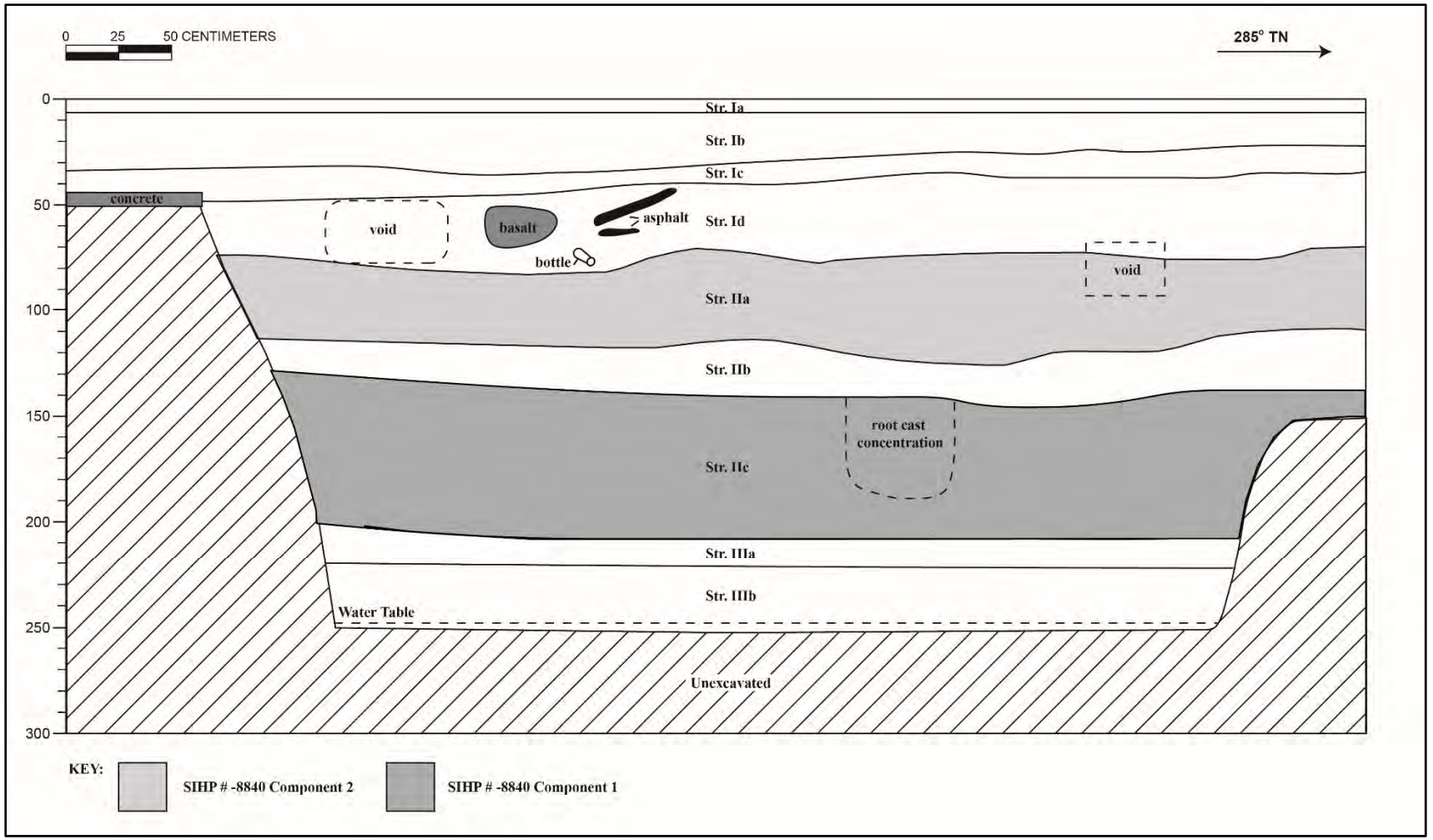

Figure 116. Profile of T-12 southwest wall

Table 18. T-12 stratigraphic description

Stratum	Depth (cmbs)	Description
Ia	0–7	Asphalt; parking lot surface
Ib	5–35	Base course; 10YR 7/3, very pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; marine origin; abrupt, smooth lower boundary; no roots observed; crushed coral base course
Ic	21–46	Fill; 5YR 3/3, dark reddish brown; gravelly sandy clay; moderate, medium, blocky structure; moist, firm consistence; no cementation; plastic; mixed origin; clear, smooth lower boundary; no roots observed; contains basalt gravel
Id	34–82	10YR 3/3, dark brown; cobbly silty clay loam; weak, medium, granular structure; moist, friable consistence; no cementation; slightly plastic; clear, smooth lower boundary; no roots observed; demolition fill containing basalt cobbles, concrete, asphalt, bottle glass, ceramic, and brick
IIa	70–125	SIHP # -8840 Component 2; 10YR 2/2, very dark brown; silty clay; weak, medium, blocky structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; naturally deposited alluvium with charcoal flecking, fish and saw-cut cow bone, and possible baleen whale
IIb	108–140	Natural; 10YR 3/4, dark yellowish brown; gravelly silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, fine roots; naturally deposited alluvium with basalt gravel
IIc	127–207	SIHP # -8840 Component 1; 10YR 3/3, dark brown; silty clay loam; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; few, medium roots; naturally deposited alluvium with oxidized (red) mottling
IIIa	200–222	Natural; 10YR 3/2, very dark grayish brown; very gravelly sandy clay; weak, fine, granular structure; moist, friable consistence; no cementation; plastic; terrigenous origin; clear, smooth lower boundary; no roots observed; streambed with waterworn basalt gravel
IIIb	218–252 (BOE)	Natural; 10YR 3/1, very dark gray; cobbly sandy clay; weak, fine, granular structure; wet, slightly sticky consistence; no cementation; plastic; lower boundary not observed; no roots observed; streambed with waterworn basalt gravel and cobbles



Figure 117. Cut, pyramid-shaped basalt stone removed from T-12 Stratum Id, demolition fill (not collected)

Section 5 Results of Laboratory Analysis

5.1 Bulk Sample Analysis

A total of 17 bulk samples were collected from seven test excavations during the current AIS (Table 19). Samples were collected from the Stratum II alluvium series, primarily from strata interpreted as possible agricultural deposits (i.e., SIHP # -8840 Component 1), which are likely associated with *lo‘i kalo*. Seven were wet screened to further characterize the targeted deposits. These include one sample from T-2B (Stratum IIc, interpreted agricultural deposit), near the southern corner of the AIS study area; two samples from T-12 (Stratum IIc [one general sample and one from a localized deposit], interpreted agricultural deposit), near the northern corner of the study area; and a series of four samples from T-9 (Stratum IIb, natural alluvium, and Strata IId–IIf, interpreted agricultural deposits), in the central portion of the study area.

5.1.1 Previous Archaeological Investigations of Taro *Lo‘i* Deposits

Previous archaeological investigations of former taro *lo‘i* have characterized the associated agricultural deposits as gleyed and predominantly clay, with ferruginous mottling, limonite root casts, and abundant dispersed charcoal. Maury Morgenstein's (1978) study of abandoned taro *lo‘i* within Kaiwainui Marsh, Kailua, O‘ahu documented two subsurface agricultural deposits associated with a terrace wall, both of which contained abundant diffused charcoal particles and limonite root casts:

> The presence of charcoal and ferruginous impregnated root tubes associated with the terrace wall strongly supports an agricultural hypothesis for soils layers III and IV. The root tubes are wider than the present grass vegetation root tubes and were formed by a heavier rooted plant such as Taro. [Morgenstein 1978:37]

The presence of ferruginous mottling, limonite casts, and dispersed charcoal within former *lo‘i* was also noted by Jane Allen and colleagues (1987) during extensive investigations of the Luluku field system within Kāne‘ohe, O‘ahu:

> In ponded soils, aeration along roots also oxidizes small areas in the subsoil, resulting in bright mottling within a dark, gleyed soil matrix; precipates of iron and manganese as limonite casts and manganese nodules, respectively, often occur. […] Charcoal in pondfields is typically churned and dispersed throughout the soil through subsequent cultivation and ponding activities. [Allen et al. 1987:36]

A. Rose Schilt (1980) made similar observations of *lo‘i* deposits in Hanalei Valley, Kaua‘i, and provided the following summary of her findings in relation to earlier *lo‘i* studies:

> Previous archaeological projects in Mākaha Valley, O‘ahu, and Hālawa Valley, Molokai have documented the appearance of pondfield soils in which irrigated taro has been cultivated (Morgenstein and Burnett 1972; Riley 1975). These soils are characterized by hydrated iron-oxide (limonite) tubes which appear as prominent reddish mottles. These ferruginous tubes are known to develop around the roots of taro plants, although the mechanism of concentration is not well understood. […] These tubes or mottles were quite prominent in the soil core we took in a recently cultivated lo‘i in Hanalei Valley. [Schilt 1980:29]

Table 19. Bulk samples collected during the AIS

Test Excavation	Stratum (location)	SIHP # -8840 Component 1	Depth (cmbs)	Size (L)	Screened? (Y/N)	Observations
T-2B	Str. IIc (excavator bucket)	Agricultural deposit	~175–216	2.0	Y	Distinctive oxidized nodules and root casts
T-4	Str. IIe (spoils)	Agricultural deposit	~205 cmbs	1.0	N	–
T-5	Str. IIf (spoils)	Agricultural deposit	~186–205	2.0	N	–
T-6	Str. IIa (NW wall)	–	80–90	0.25	N	–
	Str. IIb (NW wall)	–	125–135	0.5	N	–
	Str. IIc (NW wall)	Agricultural deposit	150–185	0.25	N	–
	Str. IId (NW wall)	–	180–212	0.5	N	–
T-9	Str. IIb (SE wall)	–	107–120	0.5	Y	No oxidized nodules or root casts
	Str. IId (SE wall)	Agricultural deposit	127–137	1.0	Y	Limited oxidized nodules
	Str. IIe (SE wall)	Agricultural deposit	145–155	1.0	Y	Limited oxidized nodules
	Str. IIf (trench floor)	Agricultural deposit	~160–180	1.0	Y	Distinctive oxidized nodules and root casts
T-9B	Str. IIc (SE wall)	Agricultural deposit	85–102	2.0	N	–
	Str. IId (SE wall)	Agricultural berm	117–113	2.0	N	–
	Str. IIe (SE wall)	Agricultural deposit	137–150	2.0	N	–
T-12	Str. IIc (trench floor)	Agricultural deposit	182–197	1.0	Y	Limited oxidized nodules
	Str. IIc (localized), (spoils; intact block)	Agricultural deposit	–	1.5	Y	Pronounced tubule structure
	Str. IIIa (streambed) (excavator bucket)	–	~200–220	0.5	N	–

More recently, Sroat et al. (2016) analyzed suspected buried taro *lo‘i* deposits from Waikele, O‘ahu, as part of archaeological data recovery carried out in the footprint of the Waipahu Transit Station for the Honolulu Authority for Rapid Transit’s Honolulu Rail Transit Project. As with the investigations cited above, these analyses documented varying amounts of dispersed charcoal particles, oxidized reddish (ferruginous) mottling, and tubular root casts and concretions consistent with the limonite casts and nodules described above, thought to be associated with buried taro *lo‘i* deposits (Figure 118 through Figure 120).

5.1.2 Results of Wet Screening for the Current AIS

Background research indicated the possibility for remnants of former agricultural activity within the current AIS study area, potentially including buried pre-Contact or post-Contact taro *lo‘i* deposits and/or deposits associated with Don Marín’s Vineyard. However, based on the results of radiocarbon dating of a feature associated with the Stratum IIa habitation layer (see Section 5.4.3), the interpreted agricultural deposits (Strata IIc–IIg) likely pre-date Marín’s Vineyard. During the AIS fieldwork, these interpreted agricultural deposits were observed to have sparse charcoal flecking and readily discernable reddish mottles, similar to those described in the earlier investigations (discussed above). These mottles are indicative of the type of oxidation that appears to result from chemical interactions between taro roots and the surrounding soil. Additionally, potential structural remains, interpreted as remnant pond-field berms consistent with taro *lo‘i*, were documented in T-9 and T-9B.

Photographs of each sample before and after wet screening are presented in Figure 121 through Figure 136. The results of the wet screening generally support a modest correlation between the field observation of reddish oxidized mottling and the presence of limonite nodules and root casts within the samples. For instance, the bulk sample from T-9 Stratum IIb (see Figure 124 and Figure 125) did not contain oxidized nodules or root casts, which is consistent with the lack of mottling observed during fieldwork and the interpretation of the layer as natural alluvium (i.e., not agricultural). Similarly, the T-2B Stratum IIc (see Figure 121 through Figure 123) and T-9 Stratum IIf (see Figure 130 through Figure 132) bulk samples yielded distinctive oxidized nodules and root casts, which is consistent with the strong reddish oxidized mottles observed in the field. In contrast, bulk samples from T-9 Strata IId (see Figure 126 and Figure 127) and IIe (see Figure 128 and Figure 129) and T-12 Stratum IIc (general sample; see Figure 133 and Figure 134), which were observed in the field to have reddish oxidized mottles, yielded only limited evidence of reddish limonite nodules and no evidence of root casts. These results indicate significant variability in the formation of these nodules and root casts, possibly related to minor differences in soil chemistry and/or the duration of use of the deposit for agriculture.

A second bulk sample from T-12 Stratum IIc (intact block) was markedly different from the other samples. In the southwest sidewall of T-12, within Stratum IIc (see Figure 116), a localized (approximately 70-cm by 70-cm area in the profile) and pronounced concentration of dense, clayey sediment with what appeared to be abundant root casts was observed. The bulk sample from this localized deposit was collected as a single, large, intact block (Figure 135). This bulk sample was distinctive during the wet screening process, as it did not break down with water soaking and agitation, nor during spraying with the water hose. The pronounced adherence of the matrix remained even after days of soaking and agitation, approaching cementation that was only eventually broken down into fragments by hand. Figure 136 shows some of the remnant after wet screening, with the pronounced tubule structure still intact and some reddish coloration on the

interior of the broken open tubules. This localized area of T-12 Stratum IIc appears to be distinct from the other bulk samples and likely represents different formation processes, potentially interactions with the soil and/or a different plant species.

No charcoal flecks, artifacts, or plant remains were observed in any of the samples. The lack of observable charcoal flecks in the wet screened samples may be a result of the wet screening method or the relatively modest size of the samples (0.5 to 2 liters).



Figure 118. Portion of a bulk sample collected from suspected taro *lo‘i* deposits from the Waipahu Transit Station, showing ferruginous (red) mottling, dispersed charcoal particles, and remnant root casts (from Sroat et al. 2016:73)

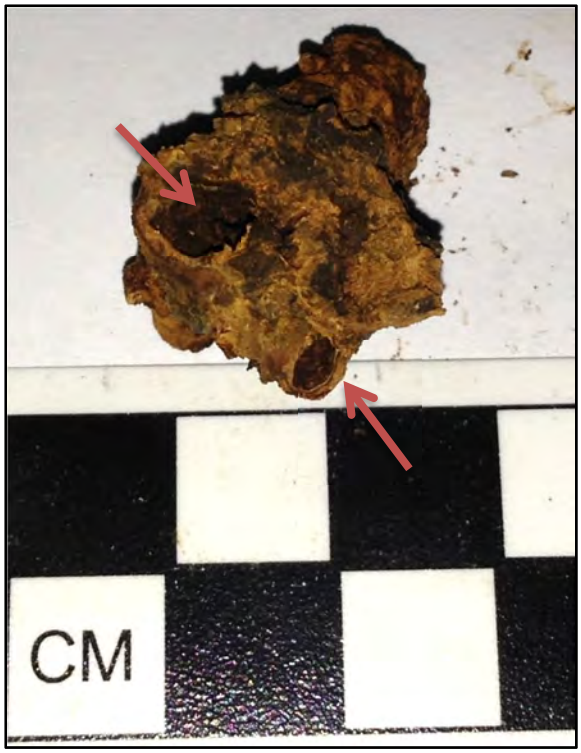

Figure 119. Dried portion of a bulk sample from suspected taro *lo‘i* deposits from the Waipahu Transit Station, showing ferruginous (red) mottling and an intact root cast (orange arrows) (from Sroat et al. 2016:77)



Figure 120. Root nodules (left) and root casts (right), identified through wet screening of bulk samples from suspected taro *lo‘i* deposits from the Waipahu Transit Station (from Sroat et al. 2016:81)



Figure 121. T-2B Stratum IIc bulk sample before wet screening; the red oxidized mottling observed in the field was less apparent in the collected bulk sample, likely as a result of drying and potentially abrasion or polishing of the large sediment masses/peds during transport within the plastic sample bag



Figure 122. T-2B Stratum IIc bulk sample after wet screening; note distinct reddish-orange concretions and nodules and several tubular root casts on right side of photo (see Figure 123 below for close-up)



Figure 123. Close-up of limonite root casts and nodules (and one natural, water-rounded basalt pebble) in the T-2B Stratum IIc bulk sample, believed to be the result of oxidation at the interface between surrounding soil and former taro roots; orange arrows indicate remnant tubules believed to have formed around taro roots and rootlets



Figure 124. T-9 Stratum IIb bulk sample before wet screening; no red oxidized mottling



Figure 125. T-9 Stratum IIb bulk sample after wet screening; no evidence of tubular root casts or nodules were observed



Figure 126. T-9 Stratum IId bulk sample before wet screening; note easily discernable reddish mottling



Figure 127. T-9 Stratum IId bulk sample after wet screening; note the reddish nodules



Figure 128. T-9 Stratum IIe bulk sample before wet screening; some reddish mottling discernable



Figure 129. T-9 Stratum IIe bulk sample after wet screening; note the small, faint, reddish nodules and the smaller volume compared to other samples of similar size



Figure 130. T-9 Stratum IIf bulk sample before wet screening; some reddish mottling discernable



Figure 131. T-9 Stratum IIf bulk sample after wet screening; note the reddish-orange concretions and nodules, several tubular root casts (right side of photo; close-up in Figure 132 below), and one limestone pebble (top right corner)



Figure 132. Close-up of limonite root casts and nodules T-9 Stratum IIf bulk sample, believed to be the result of oxidation at the interface between surrounding soils and former taro roots; orange arrows indicate remnant tubules believed to have formed around taro roots and rootlets; the reddish coloration of the interior of the root tubules can be seen in portions of tubules that have been broken open



Figure 133. T-12 Stratum IIc general bulk sample before wet screening; the red oxidized mottling observed in the field was less apparent in the collected bulk sample, likely as a result of drying and potentially abrasion or polishing of the large sediment masses/peds during transport within the plastic sample bag



Figure 134. T-12 Stratum IIc general bulk sample after wet screening; note the small reddish nodules



Figure 135. T-12 Stratum IIc bulk sample (localized deposit) after wet screening



Figure 136. A portion of the T-12 Stratum IIc bulk sample (localized deposit) after wet screening

5.2 Artifact Analysis

Artifacts collected during the AIS were curated and analyzed by CSH personnel as described in Section 2.2.2 above. One hundred sixty-one historic artifacts were collected during the AIS; no traditional Hawaiian artifacts were identified or collected. The collected artifacts do not represent 100% collection from the study area; rather, grab samples were collected with an emphasis on representative artifact types, complete artifacts, and those with diagnostic traits. The collected artifacts are presented in Table 20 and discussed below.

The current assemblage includes 74 glass bottles or bottle fragments, one glass jar, four pressed glass artifacts, three window glass fragments, one glass marble, one unidentified milk glass object, three unidentified glass fragments, one glass insulator, 36 ceramic hollowwares, four ceramic flatwares, three ceramic tablewares, one ceramic spoon, one ceramic doorknob, two stoneware storage vessels, two stoneware bottles, one unidentified stoneware vessel fragment, four common pottery vessels, one bone grooming tool, one bone toothbrush, four nails, two metal utility pipes, four unidentified metal fragments, one carbon battery rod, one slate fragment, one brick, one coral block, one concrete brick, and one concrete masonry unit.

Artifacts were assessed for type, material, origin, and date. Artifacts were identified to country of origin where possible. Some artifacts lacked the diagnostic characteristics necessary to identify the country of origin and were identified only as Euro-American, indicating origin from a country in either North America or Europe (most likely the United States or England). Origin was only identified more specifically than country when the artifact could be identified as having been made in Hawai‘i or for a Hawaiian company.

Artifacts were assessed to determine date of manufacture first and foremost. Where applicable, manufacture date ranges were modified by available information regarding dates of import of certain materials and immigration of ethnic groups to Hawai‘i. Notable dates frequently used in this capacity are 1850, the date of increased import of goods to support the influx of missionaries; 1852, the date of the first immigration of Chinese workers; and 1868, the date of the first immigration of Japanese workers. Some date ranges are quite wide, due to a lack of diagnostic characteristics needed to narrow the range. Additionally, it is not expected that artifacts were always consumed and discarded immediately; many types of artifacts would have had long periods of use between manufacture and deposition. The below discussion includes *terminus ante quem* (latest possible date) and *terminus post quem* (earliest possible date) limits for dates of deposition of artifacts, features, and stratigraphic layers based on a combination of artifact manufacture/ import dates and available land use information.

5.2.1 Glass Artifacts

The glass artifacts include 74 glass bottles or bottle fragments, one glass jar, three pressed glass tumblers, one unidentified pressed glass fragment, three window glass fragments, one glass insulator, one glass marble, one unidentified milk glass fragment, and three unidentified glass fragments. The country of origin for 18 of the bottles could be determined; these items are from the mainland United States (n=7), Hawai‘i (n=3), the Netherlands (n=2), Scotland (n=2), Japan (n=2), and China (n=2).

Table 20. Artifacts collected during the Halewai‘olu Senior Residences AIS

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-1, Str. Ig SIHP # -8840 Component 3 Base course	Ceramic	Bottle	127	Stoneware cylindrical mineral water/gin bottle, base to body fragment, ferruginous salt glaze, unglazed interior; helical marks in interior and cut-off scars on base indicate a wheel-thrown bottle	Germany	1850-1879
	Glass	Jar	128	Cobalt blue glass jar or bottle, lip fragment, continuous external thread finish without ground rim, unidentified method of manufacture	–	Post-1900
	Ceramic	Hollowware	129	Porcelain “*tz‘u*” rice bowl, body to rim fragment (1) and base to body fragment (1), cobalt underglaze, hand-painted Double Happiness motif on exterior	China	1850-1870
			130	Porcelain hollowware, body to rim fragment, deep green glaze on exterior	Asia	Post-1852
			131	Porcelain hollowware, *kozara* dish (shallow dish for side dishes), base to rim fragment, underglaze blue floral katagami stencil decoration	Japan	1870s-1912
	Glass	Bottle	132	Colorless glass beverage bottle, base to heel fragment, cylindrical shape, slight recessed base, machine-made; embossing: “[REGI] (STERED)” on heel, partial propriety mark on base	–	Post-1908
	Ceramic	Other	133	Porcelain door knob fragment	–	Post-1850
T-2, Str. Id Demolition fill	Glass	Bottle	42	Blue aqua glass bottle, complete, cylindrical shape, slight kick-up base, mold-blown, two-piece cup-bottom mold, tooled oil finish, dimples in finish for “Swingtop” lightning-type closure (not present)	–	1897-1920
			43	Blue aqua glass bottle, complete, cylindrical shape, slight kick-up base, machine-made, club sauce or similar finish; embossing: “8” on base	–	Post-1908

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2, Str. Id Demolition fill	Glass	Bottle	44	Amber glass beer bottle, complete, cylindrical shape, flat base, machine-made, crown finish	Japan	Post-1921
T-2B, Str. Ie, Fill	Metal	Unknown	1	Rusted ferrous metal ring, unknown function	–	–
	Glass	Bottle	2	Colorless glass bottle, heel to body fragment (1), body fragments (3), and shoulder fragments (2), side seam visible on one fragment, cylindrical shape, unidentified method of manufacture	–	Post-1870
			3	Colorless glass bottle, shoulder to finish fragment, cylindrical shape, machine-made, crown finish	–	Post-1908
			4	Colorless glass bottle, base to body fragment, cylindrical body, flat base, one side mold seam and horizontal seam on heel visible, unidentified method of manufacture	–	Post-1870
			5	Colorless glass bottle, body fragment, cylindrical body, side seam evident, unidentified method manufacture	–	Post-1870
			6	Aqua glass bottle, body fragment, cylindrical shape, no seam evident, unidentified method of manufacture	–	–
			7	Blue-aqua glass bottle, base to body fragment, cylindrical shape, machine-made (press-and-blow), valve mark on base	–	Early 1910s
			8	Aqua glass beer bottle, base to body fragment, cylindrical shape, flat base, mold-blown, two-piece post-bottom mold; embossing: “[HONOLULU] B.& M.Co., LTD./ [HONO]LULU, T.H.” vertically on body, “I.P.G.CO/3004” on base (double stamped with same info); mark for Illinois-Pacific Glass Co.; would have had tooled crown finish; bottle for Honolulu Brewing & Malting Co., Ltd.	Hawai‘i	1911-1917

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. Ie, Fill	Glass	Bottle	9	Aqua glass bottle, heel to body fragment, cylindrical shape, horizontal seam on heel, unidentified method of manufacture	–	–
			10	Gray tinted colorless glass bottle, body fragment, square body, no seams evident, unidentified method of manufacture	–	1915-1925
			11	Amber glass bottle, body fragment, cylindrical body, mold-blown, turn mold	–	1870-1920
	Ceramic	Hollowware	12	Porcelain rice bowl, base to body fragment (1), body fragment (1), and body to rim fragment (1), hand-painted blue and pink underglaze striped decoration on exterior, unglazed footring, hand-painted blue ring on base	Japan	Post-1868
			13	Porcelain "*tz'u*" rice bowl, base to body fragment (1) and body to rim fragment (1), cobalt underglaze hand-painted Double Happiness motif on exterior, unglazed footring	China	1850-1870
	Glass	Bottle	14	Amber glass bottle, body fragment, cylindrical shape, unidentified method of manufacture	–	–
			15	Olive-amber glass bottle, body fragment, cylindrical body, unidentified method of manufacture	–	–
			16	Amber glass bottle, body fragment, cylindrical shape, unidentified method of manufacture	–	–
	Ceramic	Hollowware	17	Porcelain straight-sided cup, body fragment (1), underglaze blue landscape transfer-print decoration on exterior	Japan	Post-1888

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. Ie, Fill	Ceramic	Hollowware	18	Porcelain hollowware, base to body fragment, underglaze blue floral transfer-print decoration on interior	Japan	Post-1888
			19	Porcelain hollowware, body to rim fragment, underglaze winter green on exterior	Asia	Post-1852
			20	Porcelain hollowware, body to rim fragment, remnant of overglaze decoration (possible floral pattern) on exterior and interior	China	Post-1852
			21	Porcelain hollowware, body fragment, wintergreen with green, white, and brown floral hand-painted decoration underglaze on exterior, unglazed interior	Japan	Post-1868
		Common pottery	22	Porcelain planter, body fragment (1) and shoulder to rim fragment (1), cobalt underglaze on exterior, on flat rim, and top part of interior, applique white and green floral design on exterior	China	Post-1852
		Hollowware	23	Whiteware hollowware, body to rim fragment, underglaze polychrome green and black hand-painted decoration	–	Post-1850
		Tableware	24	Ironstone tableware, body to rim fragment, wavy rim, undecorated	Euro-America	1850-20th century
		Hollowware	25	Porcelain flatware, body fragment, undecorated	–	Post-1850

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. Ie, Fill	Bone	Toiletries	26	Polished bone object, long thin straight-sided fragment with parallel sides and rounded end, decorative incised lines along edges of object, 11 alternating decorative square holes at rounded end, metal pin and washer through hole at rounded end; incised text: “MADE IN JAPAN” on one side; likely part of a folding personal hygiene tool	Japan	Post-1926
T-2B, Str. IIa SIHP # -8840 Component 2, Fea. 8, Historical trash pit	Glass	Bottle	27	Amber glass bottle, base to heel fragments (2), cylindrical shape, kick-up base, mold-blown, unidentified mold type	–	1800-1920
			28	Amber glass bottle, body fragment, unidentified method of manufacture	–	–
		Bottle	29	Amber glass bottle, body fragment, cylindrical shape, unidentified method of manufacture	–	–
		Window	30	Aqua flat glass fragment, one straight intact edge indicates likely part of square or rectangular pane, smooth surface	–	1838–1889
		Unknown	31	Aqua flat glass fragment, unknown function; possibly window glass but outside the thickness range of most dating methods for historic window glass	–	–
			32	Colorless glass fragment, slightly curved	–	Post-1870
		Bottle	33	Aqua glass bottle, neck to lip fragment, machine-made, small mouth external thread finish	–	Post-1908
	Ceramic	Tableware	34	Whiteware tableware fragment, undecorated	Euro-America	Post-1850
		Hollowware	35	Ironstone hollowware fragment, handle fragment, remnant of copper or gold luster	Euro-America	1850s-ca. 1900

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. IIa SIHP # -8840 Component 2, Fea. 8, Historical trash pit	Metal	Nail	36	Wire nail, rusted, complete, round shank, pointed tip, round head	–	Post-1894
	Glass	Marble	37	Glass machine-made marble, “opaque” type, light brown	–	Post-1910
	Metal	Nail	38	Wire nail, complete, white corrosion and ferrous rust, likely nickel-plated, round head, round shaft, pointed nail end	–	Post-1894
	Metal	Nail	39	Wire nail, complete, white corrosion, round head, round shaft, pointed nail end, bent profile from being pulled	–	Post-1894
	Glass	Pressed	40	Colorless pressed glass fragment, embossed ridges on edges of fragment and convex circle on center, function unknown	–	–
		Bottle	41	Colorless glass fragment, base to body fragment, cylindrical shape, flat base, machine-made, Owens machine mark on base; embossing: “986” horizontally on heel, “B/10” on base; marks for Charles Boldt Glass Co.	U.S.	1910-1919
			45	Olive glass beverage bottle, cylindrical shape, flat base, mold-blown, turn-mold, tooled mineral finish	–	1880–1920
			46	Aqua glass bottle, base to heel fragment, cylindrical shape, slight recessed base, machine-made, suction scar on base; embossing: “15 IG” on heel, possibly mark for Imperial Glass Co.	–	Post-1908

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-2B, Str. IIa SIHP # -8840 Component 2, Fea. 8, Historical trash pit	Glass	Bottle	47	Colorless glass Dutch case gin bottle, body to lip fragment, square paneled body, tooled oil finish, applied blob seal' embossing: palm tree image surrounded by text "PALMBOOM C MEYER & Co / SCHIEDAM PALMBOOM" in seal	Netherlands	ca. 1910
	Bone	Toiletries	48	Bone toothbrush, handle fragment	–	Pre-1884
	Ceramic	Hollowware	49	Porcelain hollowware sauce dish, complete except for chips in rim, flower relief mold on interior	Japan	Post-1852
T-2C, Str. If Demolition fill	Glass	Bottle	121	Blue-green beverage bottle, neck to lip fragment, machine-made, variation of crown finish	–	Post-1908
	Ceramic	Hollowware	134	Porcelain hollowware, *kozara* dish (shallow dish for side dishes), base to rim fragment, underglaze blue transfer-print on interior	Japan	Post-1888
	Glass	Bottle	135	Aqua glass bottle, complete, cylindrical shape, flat base, mold-blown, two-piece post bottom mold, tooled crown finish; embossing: "0/81/3" on base	–	1870-1890
		Pressed	136	Colorless pressed glass tumbler, base to body fragment (1) and body fragment (1), cylindrical fluted body	–	Post-1870
	Ceramic	Unknown	139	Stoneware knob fragment, possibly lid knob, for unknown vessel, dark brown metallic glaze, possibly salt or alkaline glaze	Euro-America	–
	Glass	Bottle	161	Colorless glass bottle, complete except for thin chip from base to shoulder, cylindrical shape, flat base, vertical embossed ribs on heel and shoulder, machine-made, crown finish; embossing: "Pacific//Pacific (script)" at upward angled diagonal on shoulder, "NET CONTENTS 6 1/2 FLU[ID OZ]" on body just below shoulder, "P/ 21 (Owens-Illinois mark) 5"	Hawai‘i	1935

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-6, Str. Ic Demolition fill	Other	Brick	157	Concrete dark gray block, faced on all sides but not ground to a smooth finish	Euro-America	Post-1871
			158	Concrete hollow block, half fragment, faced on all sides, light gray; length unknown, width unknown	Euro-America	Post-1916
T-6, Str. Ie, Fill	Carbon	Other	77	Carbon graphite rod for a dry-cell battery	–	Post-1912
	Stone	Slate	78	Slate fragment, one straight edge indicating it was part of a square or rectangular panel, uniform thickness, smooth sides, painted black on both sides; possibly an early chalkboard, but slate pencils do not mark it, hence, it is not a slate board	–	–
	Glass	Bottle	79	Amber glass bottle, base to body fragment, cylindrical shape, unidentified method of manufacture	–	–
	Metal	Other	80	Ferrous metal handle, semi-circular shape	–	–
		Nail	81	Rusted wire nail	–	Post-1894
	Ceramic	Hollowware	82	Porcelain hollowware, body fragment, transparent glaze, underglaze blue *fukizumi* decoration on interior	Japan	1870s–ca. 1920
			83	Porcelain hollowware, base to body fragment, relief molded scallop decoration on exterior, scalloped base/footring	Euro-America	Post-1850
			84	Japanese ceramic rice bowl lid (futa), complete with base to rim fragment (1) and body to rim fragment (1), underglaze criss-crossing line design on exterior of hand-painted blue and light green lines and transfer-printed dark green lines	Japan	Post-1888

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-6, Str. Ie, Fill	Ceramic	Hollowware	85	Porcelain bowl, base to rim fragment high unglazed footring with one blue circle around interior and two around exterior; underglaze hand-painted blue design on exterior, slightly everted rim has blue hand-painted motif of plum blossoms on exterior side of rim	Japan	Post-1868
	Glass	Bottle	86	Amber glass liquor bottle, base to lip, cylindrical shape, slight kick-up base, mold-blown, two-piece cup-bottom mold, tooled brandy finish; embossing: “W.C. PEACOCK & CO/ (company monogram logo)/ HONOLULU, H.I./ WINE & LIQUOR MERCHANTS” vertically on body	Hawai‘i	Early 1900s
	Coral	Other	137	Coral construction block, light yellow red (orange); complete, rectangular; eroded on one side but originally faced on all sides; no trace of mortar on any side	–	–
	Other	Brick	138	Dark red brick fragment, portion of one face remaining only, no measurements possible; some mortar on one side	–	–
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Glass	Bottle	50	Dark amber olive (black) glass bottle, base to shoulder fragment, cylindrical shape, kick-up base, mold-blown, turn mold	–	1870-1920
			51	Dark olive (black) glass bottle, base to lip fragment, cylindrical shape, kick-up base, mold-blown, two-piece cup-bottom mold, applied mineral or brandy finish	–	1850-1885
			52	Dark olive (black) glass whiskey bottle, base to body fragment, cylindrical shape, kick-up base, Ricketts’ style plate on base, three-piece dip-mold; embossing: “R. COOPER (arch) & CO/PORTOBELLO (inverted arch)” on base	Scotland	1866-1885

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840	Glass	Pressed	53	Colorless glass tumbler, base to body fragment, cylindrical body, flat base	–	Post-1870
Component 2, Fea. 12,			54	Colorless glass tumbler, base to body fragment, fluted cylindrical shape, flat base	–	Post-1870
Historical trash pit		Bottle	55	Olive glass Dutch case gin bottle, body fragments (3), square shape, corrugated marking on body fragment typical of European case gin bottles, mold-blown, unidentified mold type, applied mineral finish; embossing: “[COSMOPO]LIET” on body above remnant of embossed male figure known as the “Standing Man”; would have been embossed with further proprietary information for J.J. Melchers Wz distillery	Netherlands	1890-1910
			56	Olive glass bottle, shoulder fragment, horizontal seam on shoulder, mold-blown, mold type unidentified	–	1870-1920
			57	Aqua glass household bottle, body to lip fragment, round body, flat base, blowpipe pontil mark on base, mold-blown, two-piece mold, “tooled” folded finish; embossing: “SPALDING'S//GLUE” vertically on body	U.S.	1850-1870
			58	Aqua glass bottle, base to body fragment, round shape, slight kick-up base, manufacturing technique unidentified, embossed ring of dots around shoulder; embossing: “393//M”; maker’s mark unidentified	–	–
			59	Olive glass champagne bottle, complete, round body, kick-up base, turn mold, applied champagne finish with beveled top, remnant of paper label on neck	–	1880s-1920
			60	Dark olive (black) glass bottle, base to body fragment, cylindrical shape, kick-up base, mold-blown, dip mold	–	1800-1910

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Glass	Bottle	61	Aqua glass bottle, shoulder to lip fragment, mold-blown, mold type unknown, applied double ring finish	–	1800-1885
			62	Dark olive (black) glass bottle, base to body fragment, cylindrical shape, kick-up base, mold-blown, turn mold	–	1870-1920
			63	Dark olive (black) glass export beer bottle, body to lip fragment, mold-blown, dip mold, applied mineral finish	–	1878-1885
		Insulator	64	Blue-aqua glass threaded pin-type insulator, upper wire groove ridge to crown fragment	–	Post-1865
		Bottle	65	Dark olive (black) case gin bottle, base to body fragment, square shape, kick-up base, mold-blown, dip mold, faint embossed radial lines from center on base	–	1800-1870
			66	Green-aqua glass bottle, body to shoulder fragment, cylindrical shape, mold-blown, unidentified mold type	–	1800-1920
			67	Green-aqua glass bottle, body fragment, unidentified method of manufacture	–	–
			68	Aqua glass bottle, base to heel fragment, round body, slight kick-up base, blowpipe pontil scar on base, no mold seams, free-blown or dip mold	–	1850-1870
		Window glass	69	Aqua flat glass, two intact straight edges indicating it was part of a square or rectangular pane	–	1845-1889
		Bottle	70	Green-aqua glass bottle, neck to lip fragment, applied double ring finish	–	1840-1885
			71	Olive glass bottle, neck to lip fragment, mold-blown, unidentified mold type, applied grooved ring finish	–	1860-1885
			72	Olive glass bottle, neck to lip fragment, mold-blown, unidentified mold type, applied grooved ring finish	–	1860-1885

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Glass	Bottle	73	Dark olive (black) glass whiskey bottle, base to body fragment, cylindrical shape, kick-up base, Ricketts' style plate on base, three-piece dip-mold; embossing: "R. COOPER (arch) & CO/PORTOBELLO (inverted arch)" on base	Scotland	1866-1885
		Unknown	140	Thin curved colorless glass fragment, unknown function	–	–
	Ceramic	Hollowware	144	Round yellowware nappy, base to body fragment (1) and body to rim fragments (3)	Euro-America	1850-1900
		Hollowware	145	Ironstone cup, base to body fragment (1) and body to rim fragment (1), round paneled shape	Euro-America	1850-1860
			146	Ironstone ewer/pitcher, base fragment (1), body fragment (1), and body to rim fragment (1), bulbous ribbed body; black printed mark on base "Royal Coat of Arms (picture)/ STONE CHINA/ J. W. PANKHURST/ HANLEY."	England	1850-1883
		Flatware	147	Ironstone saucer, base to rim fragment, undecorated, black printed base mark, Royal Coat of Arms and "IMPERIAL/IRONSTONE CHIN[A]/ HENRY ALCOC[K & CO.]"	England	1861-1910
		Bottle	148	Stoneware cylindrical mineral water/gin bottle, base to body fragment (1), body fragments (3), and body with handle fragment (1), ferruginous salt glaze, hand-thrown (helical marks in interior), straight-sided, transparent even glaze, glossy and well made, rolled handle and lip	Germany	1850-1879

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12, Historical trash pit	Ceramic	Hollowware	149	Whiteware hollowware body fragment, hand-painted on exterior with “thick line large floral” design, dark red flowers with green leaves	Euro-America	–
		Hollowware	150	Whiteware London-shaped bowl, body to rim fragments (2), transparent glaze, blue annular bands on exterior	Euro-American	1850-early 20th century
		Flatware	151	Ironstone plate, base to rim fragment, octagonal paneled shape, no decoration	Euro-America	1850-1860
			152	Ironstone serving bowl lid for oval vessel, body to rim fragment, undecorated, likely lid for Acc. # 153 (see below)	–	1850-20th century
		Hollowware	153	Ironstone oval bowl, possible “baker,” undecorated; likely matches lid Acc. # 151 (see above)	Euro-America	1850-20th century
			154	Ironstone hollowware, base to body fragment, square paneled body with beveled edges, small square unglazed footring, undecorated; possible pitcher, creamer, or sugar bowl	Euro-America	1850-1860
			155	Ironstone hollowware, two fragments, base to rim fragment (1) and base to body fragment (1); carinated cylindrical (Grecian) shape, small glazed footring, large vessel such as a vase or a pitcher	Euro-America	1850-20th century
		Common pottery	156	Stoneware hollowware, fluted body, scalloped rim, cobalt blue glaze on rim and exterior only; large round vessel, possibly a vase	Euro-America	Post-1850

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-9, Str. IIa SIHP # -8840	Metal	Unknown	122	Thin curved colorless glass fragment, unknown function	–	–
Component 2, Fea. 14 Historic trash pit	Ceramic	Common pottery	141	Whiteware Victorian majolica planter, base to body fragments (3), body fragments (2), and body to rim fragment (1), drainage hole in base, large round body; turquoise underglaze on exterior, unglazed footring, lavender underglaze on interior, embossed repeating Celtic design along exterior rim and on heel, embossed lily design on exterior body painted in white, red, and yellow, with green leaves	Euro-America	1876-1914
			142	Earthenware flowerpot, base to body fragment, light red, hole in base, unglazed; molded, not hand-thrown	Euro-America	Post-1861
		Hollowware	143	Ironstone hollowware, body to rim fragments (2), narrow neck	Euro-America	1850-20th century
T-10, Str. IIa SIHP # -8840	Glass	Bottle	74	Dark olive (black) glass beverage bottle, base to body fragment, push-up base, mold-blown, dip mold	–	1800-1910
Component 2, Fea. 17,			75	Olive glass bottle, body fragment, unknown method of manufacture	–	–
Pit feature			76	Olive glass bottle, body fragment (1) and shoulder fragments (2), cylindrical shape, mold-blown, unidentified mold type	–	1800-1910
T-10, Spoils, likely assoc. with	Metal	Other	87	Ferrous metal utility pipe rim fragment, 15 cm diameter	–	Post-1850
Str. Ie, Fill			88	Ferrous metal pipe fragment, 2.2 cm diameter	–	Post-1850
	Glass	Bottle	89	Aqua glass bottle, body fragment	–	–
			90	Aqua glass bottle, body fragment	–	–

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-10, Spoils, likely assoc. with Str. Ie, Fill	Glass	Window glass	91	Aqua flat glass fragment, one straight edge indicating it is part of a square or rectangular panel, uniform thickness, slightly rippled surface texture	–	1840-1881
		Bottle	92	Colorless glass bottle, body fragment, round shape	–	
			93	Amber glass bottle, body fragments (4) and base fragment (1), round shape, flat base, mold-blown, two-piece post-bottom mold	–	1850-1920
			94	Colorless glass bottle, slight sun-colored amethyst tint, shoulder to neck fragment, mold-blown, mold type unidentified	–	1890-1920
			95	Colorless glass bottle, neck to finish fragment, mold-blown, unidentified mold type, tooled patent finish	–	1870-1920
		Unknown	96	Milk glass fragment, hollow circular object with molded concentric stacked circles, unknown function	–	Post-1870
	Ceramic	Hollowware	97	Porcelain hollowware, base to body fragment, unglazed footring, undecorated	Asia	Post-1852
	Glass	Bottle	98	Olive glass bottle, body fragment (1) and shoulder to finish fragment (1), cylindrical body, mold-blown, mold type unidentified, tooled blob top finish	–	1870-1920
			99	Olive glass bottle, body fragments (2) and neck to finish fragment (1), cylindrical shape, mold-blown, unidentified mold type, applied champagne finish	–	1800-1885
	Ceramic	Flatware	100	Whiteware plate, marly to rim fragment, underglaze blue scenic vignette transfer-print	Euro-America	1850-1889
		Vessel	101	Chinese brown-glazed stoneware jar, base to heel fragment, brown exterior glaze, brown interior glaze, unglazed base	China	Post-1852

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-10, Spoils, likely assoc. with Str. Ie, Fill	Ceramic	Vessel	102	Chinese brown-glazed stoneware “tiger whiskey” wine jar, body fragment with internal body seam, underglaze brown on exterior, light brown glaze on interior	China	Post-1852
		Hollowware	103	Yellowware hollowware, body fragment, undecorated	Euro-America	1850-1930s
			104	Porcelain rice bowl, body fragment, underglaze winter green on exterior and interior	China	1852-1911
			105	Whiteware bowl, body to rim fragment, underglaze polychrome (red and green) geometric cut sponge decoration on exterior, red painted bands on exterior and interior	Euro-America	1840s-1870s, U.S. revival 1915-1940
	Glass	Bottle	106	Colorless glass bottle, base to body fragment, round body, flat base, valve mark on base, machine-made (press-and-blow)	–	Late 1890s to mid-20th century
			107	Aqua glass ink bottle, base fragment, round shape, flat base, mold-blown, two-piece cup bottom mold; embossing: “[C]ARTER’S (arch)/1897/ MADE/[U].S.A. (inverted arch)” on base	U.S.	1897
			108	Colorless glass milk bottle, neck to finish fragment, round shape, machine-made (press and blow), cap-seat finish	U.S.	Late 1890s to mid-20th century
			109	Colorless glass pickle bottle, complete, octagonal shaped body, flat base, machine-made; embossing: “H.J. HEINZ CO (arch)/132/PAT D. (D underlined superscript) (inverted arch)” on base	U.S.	1918-1933

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-10, Spoils, likely assoc. with Str. Ie, Fill	Glass	Bottle	110	Colorless glass medicine bottle, base to lip, rectangular shape, flat base, machine made, double ring finish; embossing: “DAVIS” horizontal on front body panel, “PAIN KILLER//VEGETABLE” vertically on side body panels, remnant maker’s mark and code “[…] (Diamond Glass Co. logo) 3” on base	U.S.	1924-1940
T-11, Str. If SIHP # -8840 Component 3, Fea. 6, Burnt trash fill	Glass	Bottle	111	Dark olive (black) glass bottle, neck to finish fragment, mold-blown, turn or dip mold, applied grooved ring finish, stretch marks on neck	–	1860-1885
	Ceramic	Hollowware	112	Whiteware dish, body fragments (4) and shoulder to rim (1) fragment, underglaze blue cut-sponge leaf decoration on exterior and blue hand-painted bands on rim and exterior	Euro-America	1840s-1870s; U.S. revival 1915-1940
			113	Whiteware bowl or dish, body fragment (1) and base fragment (1), unidentified hand-painted underglaze yellow decoration on exterior	Euro-America	Post-1850
			114	Whiteware hollowware, body fragment, no decoration	Euro-America	Post-1850
			115	Whiteware plate or dish, base fragment, hand-painted underglaze green leaf decoration on interior	Euro-America	Post-1850
	Glass	Bottle	116	Aqua glass Chinese medicine vial, base to neck fragment	China	1850s-1930s
			117	Amber glass bottle, shoulder fragment, cylindrical shape, seam present, unidentified manufacture method	–	–
			118	Colorless flat glass fragment, well outside the typical range of historic window glass thickness	–	–

Provenience	Material	Type	Acc. #	Description	Origin	Age
T-11, Str. If SIHP # -8840	Glass	Bottle	119	Olive glass bottle fragment, body fragment, cylindrical shape, mold-blown, turn mold	–	1870-1920
Component 3, Fea. 6, Burnt trash fill			120	Colorless glass bottle, base to heel fragment, cylindrical shape, slight kick-up base, mold seam between base and heel, unidentified method of manufacture	–	–
T-12, Str. Id Demolition fill	Ceramic	Other	124	Porcelain soup spoon fragment, body to handle fragment, flat bottom, undecorated	China	Post-1852
	Glass	Bottle	125	Amber glass beer bottle, complete, round body, flat base, machine-made, crown finish; embossing: “2 (underlined) / JAPAN” on base	Japan	Post-1921
			126	Colorless glass condiment (probably mustard) bottle, complete, cylindrical shape with ten flutes, flat base, machine-made, continuous external thread finish; embossing: “R in a triangle / 0” on base; marks for F.E. Reed Glass Co.	U.S.	1923-1956

5.2.1.1 Bottles

The terminology used to describe bottle traits and dating information is based on information from the U.S. Department of the Interior, Bureau of Land Management (BLM) Society of Historic Archaeology (SHA) “Historic Glass Bottle Identification and Information Website” (BLM/SHA 2018), unless otherwise noted. Bottle research focused on function and date of manufacture, using reference texts and online resources to identify maker’s marks and company histories.

5.2.1.2 Bottle Manufacturing Methods

The evolution of bottle manufacturing breaks down into three stages. Since antiquity, bottles have been free-blown with a blow pipe. Free-blown bottles are usually asymmetrical, crudely made, and have a pontil mark where a rod was used to hold the bottle during the last steps of manufacture. The lip of the bottle was finished by hand. In the United States, these types of bottles usually pre-date ca. 1865 (BLM/SHA 2018). The current assemblage contains no free-blown bottles.

Around ca. 1800, glass workers began to blow bottles in molds. The current assemblage includes 37 mold-blown bottles (Acc. #s 8, 11, 27, 42, 45, 47, 50–52, 55–57, 59–63, 65, 66, 70–74, 76, 86, 93–95, 98, 99, 107, 111, 116, 119, 135, and 159). One of the first types of molds was the one-piece dip mold, which dates from 1800 to 1870. Bottles made with this type of mold do not have seams or embossing. Beginning in 1830, the one-piece dip mold was gradually replaced by the three-piece dip mold, which dates from 1830 to 1870. A bottom mold was used to form the body of the bottle, and a hinged top mold was used to form the shoulder, neck, and finish of the bottle. This resulted in a seam wrapping horizontally around the shoulder, and two vertical side seams extending from the shoulder seam up the neck. There are no vertical side seams on the lower body. The current assemblage contains six dip-molded bottles (Acc. #s 52, 60, 65, 73, 74, and 116).

The most common type of mold is the two-piece mold, which dates from 1850 to 1920. There are four variations of the two-piece mold: hinge, key, post-bottom, and cup-bottom. The two-piece post-bottom mold was used between 1850 and 1890. This type of mold leaves two vertical side seams extending up the heel, body, and neck of the bottle from a circle seam on the center of the base. The two-piece cup-bottom mold dates to post-1850, with peak use from 1880 through the 1910s. This mold leaves a horizontal seam around the heel of the bottle, and two side seams extending from the heel seam up the bottle body and neck. In the current assemblage, three bottles were made with a two-piece post-bottom mold (Acc. #s 8, 93, and 135), and four bottles were made with a two-piece cup-bottom mold (Acc. #s 42, 51, 86, and 107). The variation of one two-piece mold bottle (Acc. # 57) could not be determined.

Turn-mold bottles date from 1870 to 1920. They were made by turning the bottles inside the mold, which left the body of the bottles seamless and shiny. Unlike free-blown bottles, turn-mold bottles are symmetrical and evenly proportioned. They can be identified by faint concentric rings around the heel and body of the bottle. Most do not have marking or embossing. Turn-molded bottles are often used for wine or liquor. There are seven turn-mold bottles in the current assemblage (Acc. #s 11, 45, 50, 59, 62, and 119). In addition, 19 bottles in the current assemblage were identified as mold-blown, but the type of mold could not be determined (Acc. #s 27, 47, 55, 56, 61, 63, 66, 70–72, 76, 89, 90, 94, 95, 98, 99, 111, and 117).

Semi-automatic machines were introduced in the 1890s and were mostly used to make wide-mouth bottles/jars. The glass had to be manually fed into the machines by glass workers. In 1903, Michael Owens invented a machine that took the place of the skilled glass workers. The machine could blow wide-mouth bottles as early as 1905 and narrow-necked bottles (e.g., beverage bottles) as early as 1908. The Automatic Bottle Machine (ABM) blew a bottle from base to lip, usually with a two-piece cup-bottom mold. The two side seams extend to and over the lip of the bottle or to a horizontal seam at the bottom of the bottle finish. The base of a bottle made in the early Owens ABM machines often had a round scar with feathered edges. There are few ways aside from the presence of the Owens suction scar on the base to distinguish a bottle made by a semi- versus fully-automatic machine; hence, both types of bottles are described in this report as "machine-made" (BLM/SHA 2019). There are 16 machine-made bottles in the current assemblage (Acc. #s 3, 7, 33, 41, 43, 44, 46, 106, 108–110, 121, 125, 126, 132, and 161).

Additionally, the manufacturing techniques for 22 bottles in the current assemblage are unknown (Acc. #s 2, 4–6, 9, 10, 14–16, 28, 29, 58, 67, 68, 72, 75, 79, 89, 90, 92, 117, and 120). These bottle fragments do not have the diagnostic physical features (e.g., pontil marks, mold seams, suctions scars, valve marks) necessary to determine the method of manufacture.

5.2.1.3 Bottle Finishing Methods

Methods for adding the bottle finish are also useful in artifact dating. In conjunction with the method of bottle manufacturing (discussed above), bottle finishing methods were used to narrow the date range of the collected artifacts. During the mold-blown era, from 1800 to ca. 1920, the lip of the bottle continued to be done by hand. Early mouth-blown bottles were removed from the blowpipe by cracking off, bursting off, or shearing the neck. The post-manipulation of the bottle to create the lip was known as "finishing." One method, known as an "applied finish," was used from 1840 to 1885. In this method, glass was applied to the bottle neck, and the finish was shaped with a specialized lipping tool. Diagnostic features of an applied finish include side mold seams that end abruptly on the neck at the bottom of the finish; excess glass slopping over the upper neck below the finish; and a horizontal ridge inside the neck of the bottle that can be felt by inserting a finger into the bottle bore (BLM/SHA 2019). Eight bottles in the current assemblage have an applied finish (Acc. #s 51, 55, 59, 63, 70, 71, 99, and 111).

The standard tooled finish was used as early as the 1860s on smaller bottles, but it did not become the dominant finishing method until 1890. The date range for a tooled finish is generally 1870 to 1920. The upper part of the bottle was refired, and some of the glass from the neck was formed into the finish with a lipping tool. Diagnostic features of a tooled finish include side mold seams that fade out on the neck of the bottle below the finish; concentric horizontal tooling marks present on the finish and upper neck; an absence of glass flopping over the upper neck; and an absence of the interior ride in the bore (BLM/SHA 2019). Seven bottles in the current assemblage have a tooled finish (Acc. #s 42, 45, 47, 86, 95, 98, and 135).

5.2.1.4 Bottle Embossing

Several other bottle characteristics can also provide dating information. These include maker's marks, proprietary embossing, bottle type, closure type, and color. A combination of characteristics is often used to assess the most likely date range for manufacture.

Accession # 8 is an aqua glass beer bottle made by the Illinois-Pacific Glass Company for the Honolulu Brewing and Malting Company. The Illinois-Pacific Glass Company was founded in 1902 as a consolidation of the Abramason-Heunisch Company, the U.S. Bottlers' Supply Company, and the Illinois Glass Company's Pacific Coast Division (Lockhart et al. 2016:417; Moody 1926:2111). The three main manufacturer's marks used were IPGCo, IPGCo with the letters formed in a diamond shape, and IPGCo surrounded by a diamond; all three can be dated generally to 1910-1925 (Lockhart et al. 2016:443). Accession # 8 features the first listed maker's mark (IPGCO) and can be more narrowly dated by its proprietary embossing to 1911-1917 (Elliot and Gould:189).

The Owens-Illinois Glass Company was created through the merger of the Owens Glass Company and the Illinois Glass Company in 1929. The company was formally incorporated as the Owens-Illinois Glass Company, Ltd., in 1931 (Lockhart and Hoenig 2018:297; Paquett 1994). It was one of the largest glass bottle manufacturers in the world, with plants across the U.S. Since the company's incorporation, three maker's marks have been used. The first maker's mark combined the logos of both companies. It comprised a diamond around an "O" containing an "I," called the Diamond-OI logo. It was used from 1929 to 1954. Number codes were also introduced in 1929. The number on the left of the logo represents the production plant, while the number on the right represents the year of manufacture. The plant and date codes on Acc. # 161 indicate this bottle was manufactured in San Francisco, California, in 1935 (Lockhart and Hoenig 2018:303).

Accession #s 52 and 73 (Figure 137) are olive glass whiskey bottles with base embossing by Richard Cooper & Company. This company was one of several glass manufacturers that emerged in Portobello, Scotland, in the late nineteenth century. Richard Cooper began manufacturing glass in 1856 alongside William Bailey, until Bailey's death in 1859. At that time, Cooper took on his brother-in-law, Thomas Wood, as a partner (Lockhart et al. 2014:493). The two split after a disagreement in 1866, dividing the company and becoming competitors. This continued until 1928, when Cooper's plant was purchased by Distillers Company, Ltd, which had previously purchased Wood's plant (Lockhart et al. 2014:494). A few different variations of Cooper's proprietary information were used as a mark throughout the years the plant operated. The variation that appears on Acc. #s 52 and 73 was used from ca. 1866-1885 (Lockhart et al. 2014:496).

Accession # 57 is an aqua glass Spalding's glue bottle. Little is known about Henry C. Spalding & Company, the company responsible for manufacturing Spalding's Celebrated Prepared Glue, but advertisements can be found in newspapers dating to the 1860s (Henry C. Spalding & Co. 1860). The current bottle is an early two-piece mold bottle, with a blowpipe pontil scar and a "tooled" rolled finish. This type of finish, though technically created using an implement on the existing glass of the bottle lip, was phased out in the 1870s and predates the implements later used to create what is typically referred to as a tooled finish (BLM/SHA_Bottle Finishes & Closures 2019). A manufacture date of pre-1870s is further supported by the discontinuation of the use of a blowpipe as a pontil ca. 1870 (BLM/ SHA_Bottle Bases 2019).

Accession # 86 (Figure 138) is an amber glass liquor bottle manufactured for W.C. Peacock & Company Ltd., of Honolulu. Walter Chamberlain Peacock was born in England in 1858 and relocated to Hawaii in 1881. He started a liquor business with George Freeth. By 1890, Freeth had left the Islands, and W.C. Peacock & Company, Ltd., was established. After Peacock's death in

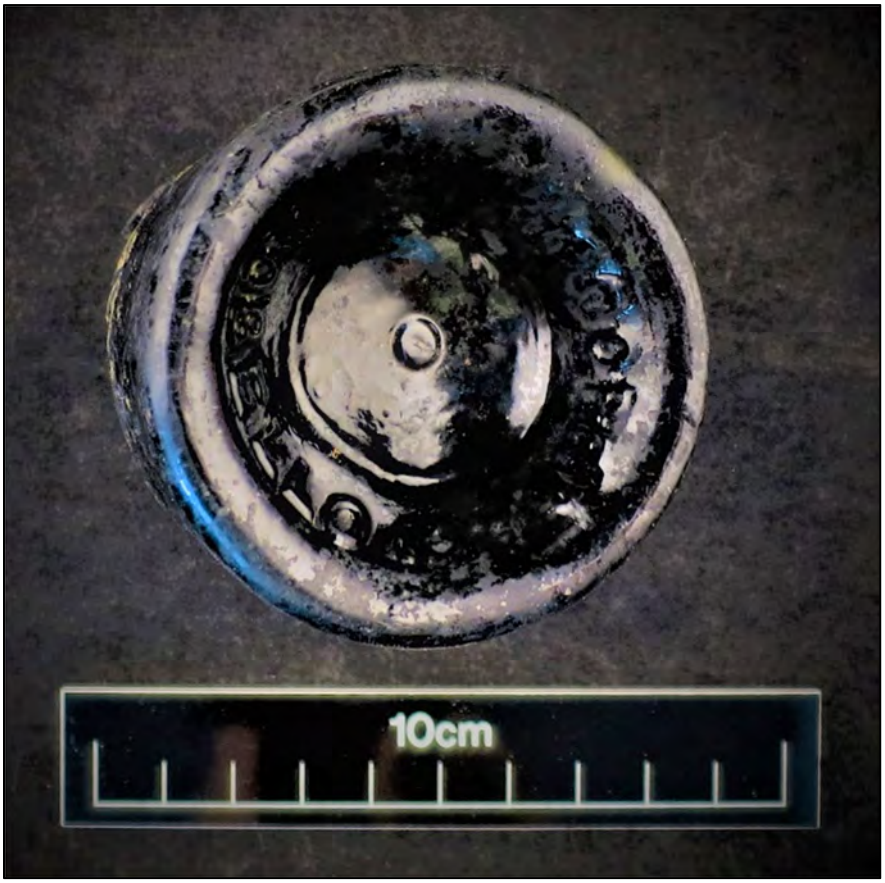

Figure 137. Acc. # 73, olive (black) glass whiskey bottle manufactured by Richard Cooper & Company



Figure 138. Acc. # 86, amber glass liquor bottle manufactured for W.C. Peacock & Company, Ltd.

1909, operation of the company passed to his nephew, before Prohibition forced the company's termination in 1915 (Sullivan 2013). The embossing on Acc. # 86 is consistent with bottles manufactured in the early 1900s (Elliot and Gould 1998:177).

Accession # 110 (Figure 139) is a colorless glass medicine bottle that held Davis brand vegetable painkiller. Created by Perry Davis to treat his own ailments and later marketed to the public, Davis' vegetable painkiller was a popular medicine sold from 1843 through the early 1940s (Davis and Son 2014; Tamburello 2008). The machine-made bottle was manufactured by the Diamond Glass Company of Pennsylvania, which was founded in 1886 when ten partners purchased and renamed the Penn Glass Works facilities. The company successfully operated and expanded to serve eastern Pennsylvania and the surrounding states through several decades, eventually merging with another firm to become Diamond-Bathurst in 1983. In 1987, it became a subsidiary of Anchor Hocking, which closed the plant for good in 1990 (Lockhart et al. 2015:88). A horizontally elongated diamond mark is embossed on the base of Acc. # 110; this logo was used by the Diamond Glass Company from 1924 to 1940 (Lockhart et al. 2015:88).

Three bottles in the current assemblage (Acc. #s 7, 106, and 108) were manufactured with a press-and-blow machine. Accession # 108 is a colorless glass milk bottle with a cap-seat finish. Based on the horizontal seam tapering out below the finish, it was made by a press-and-blow machine, which could be semi-automatic (late 1890s to mid-1910s) or fully automatic (post-1910s). Accession # 106 is a colorless glass bottle also made with a press-and-blow machine, as evidenced by the valve mark on the base. The mark is made as a machine's push-rod valve ejects the partially expanded parison from the blank mold and shifts it to the blow mold. Valve marks are round, about half an inch in diameter, and incised into the surface of the glass. As the same diagnostic features are shared by bottles made from semi-automatic and fully automatic machines, Acc. # 108 dates from the late 1890s to the mid-twentieth century (BLM/SHA 2019). Accession # 7 is a blue-aqua glass bottle with a valve mark on the base. Narrow-mouthed bottles with valve marks are uncommon, but some soda and beer bottles were manufactured on press-and-blow machines in the early 1900s (BLM/SHA 2019).

Accession # 109 (Figure 140) is a colorless glass Heinz pickle bottle. H.J. Heinz founded the company in 1869 and sold it to his brother, John, and cousin, Frederick, in 1875. They named the company F&J Heinz, which became H.J. Heinz when they sold the company back to H.J in 1888 (BLM/SHA 2019). The number embossed on the bases of Heinz bottles can help to identify bottle use and manufacture date. The "132" on the base of Acc. # 109 indicates the bottle was manufactured to hold pickles between 1918 and 1933 (BLM/SHA 2019).

Accession # 107 is an aqua glass Carter's ink bottle. Carter's Ink Company was founded in Boston in 1858 and eventually became the world's largest ink manufacturer (Faulkner and Faulkner 2003:41; Old Main Artifacts 2015). It produced ink and related products until 1976, when it was purchased by the Dennison Company (Old Main Artifacts 2015). The base embossing on Acc. # 107 indicates it was manufactured in the United States in 1897.

Accession # 55 is an olive glass Cosmopoliet Gin bottle. The gin was made by Dutch distillery Melchers, founded by Petrus Melchers in Scheidam, Netherlands, in 1837. The company made a number of branded gins, which it exported first to the United States and later to South America, Africa, and Australia. The company was operated by several generations of the Melcher family

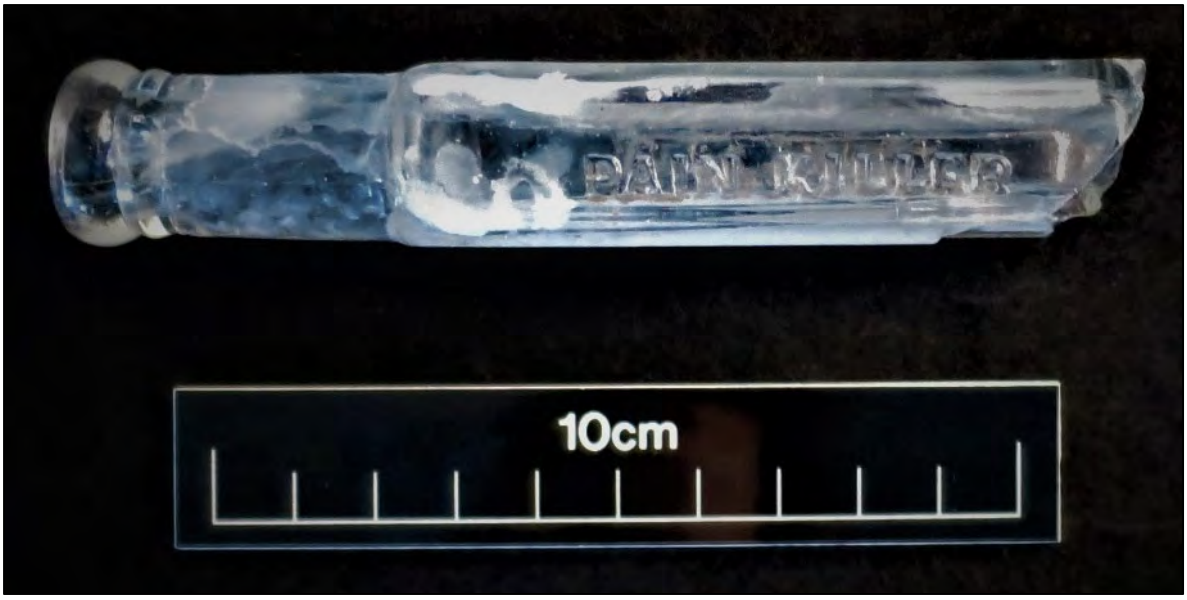

Figure 139. Acc. # 110, machine-made colorless glass medicine bottle manufactured for Davis brand vegetable painkiller

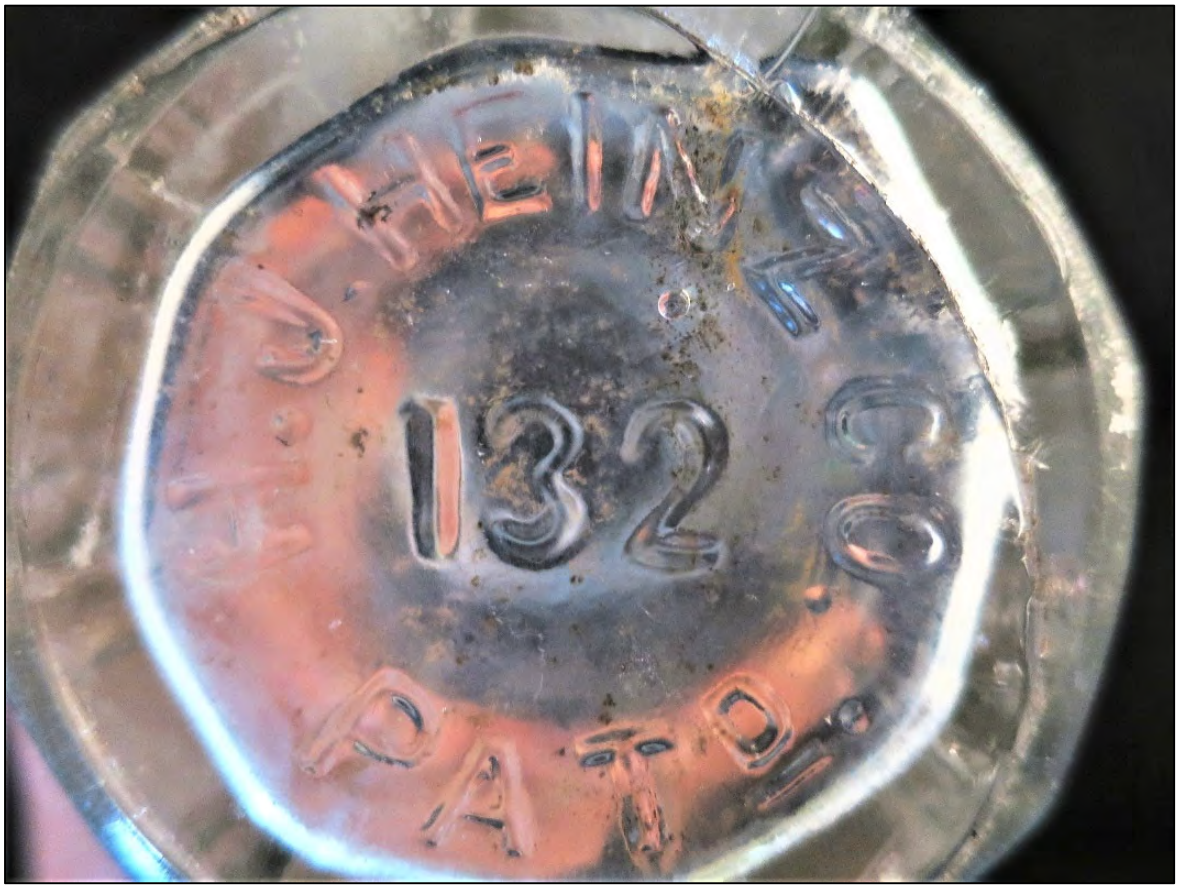

Figure 140. Acc. # 109, colorless glass Heinz pickle bottle base embossing

through both world wars, eventually being sold to the Vonk family in 1970. The company continues to produce a variety of products under the Melcher name to this day (Melchers Group 2019). Accession # 55 is a Cosmopoliet brand case gin bottle embossed with the brand's distinctive "Standing Man" figure. The bottle is incomplete, but available examples of the complete bottle show it would have had an applied mineral finish (Munsey 2009:31). Dutch case gin bottles were made with this type of finish from 1890 to 1910 (BLM/SHA 2019). Accession # 47 (Figure 141) is also a Dutch case gin bottle, colorless, with a mineral finish and a blob seal on the shoulder. This bottle was made by C. Meyer & Company, a gin distiller in Schiedam, Netherlands, about which little information could be found. This bottle, which held Palmboom gin, is common in Hawai‘i and dates to ca. 1910 (Johnston 2015:145).

Accession # 126 is a machine-made colorless glass condiment bottle manufactured by the F.E. Reed Glass Company. The company was founded in the late 1800s, when the Reed family bought into, and eventually took over, Rochester Glass Works in New York. The company produced glass for sale in the eastern United States until closing due to bankruptcy in 1956 (Lockhart et al. 2015:1). The company used the mark featured on Acc. # 126, an R in a triangle, from 1923 to 1956 (BLM/SHA 2019).

Accession # 41 is a colorless glass bottle made by the Charles Boldt Glass Company, which was founded in 1900 when the Muncie Glass Company reorganized. Boldt procured a license to manufacture liquor bottles and flasks using an Owens ABM in 1910 but sold the majority of his company stock to the Owens Bottle Company in 1919 as a result of increasing Prohibition. Owens took control of and diversified production. He acquired the rest of the company stock in 1926, closing the operation's Cincinnati plant (Schulz et al. 2014). The company used the mark that appears on Acc. # 41 from 1910 to 1919 (BLM/SHA 2019).

Accession # 42 (Figure 142) is a blue aqua glass bottle manufactured to be compatible with a "Swingtop" closure. The "Swingtop" closure is a variation of a common closure type, the lightning style closure, which features a rubber stopper held in place by a wire around the neck of the bottle. The "Swingtop" differs from a standard lightning closure in that it utilizes two dimples in the finish to hold the wire and stopper in place rather than wire around the neck of the bottle. The earliest known use of this variation is by Grolsch®, a Dutch alcohol manufacturer, in 1897 (BLM/SHA 2019).

Accession #s 44 and 125 are machine-made amber glass beer bottles with "JAPAN" embossed on the base. The McKinley Tariff Act ratified by the United States in 1891 required imports to be marked with their country of origin. Japan used "Nippon" until the term was declared inadequate by the United States in 1921, and all future imports were required to be labeled with "Japan" (Ross 2012:24).

Accession # 116 is a Chinese medicinal vial, which was made using a special process. First, a hollow glass tube was blown. Then, the tube was dipped in molten glass, and the outer body was shaped into a rectangle with four sides and a base on a hard surface. The free end of the tube was then broken from the blowpipe, creating a "burst off" finish, which was left rough on purpose, so that the rough edges would "grab" the cork seal and keep it in place. These vials contained liquid or oil-based medicine and are often associated with Chinese overseas sites in the American west dating from 1850 to 1930 (BLM/SHA 2019; Montana Historical Society 2010:7).



Figure 141. Acc. # 47, colorless glass Dutch Palmboom case gin bottle with applied blob seal

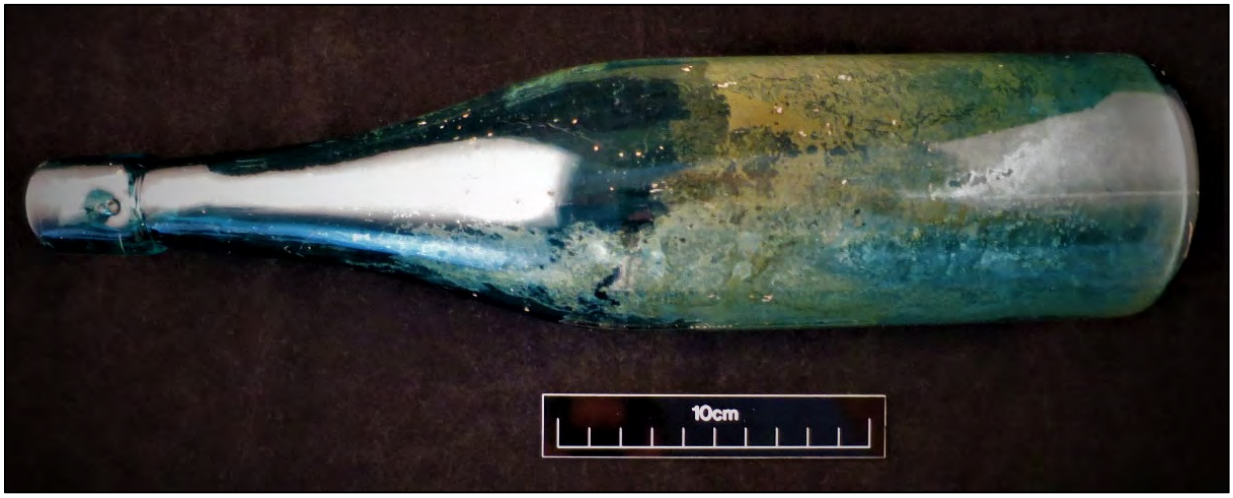

Figure 142. Acc. # 42, aqua glass beverage bottle with “Swingtop” closure

Accession # 94 is a colorless glass bottle fragment with a slight sun-colored amethyst tint. Colorless glass is usually created through the use of a decolorizing agent such as manganese dioxide. Upon exposure to ultraviolet (UV) light, manganese dioxide causes the glass to take on a tint ranging in color from light pink to moderately dark amethyst, commonly referred to as "sun-colored amethyst." Manganese dioxide was commonly used to decolor glass bottles, primarily mold-blown bottles, between 1890 and 1920 (BLM/SHA 2019). Accession # 10 is a colorless glass bottle fragment with a slight gray tint. Gray-tinted colorless glass bottles usually date from 1915 to 1925 (BLM/SHA 2019).

5.2.1.5 Miscellaneous Glass Artifacts

Accession #s 53 (Figure 143), 54, and 136 are colorless pressed glass tumblers. To make pressed glass, molten glass is poured into a mold and "pressed" with a plunger. Pressed glass tableware was produced beginning in 1825. Early pressed glass was ornate to hide manufacturing flaws (Welker and Welker 1985). By 1865, pressed glass technology had advanced, and it became more functional and affordable. True colorless pressed glass dates to post-1870 (BLM/SHA 2019).

There are three window glass fragments in the current assemblage (Acc. #s 30, 91, and 118). Flat window glass can be diagnostic depending on—among other traits—surface texture, uniformity, and thickness. Hand-blown window glass dates to pre-1920, and machine-made window glass dates to post-1905. Cylinder window glass was made when a tube of blown glass was flattened to create a large, smooth, even sheet. Its predecessors, broad and crown glass, produced glass with less even surfaces and variable thicknesses (Weiland 2009:29). Cylinder glass was the most popular type of window glass in the early nineteenth century, and an increasing demand for larger (and therefore thicker) windows resulted in a steady increase in glass thickness. Glass thickness increased from 0.75 mm in the early 1800s to 3.3 mm in the early 1900s, when machine-produced glass replaced cylinder glass (Weiland 2009:29). Accession #s 30 and 91 are both aqua window glass fragments, 2.2 mm and 2.0 mm thick, respectively. Taking into account all of the methods tested by Weiland, Acc. # 30 was likely manufactured between 1838 and 1889, while Acc. # 91 was most likely manufactured between 1840 and 1881 (Weiland 2009:31). Accession # 118 is also a flat glass fragment; however, its thickness of 7 mm is well outside the range for pre-machine-made window glass. Accession # 31 is 3.1 mm thick, which is outside the dating range of most of the methods tested by Weiland. Only one method includes glass of this thickness, indicating a date of post-1845 (Weiland 2009:31).

Accession # 64 is a blue-aqua glass insulator. Glass insulators came into use during the mid-1840s to early 1850s, when they were used on telephone and electrical power lines. They were attached to the wooden utility lines using metal pins, and their peak popularity was between 1875 and 1930. Some of the styles manufactured include toll style, telegraph style, rural and long-distance telephone styles, beehive, hoopskirt, and pony. Accession # 64 is a threaded pin-style insulator, which was invented in 1865 (Berge 1980:155–156).

Accession # 37 (Figure 144) is an opaque brown-swirled glass machine-made marble. Marbles are some of the first toys in history, with use during Roman times and the Middle Ages, and can be made of ceramic, stone, or glass. They were mass produced in Europe, particularly Germany, during the eighteenth and nineteenth centuries (Carskadden and Gartley 1990). Germany was the world leader in marble production throughout the nineteenth century into the 1920s. Marbles were

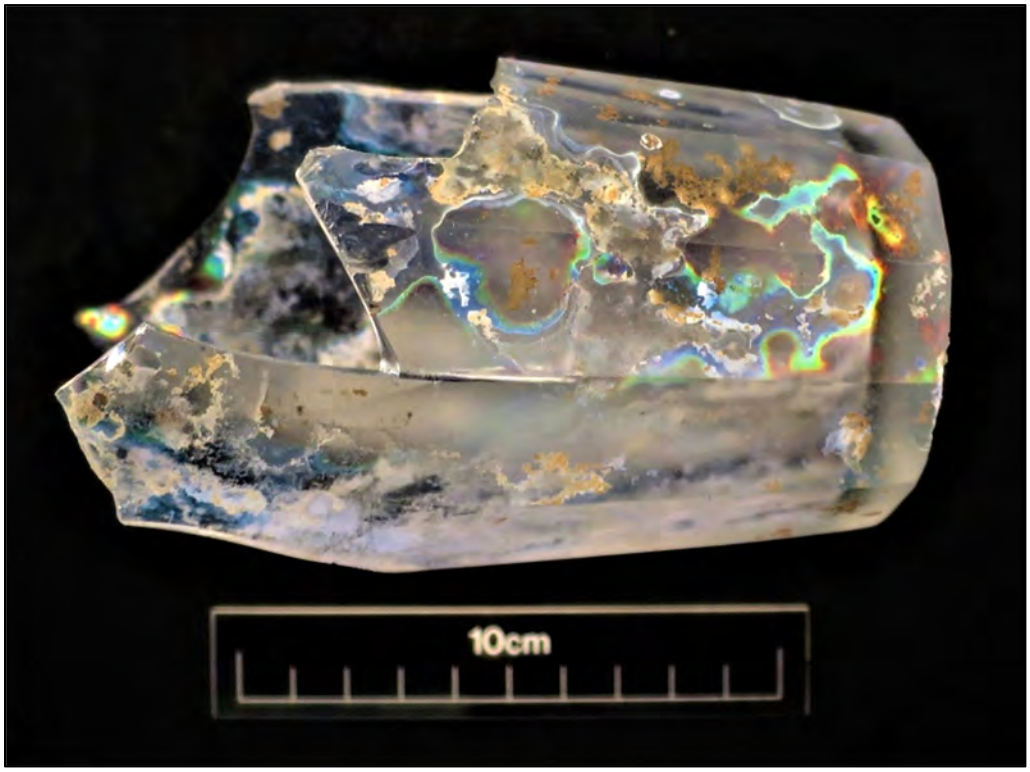

Figure 143. Acc. # 53, colorless pressed glass tumbler



Figure 144. Acc. # 37, machine-made brown glass marble

produced in the United States but not in large quantity until the invention of the automatic marble-making machine in 1901 (Randall 1971). Machine-made marbles most likely date to post-1910, when glass marbles became more common in the United States (Carskadden and Gartley 1990).

Accession # 96 is a fragment of a circular, hollow milk glass object of indeterminate function. Milk glass was first introduced in Venice during the 1500s. Milk glass tableware was popular from ca. 1870s to the mid-twentieth century. It waned in popularity during the Great Depression but experienced a resurgence after World War II. Like pressed glass, milk glass was an economical substitute for more expensive China (BLM/SHA 2019).

5.2.2 Ceramic Artifact Analysis

Ceramic vessels were analyzed for paste, shape, color, decoration, and origin. Paste includes "earthenware," "stoneware," and "porcelain." Shapes are designated as "flatware" (e.g., plates, shallow saucers) or "hollowware" (e.g., bowls, cups). When a fragment was too small to determine general shape, the artifact is listed as "tableware" (Huddleson 2013). The terminology and dates for manufacturing and decoration techniques used in this section are from the Maryland Archaeological Conservation Lab (2002) internet site "Diagnostic Artifacts of Maryland," unless otherwise noted.

Fifty-four ceramic artifacts were collected during the AIS. These include 52 vessel fragments, a spoon, and a doorknob. The 52 vessel fragments include flatware (n=4), hollowware (n=36), tableware (n=3), common pottery vessels (n=4), storage containers (n=2), bottles (n=2), and one unidentified item. Twenty-five of the artifacts originate from Euro-America, two from England, two from Germany, ten from Japan, eight from China, and three from Asia (China or Japan).

5.2.2.1 Euro-American Ceramics

The ceramics discussed in this section were manufactured in the United States or England or were identified only as Euro-American. They fall into three main categories: earthenwares, stonewares, and porcelains.

Whiteware is a type of earthenware made of a semi-porous to porous, compact material fired at 1100–1200º C (Florida Museum of Natural History 2018). Whiteware production began in 1820, with the height of production from 1850-1910 (Lebo 1997). Hand-painted whiteware dates between 1830 and 1870 (Maples 1998:110). One whiteware fragment (Acc. # 149; Figure 145) is decorated with a painted thick-line polychrome floral design, which was most popular on whiteware from 1840 to 1870.

Accession # 100 (see Figure 145) is a whiteware fragment with a transfer-print decoration. This type of decoration was made using tissue paper to transfer designs from inked, engraved plates onto the surfaces of ceramic vessels. Transfer-printing began in Staffordshire in 1783 and was popular in the United States until the mid-nineteenth century, when undecorated or minimally decorated ceramic wares came into style. There was a resurgence in use ca. 1870, and transfer-printed wares remained on the market until they were replaced by decals in the early 1900s. Accession # 100 has a scenic vignette print, which dates from 1850 to 1889 (Maryland Archaeological Conservation Lab 2019).



Figure 145. 1) Acc. # 149, whiteware hollowware fragment with hand-painted floral decoration; 2) Acc. # 100, whiteware plate marly to rim fragment with blue scenic vignette transfer; 3) Acc. # 150, dipped London-shaped whiteware bowl fragments with blue annular banding

Dipped wares are refined earthenwares decorated with clays that had different colors when fired or were dyed with mineral oxides suspended in a liquid solution called slip. Slip could be used as a dip for the entire surface of the vessel or solution to pour, band, drip, or trail decoration. Dipped earthenwares could also be decorated by removing the slip in cut patterns and exposing the ceramic body underneath. Dipped earthenwares were the most affordable hollowware decoration available from ca. 1780s through the nineteenth century. Dating is based on decorative technique and vessel shape. Accession # 150 (see Figure 145) is a London-shaped bowl with blue annular banding. Banded wares date from the 1770s to the early twentieth century, with blue bands being most common after 1840 (Miller 1991:6).

One artifact in the current assemblage, Acc. # 141 (Figure 146), is a Victorian majolica style whiteware planter. Victorian majolica is a ware characterized by intricate relief molding and brightly colored glazes, usually on earthenware (Maryland Archaeological Conservation Lab 2019). It was first produced in Great Britain in 1851 to mimic Italian Renaissance tin-glazed pottery. It then spread through Europe and the Americas, with production beginning in North America by the 1870s (Bergesen 1990:9, 87, 103; Dawes 1990:140). Victorian majolica's popularity in the United States began as a result of its appearance at the 1876 Centennial Exposition in Philadelphia. Its popularity peaked in the 1880s but waned by the turn of the twentieth century, with production discontinued in the United States by World War I (Dawes 1990:151; Maryland Archaeological Conservation Lab 2019). As Victorian majolica is relatively fragile compared to



Figure 146. Acc. # 141, whiteware Victorian majolica planter fragments

other types of wares, special use items such as butter dishes, dessert plates, and cheese plates were more common than everyday tableware (Bergesen 1990:22). Accession # 141 is decorated with a turquoise underglaze on the exterior and a lavender underglaze on the interior. The exterior body has a relief molded repeating a Celtic style pattern along the rim and heel and multicolored embossed lilies on the exterior body. There is no maker's mark on this artifact; however, while colors are not considered diagnostic, it should be noted that this color scheme was favored by popular British potter George Jones.

Accession #s 103 and 144 are yellowware hollowware fragments. Yellowware is a type of earthenware made from yellow clays in England and North America. The paste is coarser than refined earthenwares such as whitewares and porcelains, and yellowwares are fired at higher temperatures. Yellowware production began in the United Kingdom in the late eighteenth century. By 1800, North American potteries were producing yellowware in Ohio, New Jersey, Pennsylvania, and Maryland. Yellowware continued to be produced until the 1930s, but popularity declined around the turn of the century. Five common decorating techniques include slipped decoration, mocha, Rockingham glazes, oxide washes/flint enamels, and relief molding (Maryland Archaeological Conservation Lab 2019). Accession # 144 is a yellowware nappy, a plain deep bowl with flared sides (Liebowitz 1985). Nappies are a common yellowware vessel type, with most produced between 1840 and 1900 (Lebo 1997:83)

Another type of Euro-American ceramic in the current assemblage is ironstone (Acc. #s 24, 35, 143, 145–147, and 151–155; Figure 147). This is a semi-vitreous refined earthenware fired at higher temperatures than whiteware, with an intermediate hardness between whiteware and porcelain (Florida Museum of Natural History 2018). It was produced in England's Staffordshire district and in the United States. White ironstone was most popular from 1840 to 1870 but was sold into the twentieth century. Many patterns and shapes were produced and replicated by



Figure 147. 1) Acc. # 154, paneled ironstone hollowware vessel, base to body fragment; 2) Acc. # 146, ironstone ewer or pitcher fragments with J.W. Pankhurst maker's mark on base; 3) Acc. # 147, ironstone saucer fragment with Henry Alcock & Company maker's mark on base; 4) Acc. # 35, ironstone hollowware handle fragment with remnants of copper or gold luster decoration

different potters, and the rise and fall in popularity of the styles is useful for dating. Before 1860, wares with detailed molding and sharp angles were popular. Examples include foliage, paneled/scalloped, harvest, classical, and ribbed motifs. Post-1860, detailed molding was replaced by wares with simple lines (Maryland Archaeological Conservation Lab 2019; Wetherbee 1985:102). Around the turn of the century, household use declined and white ironstone began to be used commercially in hotels, train depots, and restaurants. Accession #s 145, 151, and 154 are all paneled wares, indicating a manufacture date of pre-1860.

Several ironstone artifacts in the collection have maker's marks. Accession # 146, a pitcher or ewer with relief-molded foliage, was made by J.W. Pankhurst, a British potter who operated in Hanley, Stoke-on-Trent, from 1850 to 1883 (Birks 2016). Accession # 147 is an undecorated saucer made by Henry Alcock & Company, a potter operating in Cobridge, Stoke-on-Trent, between 1861 and 1910 (Birks 2016). Accession # 35 is a hollowware handle fragment with remnants of copper or gold luster, a decoration used on ironwares from the 1850s to ca. 1900 (Wetherbee 1996:150–151). Accession #s 24, 143, 152, 153, 155, and 160 are all incomplete and lack diagnostic characteristics to further narrow the date of manufacture.

Accession # 142 is a common earthenware garden flowerpot. Flowerpots were hand thrown until William Lond made a pottery molding machine in 1861 (Scanland and Redmond 2013:30). Accession # 142 appears to be machine-made, indicating it was made after 1861.

Stoneware is fired at higher temperatures and is more vitrified and durable than earthenwares (Florida Museum of Natural History 2018). Stonewares are often decorated with a salt glaze, which is produced when salt is introduced into the kiln during firing. The salt reacts with the silicates in the clay leaving a shiny, pitted surface; this texture is also called “orange peel.” Color varies between pale beige, dark gray, and red. Accession # 156 is a stoneware vessel fragment, likely from a flowerpot. Accession # 162 is a knob fragment from an unidentified vessel with a shiny brown glaze, possibly a salt-glaze.

Accession #s 127 (Figure 148) and 148 are German “Westerwald” stoneware bottles. These bottles were made in a variety of shapes that evolved over time, but most are tall and cylindrical with a short neck and shoulder handle. They were salt-glazed for decoration. The bottles were typically used to export mineral water from the lower Westerwald region of Germany (Leavitt 2013:324); however, some were sent to Holland, filled with Dutch gin, and exported. The sturdiness of the bottles made them ideal for shipping water and gin overseas. Production range is from the early to mid-nineteenth century until World War I. Until the end of the nineteenth century, the bottles were thrown on a wheel, creating a distinctive pattern of helical ridges on the interior of the jug. In 1879, an extruding press used in the manufacture of sewer pipes was adapted for use in bottle-making, soon replacing wheel manufacture and resulting in fine, near-vertical marks on the interior of the bottles (Leavitt 2013:329). Accession #s 127 and 148 both have helical ridges on the interior, indicating they were produced before 1897.

One Euro-American porcelain fragment was collected (Acc. # 83). Porcelains are very hard, compact, vitreous, and fired at temperatures of 1300–1450º C (Florida Museum of Natural History 2018). The manufacture of Euro-American porcelain began as early as the mid-1700s, but the popularity of porcelain did not take hold until the mid- to late nineteenth century. Most Euro-American porcelain was decorated, with common techniques including overglaze painting and printing, relief molding, gilding, and decal print. Accession # 83 is a relief molded hollowware fragment, while Acc. # 133 is a doorknob. Until the mid-1800s, porcelain doorknobs were imported from France and England. In 1841, porcelain doorknobs with simple cast iron shanks were patented in the United States. They gained popularity and became more widespread by the 1860s (Hall 2009).

5.2.2.2 Asian Ceramics

Twenty-one Asian ceramic artifacts were collected during the AIS. They include 17 hollowware porcelain vessels, one porcelain spoon, one common pottery planter, and two stoneware storage jars. Eight were identified as Chinese, and ten were identified as Japanese. Another three could only be identified as Asian.

5.2.2.2.1 Chinese Ceramics

Of the Chinese ceramics collected during the AIS, three can be categorized as “*tz‘u*” wares or “Kitchen Qing” wares (Acc. #s 13, 104, and 129; Figure 149). These wares were made and exported to America between 1644 and 1911 (Lister and Lister 1989). They are typically found in nineteenth and early twentieth century archaeological contexts for overseas Chinese communities in the western United States and Hawai‘i (Costello and Maniery 1988; Lebo 1997). The immigration of Chinese to work on Hawaiian sugar plantations took place between 1852 and 1892, but several Chinese entrepreneurs had established themselves in the Islands earlier (Nordyke and



Figure 148. Acc. # 127, German stoneware bottle, base to body fragment



Figure 149. Acc. # 129, porcelain *tz‘u* rice bowl with Double Happiness decoration

Lee 1898). In fact, there were three Chinese stores in Honolulu by the 1830s dealing in “dry goods,” with at least one selling “crockery.” In this context, “crockery” probably refers to inexpensive export Chinese porcelain (Char 1974:20). Chinese exports were not only bought by Chinese immigrants but were also purchased by Hawaiians, Caucasians, and other residents. In a study on three early Chinese stores in Hawai‘i, Char (1974:31) stated that “[m]issionary and merchant families of the white population took to China goods, as did the New Englanders at home in America.”

Chinese ceramics were made with a variety of motifs including “Double Happiness,” “Bamboo,” “Four Seasons,” and “Winter Green” (Lebo 1997). The “Double Happiness” motif consists of a blue hand-painted design with two stylized “Happiness” symbols. This can be accompanied by a “Swirl” or “Sweet Pea” motif.

“Winter Green” is a decoration consisting of a light blue to bluish green glaze, usually on the interior and exterior of the vessel. It has been noted in collections containing both Chinese and Japanese ceramics. Some sources say it was a Chinese invention adopted by the Japanese in the seventh century (Lister and Lister 1989; Ross 2012), while others say it was of Japanese origin and adopted by the Chinese (Sando and Felton 2013; Stenger 1986; Wegars 1988). Certain techniques can be linked to Japanese Winter Green; these include polychrome hand-painted overglaze and the Japanese technique of *kasuri-mon* (incising the exterior of the vessel before glazing) (Ross 2012). Accession # 104 is a Chinese porcelain rice bowl with wintergreen glaze.

Lister and Lister (1989) note the Double Happiness motif is usually found in California Chinese community sites dating before 1880, while the Bamboo (Three Circles and Dragonfly) motif is found in the early part of the 1860-1900 period. The Four Seasons and Winter Green dishes are usually found in the later part of the 1860-1900 period. However, Lister and Lister (1989:53) caution that Chinese ceramic styles are “notably long-lived” and that some styles, especially the Four Seasons and Winter Green types, may have been exported to America into the mid-twentieth century. Sando and Felton (1993), using the inventory of a nineteenth century Chinese store in Northern California, researched the various prices of ceramics with different patterns. Both Double Happiness and the Bamboo pattern were considered low-priced wares, in contrast with the more high-priced ceramics, such as Four Seasons and Winter Green. Of the inexpensive patterns, Double Happiness wares are found in contexts that pre-date 1870; they are superseded by the Bamboo pattern after that date. Accession #s 13 and 129 are decorated with the Double Happiness motif (see Figure 149).

Accession # 124 is an undecorated porcelain spoon fragment. Spoons were an important Chinese eating utensil (Frierman 1983:176). The Chinese table setting would have consisted of a teacup, spoon, chopsticks, bowl, and saucer to eat soups, stews, noodles, meats, and broth (Anderson 1988; Knee 2012:69; Lister and Lister 1989). Accession # 124 dates to post-1852 (date of the first immigration of Chinese workers). Accession # 20, a porcelain hollowware fragment with an overglaze decoration, also dates to post-1852, as it lacks the necessary characteristics for further dating.

Accession #s 101 and 102 are Chinese brown-glazed stoneware (CBGS) vessel fragments. CBGS is one of the most common types of ceramics found in archaeological contexts with Chinese artifacts. They were utilitarian in function, primarily used for the shipment and storage of food (Yang and Hellmann 2013). Most vessels were produced in Canton, a province in southern China,

and were made using a combination of slab and coil technology. Because the vessels were made by hundreds of potters, there are variations in form; however, standard shapes include wide-mouth, spouted, barrel, and straight-sided jars, liquor bottles, stew pots, and pans (Yang and Hellmann 2013). CBGS vessels have buff-colored paste, an exterior glaze ranging from brown to black, and a thin, light brown interior glaze, although the glaze rarely covers the entire vessel; usually, the heel, base, and footring are unglazed (Choy 2014). CBGS can be difficult to date because similar vessel forms have been manufactured for hundreds of years (Munsey 1970:136; Yang and Hellman 1996:59).

5.2.2.2.2 Japanese Ceramics

Three decoration methods are used on Japanese ceramics: hand-painting, stencil-printing, and transfer-printing. Stencil-printing is when a paper stencil is placed over the vessel, and color decoration is applied. The two stenciling methods are called *fukizumi* and *katagami*. *Fukizumi*, or negative, stenciling is when the stencil is placed on the vessel to block pigment, and color is sprayed around the edges, creating an outline. *Katagami*, or positive, stenciling is when the color is applied to the vessel through holes in the stencil. Stenciling was used during the seventeenth century, abandoned in the eighteenth century, and reinvented in the early 1870s in Hizen province. From there, it spread to Tobe and Mino provinces between 1878 and 1882 and was later adopted in other porcelain centers across Japan (Ross 2012:7). The first Japanese transfer-printed wares were produced by potters in Tajimi in 1888 and were soon copied by other major ceramic centers. By ca. 1920, transfer-printed wares replaced stenciled wares (Ross 2012:8).

Accession #s 12, 21, and 85 (Figure 150) are hand-painted porcelain bowls dating to post-1868 (date of the first immigration of Japanese workers). Accession # 49 is a small porcelain sauce dish, with a relief-molded flower on the interior, also dating to post-1868. Accession # 82 (see Figure 150) is a porcelain hollowware fragment with an underglaze blue *fukizumi* decoration on the interior dating from the 1870s to 1920. Accession # 131 (see Figure 150) is a flatware *kozara* dish with an underglaze blue *katagami* decoration on the interior. The combination of the dish style and the stencil decoration provides a manufacture date range of 1870s to 1912 (Ross 2012:10). Accession # 84 is a rice bowl lid (*futa*) with a mix of transfer-printed and hand-painted lines dating to post-1888 (date of the first Japanese transfer-printed wares). Accession #s 17, 18 (see Figure 150), and 134 are hollowware fragments with a blue transfer-print decoration, also dating to post-1888.

5.2.3 Miscellaneous Artifacts

Accession # 48 (Figure 151) is a bone toothbrush handle fragment. Bone was the most common material for toothbrush handles up to the end of the nineteenth century. Celluloid brushes began to be made as early as 1869 and, along with other synthetic materials, almost completely replaced bone as the handle/head material by the 1940s. Two attributes that provide definitive date ranges are the number of holes/number of rows and the presence of a hole on the handle end. Before ca. 1890, brushes tended to have four or five rows of holes, with about 21 holes per row. From 1890 to 1910, brushes had three or four rows, with an average of 17 holes per row. After 1910, a brush had three or four rows, with an average of ten holes per row (Mattick 1993:182). Toothbrush makers drilled a hole at the end of the handle, starting in 1884, to encourage people to hang up their brushes to dry thoroughly and prevent the growth of bacteria (Mattick 1993:165). Based on these criteria, Acc. # 48 dates to pre-1884.



Figure 150. 1) Acc. # 85, porcelain rice bowl with hand-painted decoration; 2) Acc. # 82, porcelain hollowware body fragment with *fukizumi* decoration; 3) Acc. # 131, porcelain *kozara* dish base to rim fragment with *katagami* decoration; 4) Acc. # 18, porcelain hollowware base to body fragment with transfer-print decoration



Figure 151. Acc. # 48, polished bone toothbrush handle

Accession #s 36, 38 (Figure 152), 39, and 81 are wire nails. Wire nails are the most recently produced type of nail, manufactured in the United States from ca. 1850 to the present. They have round heads and round shafts, with consistently shaped shanks, and exhibit little change over time. Thus, distinguishing early wire nails from modern wire nails is very difficult (IMACS 1992). Wire nails were first imported to Hawai‘i by E.O. Hall and Son in 1894 (Hurst and Allen 1992 in Lebo 1997:112).

Accession # 26 is a polished bone artifact fragment that was likely part of a folding personal hygiene tool. It is incised with the words “MADE IN JAPAN,” which indicates the object was imported to the United States post-1921 (Ross 2012:24).

Accession # 87 is a 15-cm diameter ferrous metal utility pipe fragment. The first iron pipes for government utility use arrived in Hawai‘i in 1850 (Taylor 1922:374).

Accession # 78 is a slate fragment, with one straight edge indicating it was part of a square or rectangular panel. It is painted black on both sides. As slate pencils do not mark it, this is not a slate board. However, it could be an early chalkboard.

Accession # 77 is a carbon battery electrode. The first modern batteries were invented in 1800 by Alessandro Volta (Spude 2002), who produced “wet cell” batteries containing liquid electrolyte and metal electrodes. Based on principles pioneered by Volta, William Cruichshank was the first to mass produce batteries for purchase starting in 1802. In 1836, the first rechargeable battery was invented by John D. Daniell. It produced a more stable current with a system using lead acid. In 1886, the first “dry cell” battery was invented using ammonium chloride mixed with plaster (Spude 2002). This type of battery, often called a zinc-carbon battery, is the modern standard for batteries. Accession # 77 is a carbon electrode from a zinc-carbon “dry cell” battery, manufactured post-1912 (Goodman 1998:36).

Accession # 138 (Figure 153) is a dark red brick fragment with attached mortar. The first brick building in Hawai‘i was the King’s palace built in Lahaina, Maui in 1802. By 1820, “California” or “Victoria” bricks were being imported to Hawai‘i (Greer 1968:16). Local brick-making began on O‘ahu in 1839, and the first structure was built in Honolulu in 1847 (Lebo 1997:106–107). However, bricks were only manufactured for a brief time in Hawai‘i. In the 1860s, bricks started being imported from Japan (Lebo 1999). Accession # 138 is too small to provide datable information.

Accession # 137 (Figure 154) is a coral block, faced on all sides, with no mortar. It appears too small to be part of the outer wall of a structure but may be a paving brick. It measures 12.3 cm long by 11.4 cm wide and 6.6 cm thick. The block was not able to be dated.

Accession # 157 is a dark gray concrete block, faced on all sides, but not ground to a smooth finish. It is 18.6 cm long by 8.3 cm wide, and 5.6 cm thick. Solid concrete blocks were first used for construction in Hawai‘i in 1871 (Schmitt 1995:77). Accession # 158 is a concrete masonry unit (CMU) fragment. The first machine to manufacture the hollow concrete blocks was invented in 1900 (Madehow.com).

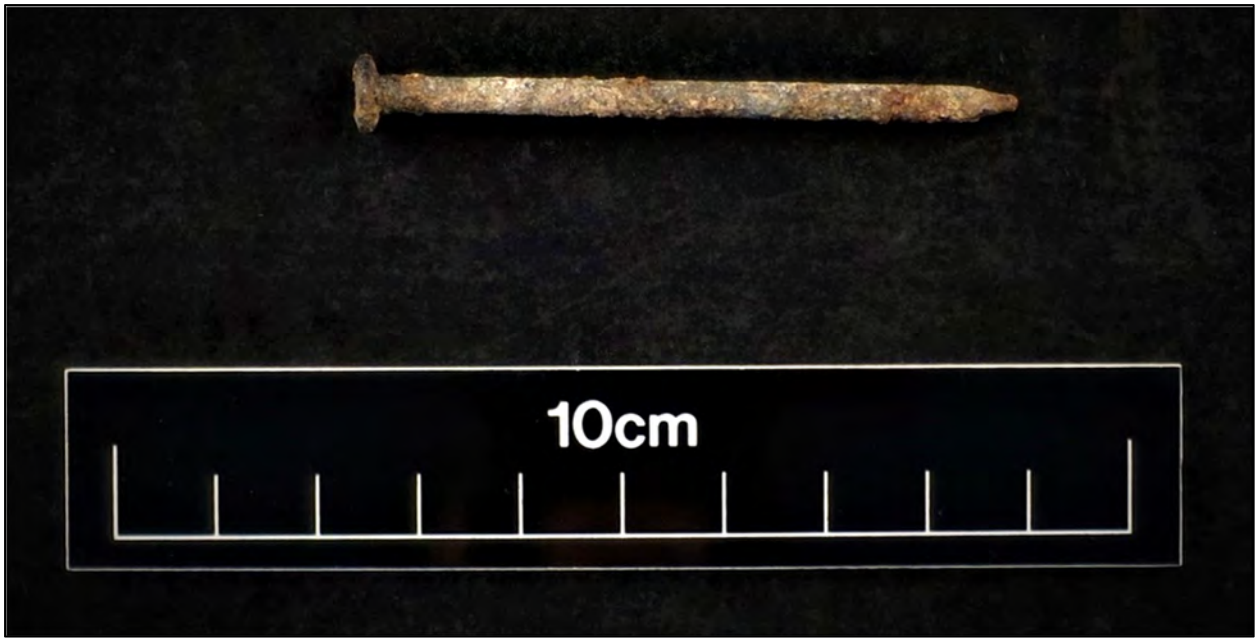

Figure 152. Acc. # 38, wire nail with white corrosion and ferrous rust



Figure 153. Acc. # 138, dark red brick fragment with mortar



Figure 154. Acc. # 137, coral block fragment

5.2.4 Summary

CSH personnel collected 161 artifacts during the AIS. Most are composed of glass (n=89) and ceramics (n=53). Artifacts were collected from fill deposits, including demolition fills and a burnt trash fill (SIHP # -8840 Component 3, Feature 6), and the Stratum IIa/SIHP # -8840 Component 2 habitation layer, mainly from historical trash pit features. In general, the artifact assemblage dates from the mid-nineteenth to mid-twentieth century and consists of domestic items associated with the residential and commercial development of the study area.

The glass artifacts consist primarily of beverage bottles, with more than twice as many mold-blown bottles (1800-1920) as machine-made bottles (post-1908). Many of the mold-blown bottles are early mold types and have applied finishes (1800-1885), although a small number of later two-piece molds with tooled finishes are also present. Most of the bottles for which country of origin could be identified were manufactured in the United States, while the rest are from Scotland, the Netherlands, Japan, and China. Three were identified as having been manufactured for use by Hawaiian companies. Likely manufacture dates of bottles in the current assemblage span the full length of a century from ca. 1850-1950.

The ceramic artifacts are mostly hollowware vessels originating from Euro-American countries, primarily England. Ironstone is the most common ware type, with most dating to the latter half of the nineteenth century. Porcelain artifacts from Japan and China that could be dated from decoration type date primarily to the latter half of the nineteenth century as well. The ceramics from Euro-America date to the late nineteenth to early twentieth century.

The dating of diagnostic artifacts can be used to assess the earliest and latest possible dates for the deposition of fills and structural remnants and the use of cultural layers and features. Artifacts

were collected and analyzed from four pit features associated with the Stratum IIa/SIHP # -8840 Component 2 habitation layer. Three of these features (Features 8, 12, and 14) were documented at the upper boundary of the layer and are interpreted as historical trash pits. The fourth (Feature 17) extended from the lower portion of the layer; its function is indeterminate. As features were documented within different vertical portions of the quite thick layer, Stratum IIa was likely deposited in multiple episodes over a potentially extended period of time. If this were the case, features in the upper portion of the layer would therefore post-date those in the lower portion of the layer. Furthermore, radiocarbon dating (see Section 5.4.3 below) suggests the lower portion of Stratum IIa was in place by 1810. The artifact assemblage supports this timeline, as two diagnostic glass fragments (Acc. #s 74 and 76) collected from Feature 17, at the lower boundary of Stratum IIa, date to 1800-1910, indicating use of the feature during that time period. In contrast, diagnostic artifacts collected from Features 8, 12, and 14, at the upper boundary of the stratum, indicate use of these features post-1910 (Acc. #s 37, 41, and 47), post-1890 (Acc. # 55), and post-1880 (Acc. # 159), respectively.

Furthermore, analysis of artifacts collected from fill deposits overlying the Stratum IIa/SIHP # -8840 Component 2 habitation layer can provide an indication of how long Stratum IIa was exposed and functioned as a surface prior to being in-filled. The results of this analysis indicate Stratum IIa functioned as a surface into the twentieth century, as recently as the mid-1930s. This is based on diagnostic artifacts associated with T-2 Stratum Id (Acc. # 44), T-2B Stratum Ie (Acc. # 26), T-2C Stratum If (Acc. # 161), T-6 Stratum Ie (Acc. # 77), T-10 Stratum Ie (Acc. # 110), and T-12 Stratum Id (Acc. # 126), which date to post-1921, post-1926, 1935, post-1912, 1924-1940, and 1923-1956, respectively.

Artifact analysis also assists in establishing dates of likely deposition for SIHP # -8840 Component 3 infrastructure remnants. For instance, a glass beverage bottle (Acc. # 132) collected from T-1 Stratum Ig, base course associated with SIHP # -8840 Component 3, Feature 1 (oil-rolled crushed coral surface), dates to post-1908, indicating Feature 1 was deposited after that date. Furthermore, the dating of SIHP # -8840 Component 2, Feature 8 (historical trash pit, discussed above), provides a *terminus post quem* of 1910 for SIHP # -8840 Component 3, Feature 2 (hollow tile wall), which directly overlies it.

In addition, artifacts were collected from SIHP # -8840 Component 3, Feature 6, burnt trash fill (T-10 Stratum If). Although none of the collected artifacts were sufficiently diagnostic to be dated to a particular year or even decade, the date ranges for the items fall between the 1840s and 1930s. However, the date range for the deposition of Feature 6 can be narrowed further, since it overlies and therefore post-dates the Stratum IIa/SIHP # -8840 Component 2 habitation layer. Analysis of artifacts from features associated with Stratum IIa and from overlying fill deposits suggests Stratum IIa functioned as a surface until at least 1935 (see discussion above); hence, the Feature 6 burnt trash fill was likely deposited after that date. In addition, a review of historical maps suggests the overlying SIHP # -8840 Component 3, Feature 4 (etched concrete surface), was in place by 1950, indicating Feature 6 pre-dates that time. The Feature 6 artifact assemblage, with its potential range of 1840s to 1930s, is consistent with deposition of the layer sometime between 1935 and 1950.

5.3 Faunal Analysis

5.3.1 Faunal Osseous Remains

CSH personnel collected faunal osseous remains from ten of the 15 test excavations during the current AIS. The identified remains, as shown in Table 21, include pig (*S. scrofa*), cow (*B. taurus*), fish (Osteichthyes), bird (Aves), goat (*C. hircus*), and possibly baleen whale (Mysticeti). These include a Polynesian-introduced species (i.e., pig), historically introduced species (i.e., cow and goat), and possible native/endemic species (fish, birds, and possibly whale). Most of these remains are considered to be food refuse, with many exhibiting evidence of post-Contact butchering methods as indicated by striated cut marks from a saw; these butchered remains are primarily cow and pig. One sample of pig remains also exhibits potential evidence of heat alteration, further supporting its interpreted function as food refuse.

The collected material for which the provenience was known came from fill deposits (Stratum I), usually demolition fill layers, and from Stratum IIa/SIHP # -8840 Component 2, the upper of two habitation layers. Most of the material associated with Stratum IIa/SIHP # -8840 Component 2 was collected from three pit features in T-9 (Features 12–14), interpreted as historical trash pits. These features originate at the upper boundary of the stratum and are therefore interpreted as being more recent than features identified within lower portions of the stratum, which appears to have accumulated over a relatively long period of time and may have functioned as a surface from the pre- or very early post-Contact period into at least the 1920s (see Section 6.2.1 discussion). The identification of faunal osseous material from historically introduced species (goat, cow) and with evidence of post-Contact butchering methods within the features supports this interpretation.

Only in T-12 were faunal osseous remains collected from the general layer of Stratum IIa (i.e., not collected from a feature). Notably, these remains include material tentatively identified as possible baleen whale by Dr. Kenneth Longenecker of the Hawai‘i Institute of Marine Biology, who examined photographs of the material. Whales are divided into two suborders: baleen whales (Mysteceti) and toothed whales (Odontoceti). In place of teeth, baleen whales have baleen, bristly plates composed of keratin, which the whale uses to “filter, sift, sieve or trap” its prey from seawater inside its mouth (Whale and Dolphin Conservation, n.d.). The humpback whale is by far the most common baleen species found in Hawaiian waters, although there have been rare sightings of other species (State of Hawai‘i Division of Aquatic Resources 2019).

Whalers, primarily American vessels, began arriving in Hawai‘i in the early nineteenth century. For Hawaiian ports, especially Lahaina and Honolulu (0.7 km southwest of the current project), the whaling fleet was the crux of the economy at that time, and whale oil was used for heating, lamps, and in industrial machinery (HawaiiHistory.org 2019). Because dried baleen is strong, light, flexible, and hard-wearing, it was useful as construction material. Baleen was used in a variety of commercial enterprises, including the manufacture of fashion items, particularly corsets, collars, and frames for hooped skirts. In addition, it was also used in chimney sweep brushes, umbrella ribs, riding crops, buggy whips, hat brims, and upholstery stuffing (Smithsonian, n.d.; University of Aberdeen Department of Zoology 2002). The discovery of petroleum in 1859 in Pennsylvania signaled the end of the whaling industry (HawaiiHistory.org 2019).

Table 21. Faunal osseous remains collected during the AIS

Provenience	Taxon	Weight (g)	Description
T-1, Str. Ig/SIHP # -8840 Component 3, Fea. 1 Base course	*S. scrofa* (pig)	12.3	Mandible portion with M1, M2
T-2, Str. Id Demolition fill	*S. scrofa* (pig)	27.0	Proximal rib portion, various fragments; possible heat alteration
T-2B, Spoils	*B. taurus* (cow)	177.9	Long bone section, saw-cut
T-2C, Str. If Demolition fill	Medium mammal, inconsistent with human	7.9	Small fragments
T-4, Spoils	Small mammal	4.3	Long bone portion
	B. taurus (cow)	12.7	Rib section, saw-cut
T-6, Str. Ic Demolition fill	Osteichthyes (fish)	0.8	Unknown portion
T-6, Str. Ie, Fill	*Sphyraenidae* sp. (barracuda)	3.8	Dentary
T-9, Str. IIa/SIHP # -8840	Aves (bird)	4.7	Femur, ulna
Component 2, Fea. 12 Historical trash pit	Mammal, inconsistent with human	6.2	Fragments, saw-cut
T-9, Str. IIa/SIHP # -8840 Component 2, Fea. 12 Historical trash pit	Aves (bird)	8.4	Phalanx, carpometacarpus, and distal tibiotarsus, various portions and fragments
	B. taurus (cow)	22.0	Vertebral portion
T-9, Str. IIa/SIHP # -8840 Component 2, Fea. 12, Historic trash pit	*C. hircus* (goat)	5.4	Femur fragment
T-10, Spoils	*B. taurus* (cow)	42.4	Scapula section, saw-cut; other fragment
	Small mammal	1.6	Misc. fragments
T-11, Spoils	Small mammal	1.5	Long bone portion, saw-cut
T-12, Str. IIa/SIHP # -8840 Component 2	Possible Mysticeti (whale)	67.6	Possible baleen
Habitation layer	Osteichthyes (fish)	9.7	Vertebral fragments
	B. taurus (cow)	2.8	Cortical fragment, saw cut

5.3.2 Invertebrate Faunal Remains

Invertebrate faunal remains were collected from a single test excavation (T-9) and are summarized in Table 22. The shells, identified as *Periglypta reticulata*, were collected from SIHP # -8840 Component 2, Feature 12, interpreted as a historical trash pit. This bivalve species is consistent with midden (i.e., food refuse). Based on the completeness of the shells, the consistency of their sizes, and their lack of damage, this is likely historical (i.e., post-Contact) midden. This interpretation is supported by the Feature 12 artifact assemblage, which indicates the feature post-dates 1890.

5.4 Floral Analysis

5.4.1 Pollen Analysis

Ten samples from two test excavations (T-7 and T-9) were submitted to BGP Consulting, LLC, for pollen analysis. The samples target a vertical series of natural alluvium deposits (Stratum II), including interpreted agricultural deposits (SIHP # -8840 Component 1). The samples are summarized in Table 23, and the report by BGP Consulting, LLC (Phillips 2019), is presented in Appendix C. The results of the analysis are discussed below.

It should be noted that no samples were sufficient for standard counts, and pollen is completely absent from four samples. In samples containing pollen, the percentages of degraded grains range from relatively high (19.3%) to very high (39.5%), indicating poor preservation. Hence, the data is likely not an accurate reflection of the original pollen assemblage.

5.4.1.1 Test Excavation 7

Six samples from T-7 were submitted for palynological analysis. The samples were collected from Strata IIa–IIf, naturally deposited alluvium. Strata IIc and IId contain charcoal flecking and oxidized (red) mottling and are interpreted as agricultural deposits (SIHP # -8840 Component 1). The Strata IIa, IIb, and IIf samples contained no pollen and are therefore not discussed further.

Asteraceae and Cheno-Ams dominate the Stratum IIe sample, suggesting a shrubland environment. Grass pollen gradually increases over time (i.e., increases up the column sample), becoming dominant in Stratum IIc. A single large grass grain identified in Stratum IIc may represent rice (*laiki*; *Oryza sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*Heteropogon contortus*) grass. In addition, a high proportion of fern spores in Stratum IIc might reflect increased input from upslope and/or overbank flooding.

5.4.1.2 Test Excavation 9

Four samples from T-9 were submitted for palynological analysis. The samples were collected from Strata IIb and IId–IIf (naturally deposited alluvium). Strata IId–IIf contain abundant oxidized (red) mottling and are interpreted as agricultural deposits (SIHP # -8840 Component 1). The Stratum IIe sample contained no pollen and is therefore not discussed further.

The T-9 assemblage is more diverse than the T-7 assemblage (discussed above), with a greater number of types identified in all productive samples. No distinct temporal trends are apparent; rather, the assemblage is characterized by less common types, particularly the spurge and madder families. Normally, this data would be interpreted as reflecting local stands of shrubs and herbs.

Table 22. Invertebrate faunal remains collected during the AIS

Provenience	Taxon	Comment
T-9, Str. IIa SIHP # -8840 Component 2, Fea. 12 Historic trash pit	*P. reticulata*	MNI of 25 valves; completeness of shells, consistency of size, and lack of damage indicate this is likely historic (i.e., post-Contact) midden

Table 23. Samples submitted for palynological analysis

Test Excavation	Sample #	Stratum	Depth (cmbs)	SIHP #	Description
7	1	IIa	44–47	–	Natural alluvium
	2	IIb	76–79		
	3	IIc	107–110	SIHP # -8840	Agricultural deposit
	4	IId	148–151	Component 1	
	5	IIe	172–175	–	Natural alluvium
	6	IIf	190–193		
9	7	IIb	111–114		
	8	IId	128–131	SIHP # -8840	Agricultural deposit
	9	IIe	150–154	Component 1	
	10	IIf	170–173		

Large grass grains in Strata IIb and IId provide additional evidence for rice (*laiki*; *O. sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*H. contortus*) grass, as suggested by the single grain identified in the T-7 Stratum IIc sample (see above). In addition, a single pollen grain from historically introduced *kiawe* (*Prosopis pallida*) was identified in Stratum IIb, and two grains from historically introduced pine (*Pinus* sp.) were identified in Stratum IId.

5.4.1.3 Summary and Interpretation

The most common pollen types identified in the current samples are low-spine Asteraceae (*Ambrosia* type) and Cheno-Am (*‘āweoweo*), spurge family, and grass family. Sedge family pollen, representing wetlands, is present but found in relatively low percentages. Polynesian introductions include coconut (*niu*; *Cocos nucifera*), paper mulberry (*wauke*; *Broussonetia papyrifera*), and possibly ti (kī; *Cordyline fruticosa*). Large grass pollen grains may represent rice (*laiki*; *O. sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*H. contortus*) grass.

Historically introduced mesquite (*kiawe*; *P. pallida*) and pine (*Pinus* sp.), identified in T-9 Strata IIb and IId, respectively, likely indicate disturbance throughout the sample column. Radiocarbon dating of a fire-related feature associated with Stratum IIa (in T-1, see Section 5.4.3) suggests use of that layer as a living surface by 1810. As *kiawe* was not introduced to the island until 1828, the single grain identified in Stratum IIb is likely intrusive from above. The two *Pinus*

pollen grains identified in Stratum IId are even more incongruous, as pine trees were not introduced to the island until the twentieth century.

Although there is strong evidence suggesting the current study area was once in taro cultivation, no *Colocasia* pollen was identified in the samples. According to Phillips (2019), despite the widespread practice of wetland taro cultivation across O‘ahu, *Colocasia* pollen is rare, even in suspected and known agricultural settings, such as the current study area. Typically propagated from a corm/root cutting or from a shoot, taro rarely blooms or sets seeds naturally (Onwueme 1999 in Phillips 2019). Like other members of the Araceae family, taro produces relatively small quantities of pollen when in bloom; in fact, some varieties have never been known to flower. Furthermore, taro is harvested at a time when the edible corm has its highest nutritional value and is most viable for propagation, which occurs before flowering, further reducing the likelihood of pollen deposition.

The likelihood of finding *Colocasia* pollen was further decreased by the very poor pollen preservation within the samples. Only six of the ten samples contain pollen; within those six, the percentages of degraded grains are very high, while the total pollen concentrations are very low. Taken at face value, the data from T-7 suggests a change over time from shrubland to grassland. In nearby T-9, no such change is evidenced, and the assemblage is more diverse. However, given the proximity of the two excavations, these apparent differences are more likely a product of poor pollen preservation rather than an accurate reflection of past vegetation. Sedge pollen, indicative of a wetland environment such as a *lo‘i*, is unexpectedly scarce—likely also a product of taphonomic factors.

5.4.2 Wood Taxa Identification

Two charcoal samples were submitted to the Wood Identification Laboratory at IARII for taxa identification. Both samples were collected from fire-related features in T-1 Stratum IIa/SIHP # -8840 Component 2, designated as Features 2 and 4. The samples are summarized in Table 24, and the report from IARII (Huebert 2019) is included in Appendix D. The results of the analysis are presented in Table 25 and discussed below.

Most of the examined material was small (< 1 cm), and all fragments except one were wood charcoal; the other was parenchyma charcoal. Most of Sample 1 (SIHP # -8840 Component 2, Feature 2) is *kiawe* (*P. pallida*); the rest is indeterminate hardwood. *Kiawe* is a tree native to Peru, Colombia, and Ecuador, which was likely introduced to Hawai‘i by Father Bachelot in 1828 (Huebert 2019:3).

Sample 2 (SIHP # -8840 Component 2, Feature 4) contains wood from native species including *‘ōhi‘a lehua* (*Metrosideros polymorpha*), *koa* (*Acacia* cf. *koa*), *kōpiko* (*Psychotria* sp.), and possibly *hau* (*Hibiscus* sp.). There are seven native shrub and tree species of *Hibiscus*, including several endemic varieties, as well as at least three naturalized historical (i.e., post-Contact) introductions (Wagner et al. 2005 in Huebert 2019:3). Most species feature showy flowers. *Hibiscus tiliaceus*, or *hau*, occurs commonly in moist areas on most of the main Hawaiian Islands. In addition to ornamental plantings, the bark of *hau* was sometimes used to make *lei*, while the soft wood was used for canoe outriggers, fishnet floats, and in the native fireplow (Abbott 1992 in Huebert 2019:3).

Table 24. Samples from T-1 Stratum IIa/SIHP # -8840 Component 2 submitted for wood identification analysis

Sample #	Depth (cmbs)	Fea. #	Description
1	111	2	Fire-related feature at the upper boundary of the habitation layer
2	128–131	4	Fire-related feature in the lower-middle portion of the habitation layer

Table 25. Results of wood identification analysis

Sample #	WIDL #	Taxon	Plant Part	Count	Weight (g)	Comment
1	1916-1	*P. pallida* (*kiawe*)	Wood charcoal	18	0.4	–
	1916-2	Indeterminate hardwood	Wood charcoal	1	0.01	–
2	1916-3	*M. polymorpha* (*‘ōhi‘a lehua*)	Wood charcoal	2	0.06	–
	1916-4	Indeterminate	Parenchyma charcoal	1	0.01	Thin; superficially resembles nutshell but is not endocarp
	1916-5	*Psychotria* sp. (*kōpiko*)	Wood charcoal	1	0.01	–
	1916-6	*Hibiscus* sp. (*hau* and others)	Wood charcoal	1	0.04	–
	1916-7	*Acacia* cf. *koa* (*koa* and others)	Wood charcoal	5	0.08	–
	1916-8	Indeterminate hardwood	Wood charcoal	4	0.06	–

‘Ōhi‘a lehua (*M. polymorpha*) is an endemic species used for making spears, mallets, idols, posts and rafters for houses, and enclosures around temples (Buck 1957, Malo 1951, and Neal 1965 in Huebert 2019:3). *Kōpiko* (*Psychotria* sp.) comprises 11 endemic species, of which five are known to grow on O‘ahu. The species range from small to up to 20 m tall (Wagner et al. 1990 in Huebert 2019:3). *Kōpiko* was used as firewood and to make *kapa* (barkcloth) logs (Malo 1951 in Huebert 2019:4).

None of these are short-lived materials preferred for radiocarbon dating. However, Huebert (2019:2) indicates the parenchyma is not likely to have much inbuilt age, since soft storage tissues are not long-lived; hence, it is the best option available for radiocarbon dating (see Section 5.4.3 below for results). As some *Psychotria* species are small trees, and *Hibiscus* species are fast growing, Huebert (2019:2) suggests one of these as the next best option.

As mentioned above, Sample 1, collected from SIHP # -8840 Component 2, Feature 2, consists mainly of a post-Contact introduction, *kiawe* (*P. pallida*). As it is believed *kiawe* was introduced to the Islands in 1828, its presence indicates the feature was used after that time. In contrast,

Sample 2, collected from SIHP # -8840 Component 2, Feature 4, consists mainly of native or endemic species, with no positive identification of post-Contact introductions; these results are in agreement with the stratigraphic positions of the features. Although both were identified within T-1 Stratum IIa, Feature 2 originates at the upper boundary of the stratum, while Feature 4 is within the lower-middle portion; hence, Feature 2 post-dates Feature 4. As Feature 2 dates securely to the post-Contact period, Feature 4 may therefore date to the pre- or early post-Contact period—a hypothesis supported by the radiocarbon dating results (see Section 5.4.3 below).

5.4.3 Radiocarbon Dating Analysis

One sample was submitted to Beta Analytic, Inc., for radiocarbon dating analysis. This sample comprises parenchyma charcoal recovered from a charcoal sample (Sample 2; see Section 5.4.2 above) analyzed at IARII's Wood Identification Laboratory. The parenchyma charcoal was selected for radiocarbon analysis because it is not likely to have much inbuilt age, as soft storage tissues are not long-lived. The results of the radiocarbon analysis are presented in Table 26 and discussed below. The report from Beta Analytic is included in Appendix E.

The sample was recovered from SIHP # -8840 Component 2, Feature 4, a fire-related feature identified within the lower-middle portion of T-1 Stratum IIa, interpreted as a habitation layer (SIHP # -8840 Component 2). The radiocarbon analysis yielded two-sigma calibrated date ranges of AD 1728-1810 (53.5% probability), 1646-1690 (26.0%), and 1925-post 1950 (15.9%); however, the most recent date range can likely be discarded. While diagnostic artifacts recovered from overlying fill deposits (see Section 5.2.4) suggest Stratum IIa functioned as a surface into the 1930s, the identification of pit features within different vertical portions of the quite thick stratum indicates the layer was not deposited all at once, but rather over a (potentially extended) period of time. As Feature 4 was identified within the lower portion of IIa, it would therefore date to the earlier part of that time period. Furthermore, the cobble-lined fire pit is consistent with traditional Hawaiian fire-related features. Hence, the radiocarbon analysis, like the wood taxa analysis (discussed above), supports a pre- or early post-Contact date for Feature 4 and suggests use of the Stratum IIa habitation layer by 1810.

Table 26. Results of radiocarbon analysis

Lab #	Beta Lab #	Material Dated	SIHP/Fea. #	Stratum (matrix)	Depth (cmbs)	Activity Rep. by Date	Conventional Age (BP)	C12/13 Ratio	Calibrated Dates (AD; 2-sigma) (% probability)
1	541406	Parenchyma charcoal	SIHP # -8840 Component 2, Fea. 4 (fire-related feature)	IIa (silty clay)	128–131	Fire pit use	200±30	-24.3	1728-1810 (53.5%) 1646-1690 (26.0%) 1925-post 1950 (15.9%)

Section 6 Historic Property Description

One archaeological historic property was newly identified during the Halewai‘olu Senior Residences AIS: SIHP # 50-80-14-8840, subsurface cultural deposits. SIHP # -8840 was identified in all 15 test excavations and comprises 0.52 acre (including interpolated boundaries), encompassing nearly the entire AIS study area. It has three components, which are summarized in Table 27 and depicted on Figure 155 through Figure 157. SIHP # -8840 Components 1–3 span the pre-Contact period through the mid-twentieth century and are discussed in detail in Sections 6.1–6.3 below. The significance assessment of SIHP # -8840 is presented in Section 6.4 below.

Table 27. Summary of SIHP # 50-80-14-8840 components

Component #	Formal Type	Function
1	Agricultural deposits	Agriculture
2	Habitation layers	Habitation; human interment
3	Subsurface infrastructure remnants	Residential; commercial

6.1 SIHP # 50-80-14-8840 Component 1

FORMAL TYPE:	Agricultural deposits
FUNCTION:	Agriculture
AGE:	Pre-Contact
NUMBER OF FEATURES:	0
TEST EXCAVATIONS:	T-2, T-2B, T-3 through T-10, and T-12
DIMENSIONS	0.43 acre
TAX MAP KEY:	[1] 1-7-006:012
LAND JURISDICTION:	City and County of Honolulu
PREVIOUS DOCUMENTATION:	N/A

SIHP # 50-80-14-8840 Component 1 consists of multiple buried agricultural deposits, identified throughout the majority of the AIS study area, within 13 of the 15 test excavations (absent only in T-1 and T-11) (see Figure 35 and Figure 155 through Figure 157). These agricultural deposits are within a vertical series of primarily silty clay loam alluvial deposits, which appear to represent Nu‘uanu Stream overflow or flooding episodes. The agricultural deposits were identified beneath the upper two alluvial deposits (Strata IIa and IIb), which functioned as possibly pre- to post-Contact habitation layers and are designated as SIHP # -8840 Component 2 (see Section 6.2 below). As radiocarbon dating suggests use of Stratum IIa by 1810, with Stratum IIb therefore even earlier, the Component 1 agricultural deposits (Strata IIc–IIg) likely date to the pre-Contact period, with at least three chronological periods of agricultural use indicated (Table 28). Given the location of the AIS study area within the floodplain of Nu‘uanu Stream, these agricultural deposits likely represent *lo‘i kalo*.

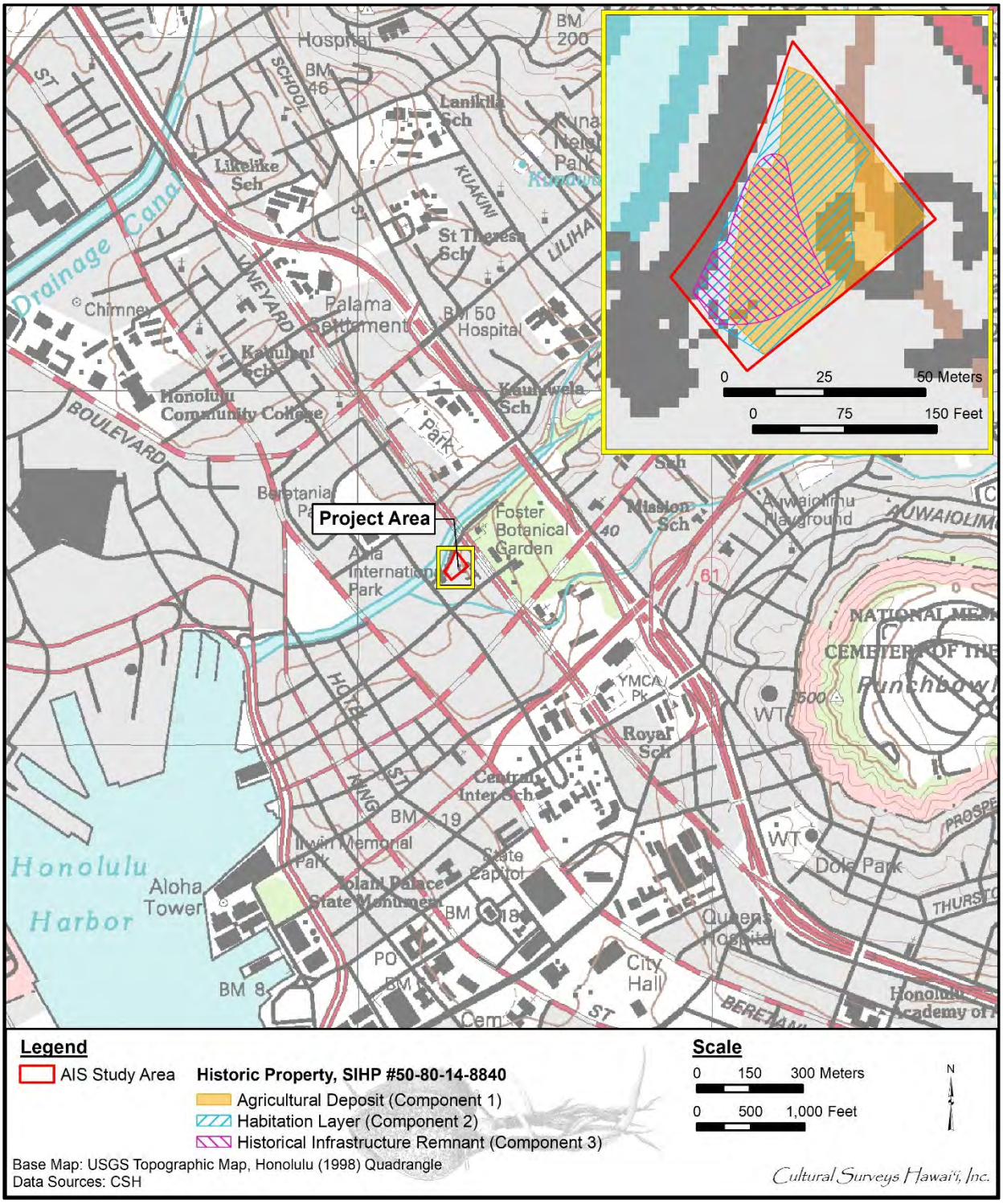

Figure 155. Portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle, showing the distribution of SIHP # -8840 Components 1–3 within the Halewai‘olu Senior Residences AIS study area

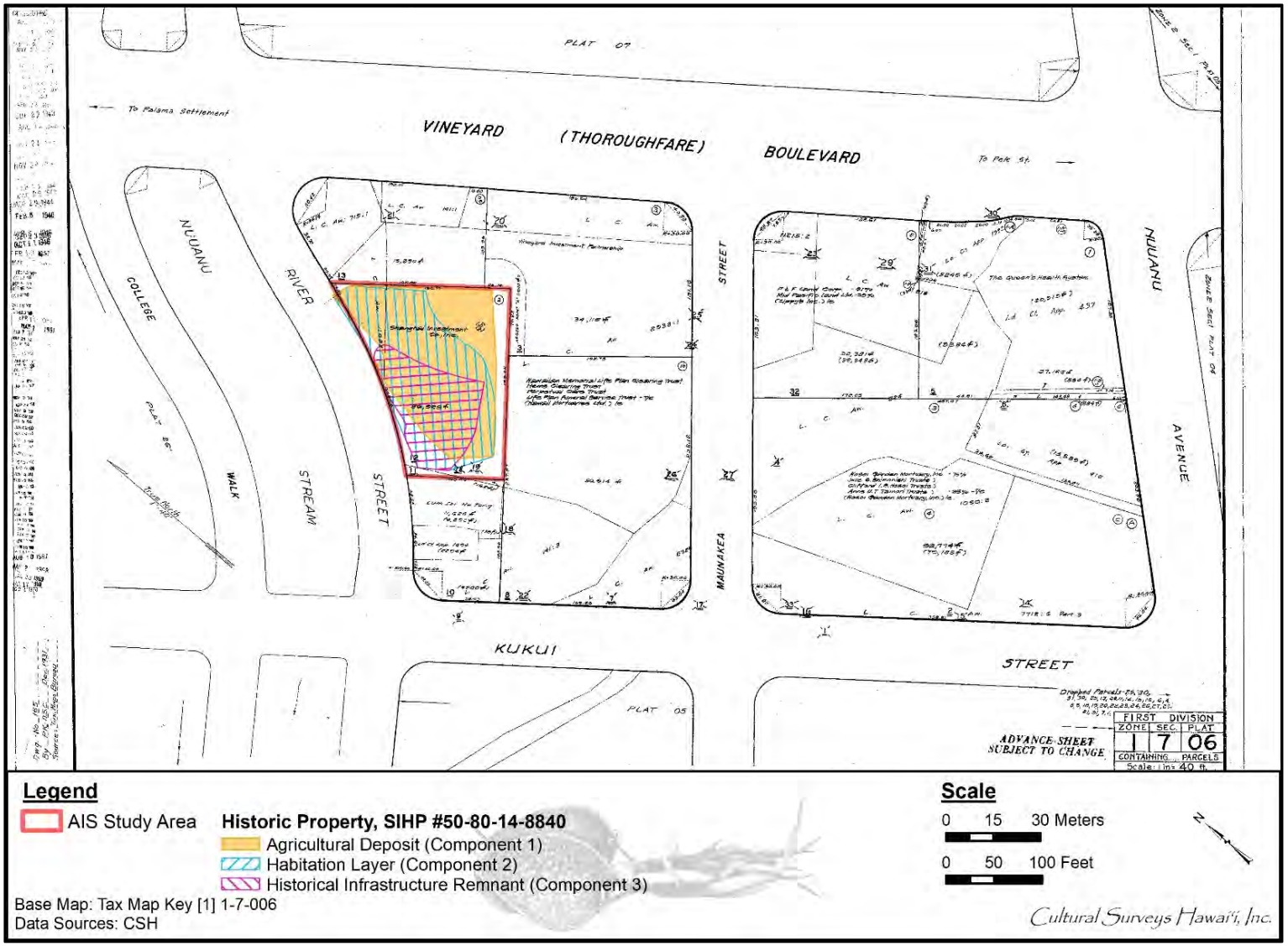

Figure 156. TMK: [1] 1-7-006, showing the distribution of SIHP # -8840 Components 1–3 within the Halewai‘olu Senior Residences AIS study area (Hawai‘i TMK Service 2014)

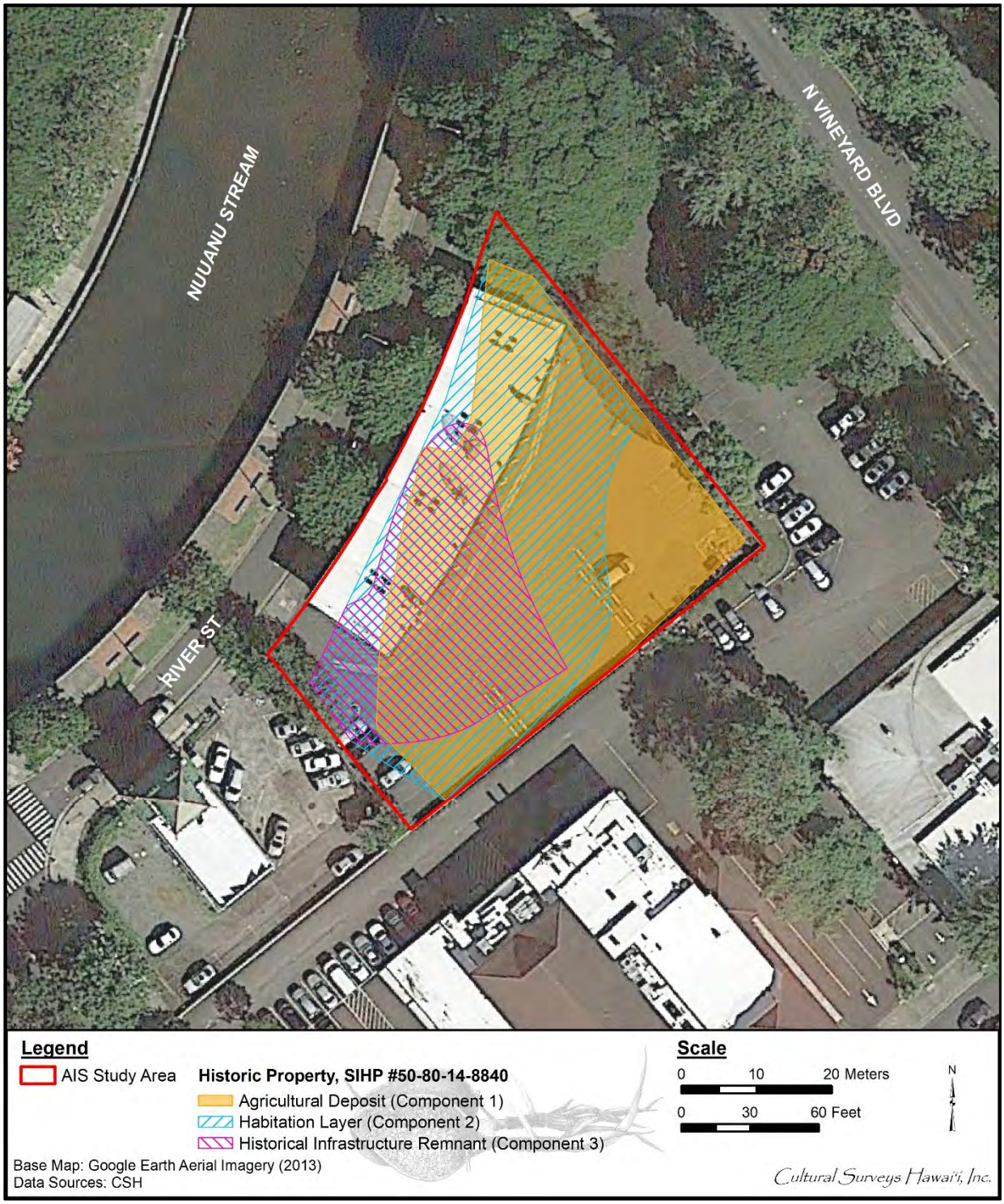

Figure 157. Aerial photograph (Google Earth 2013), showing the distribution of SIHP # -8840 Components 1–3 within the Halewai‘olu Senior Residences AIS study area

Table 28. SIHP # -8840 Component 1 agricultural deposits identified during the AIS

Formal Type	Stratum	Test Excavation
Agricultural deposit	IIc	T-2, T-2B, T-3 through T-8, T-10, and T-12
	IId	T-7, T-8, T-9, T-9B
	IIe	T-4, T-9
	IIf	T-5, T-9
	IIg	T-8
Agricultural berm	IIc	T-9, T-9B

6.1.1 Uppermost Agricultural Deposit

The most recent agricultural deposit (Stratum IIc in T-2, T-2B, T-3 through T-8, and T-10; Stratum IId in T-9 and T-9B) was identified almost ubiquitously across the AIS study area, in 13 of the 15 test excavations. It typically presents as dark brown silty clay loam and contains cinder gravel in some areas (Figure 158 and Figure 159). The deposit is characterized by a dense latticework of oxidized (red) mottling, which is believed to be the result of chemical interactions between taro roots and the surrounding soil. In addition, limonite nodules and/or root casts were identified within bulk samples collected from the uppermost agricultural deposits in T-2B, T-9, and T-12; based on previous archaeological studies (see Section 5.1.1), these are also interpreted as evidence of agricultural use.

This interpretation is further supported in T-9 and T-9B by the presence of small berms (Stratum IIc) adjacent to the uppermost agricultural deposit (Stratum IId) (see Figure 94 and Figure 100). In T-9, the Stratum IIc berm measures approximately 2 m across and 25 cm tall in the southeast sidewall. In the northwest sidewall, it is only 50 cm across, as it appears to be truncated by SIHP # -8840 Component 2, Feature 14 (pit feature). In T-9B, the berm at the *mauka* (northeast) end measures approximately 1.7 m across by 35 cm tall (see Figure 102), while the berm at the *makai* (southwest) end measures approximately 1.5 m across by 30 cm tall, although it is bisected by SIHP # -8840 Component 2, Feature 15 (pit feature). As these berms do not align with the berm identified in T-9, this area may represent the convergence of multiple agricultural plots.

6.1.2 Deeper Agricultural Deposits

Deeper (i.e., older) agricultural deposits were identified within a discrete zone in the central/*mauka* (northeast) portion of the AIS study area (within T-4, T-5, T-7 through T-9B). Directly beneath the youngest agricultural deposit within T-7 through T-9B is a silty clay loam deposit (T-7 and T-8 Stratum IId; T-9 and T-9B Stratum IIe) interpreted as an agricultural layer. This deposit contains a similar latticework of oxidized (red) mottling, although generally less dense than the overlying stratum (Figure 160). The layer is described as brown, dark yellowish brown, or very dark grayish brown and lacks the cinder content of the overlying deposit.

The deepest agricultural deposits were documented within T-4, T-5, T-8, and T-9, just above or at the level of the water table. These deposits (Strata IIe–IIg) range from silty clay loam to sandy clay loam and contain a dense latticework of oxidized (red) mottling similar to the uppermost agricultural deposit (Figure 161).



Figure 158. Close-up of Stratum IIc (youngest SIHP # -8840 Component 1 agricultural deposit) within T-7 northeast wall, showing a dense latticework of oxidized (red) mottling



Figure 159. T-9 Stratum IId, SIHP # -8840 Component 1 agricultural deposit, characterized by oxidized (red) mottling

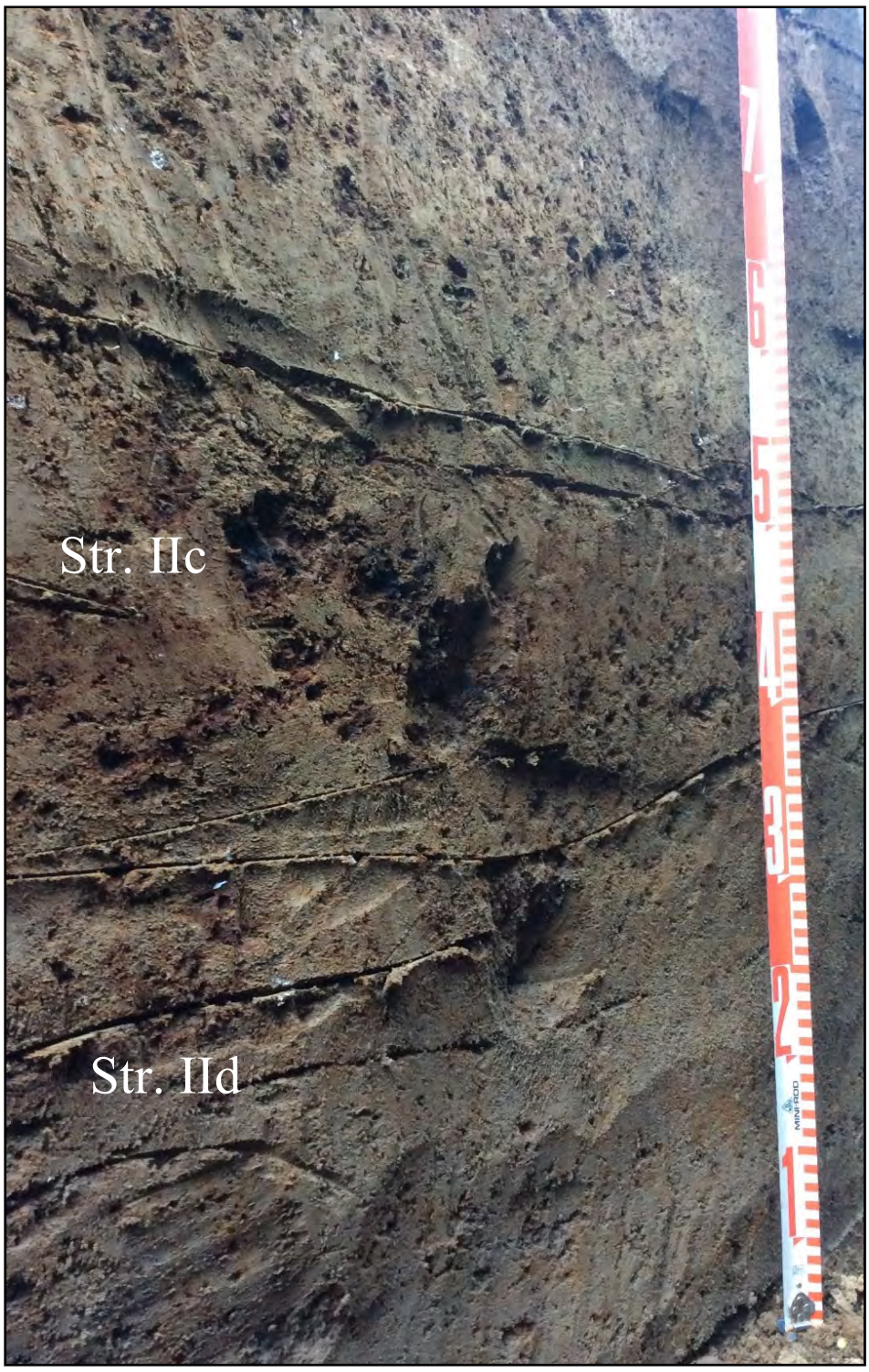

Figure 160. T-7 northeast wall, showing SIHP # -8840 Component 1 agricultural deposits (Strata IIc and IId) characterized by oxidized (red) mottling; the darker areas and voids of Stratum IIc contain cinder gravel



Figure 161. T-9 Stratum IIe, SIHP # -8840 Component 1 agricultural deposit, characterized by oxidized (red) mottling

6.1.3 Pollen Analysis

Abundant bulk samples were collected from the Stratum II alluvium series, including the interpreted SIHP # -8840 Component 1 agricultural deposits. In addition, several column samples were collected; two of these column series (from T-7 and T-9) were submitted for palynological analysis (see Section 5.4.1 for full results).

The most common pollen types identified in the samples are low-spine Asteraceae (*Ambrosia* type) and Cheno-Am (*‘āweoweo*), spurge family, and grass family. Sedge family pollen, representing wetlands (including *lo‘i*), is present but found in relatively low percentages. Polynesian introductions include coconut (*niu*; *Cocos nucifera*), paper mulberry (*wauke*; *Broussonetia papyrifera*), and possibly ti (*kī*; *Cordyline fruticosa*). Large grass pollen grains may represent rice (*laiki*; *O. sativa*) or sugarcane (*kō*; *Saccharum* sp.) cultivation in the vicinity or the collection of *pili* (*H. contortus*) grass.

Historically introduced mesquite (*kiawe*; *P. pallida*) and pine (*Pinus* sp.), identified in T-9 Strata IIb and IId, respectively, likely indicate disturbance throughout the sample column. Radiocarbon dating of a fire-related feature associated with Stratum IIa (in T-1, see Section 5.4.3) indicates use of that layer as a living surface by 1810. As *kiawe* was not introduced to the island until 1828, the single grain identified in Stratum IIb is likely intrusive from above. The two *Pinus* pollen grains identified in Stratum IId are even more incongruous, as pine trees were not introduced to the island until the twentieth century; hence, they are also likely intrusive from above.

Although there is strong evidence suggesting the current study area was once in taro cultivation, no *Colocasia* pollen was identified in the samples. According to Phillips (2019), despite the widespread practice of wetland taro cultivation across O‘ahu, *Colocasia* pollen is rare, even in suspected and known agricultural settings such as the current study area. Typically propagated from a corm/root cutting or from a shoot, taro rarely blooms or sets seeds naturally (Onwueme 1999 in Phillips 2019). Like other members of the Araceae family, taro produces relatively small quantities of pollen when in bloom; in fact, some varieties have never been known to flower. Furthermore, taro is harvested at a time when the edible corm has its highest nutritional value and is most viable for propagation, which occurs before flowering, further reducing the likelihood of pollen deposition.

The likelihood of finding *Colocasia* pollen was further decreased by the very poor pollen preservation within the samples. Only six of the ten samples contain pollen; within those six, the percentages of degraded grains are very high, while the total pollen concentrations are very low. Hence, the data is likely not an accurate reflection of the original pollen assemblage.

6.2 **SIHP # 50-80-14-8840 Component 2**

FORMAL TYPE:	Habitation layers
FUNCTION:	Habitation; human interment
AGE:	Possibly pre- to post-Contact
NUMBER OF FEATURES:	19
TEST EXCAVATIONS:	T-1 through T-5 and T-8 through T-12
DIMENSIONS	0.43 acre
TAX MAP KEY:	[1] 1-7-006:012
LAND JURISDICTION:	City and County of Honolulu
PREVIOUS DOCUMENTATION:	N/A

SIHP # -8840 Component 2 consists of buried habitation layers, which developed within the uppermost natural alluvium deposits alongside Nu‘uanu Stream. Component 2 was documented throughout the majority of the AIS study area (absent only in the eastern corner of the AIS study area; see Figure 155 through Figure 157). Only two test excavations (T-6 and T-7) are not included within the boundaries of SIHP # -8840 Component 2 due to negligible cultural content (i.e., only sparse amounts of charcoal flecking). SIHP # -8840 Component 2 is primarily composed of the uppermost (i.e., youngest) natural alluvial deposit, designated as Stratum IIa. Within two adjacent test excavations (T-2 and T-2B) in the southern portion of the AIS study area, the underlying Stratum IIb alluvial deposit also evidences cultural activity and is therefore designated as part of SIHP # -8840 Component 2. A total of 19 features (17 associated with Stratum IIa and two associated with Stratum IIb) were documented. SIHP # -8840 Component 2 layers and features are summarized in Table 29 and discussed in detail below.

6.2.1 Stratum IIa

Stratum IIa typically presents as a very dark grayish brown silty clay loam deposit, between 25 and 70 cm thick. Cultural use of Stratum IIa is indicated by strong charcoal flecking, historical

Table 29. Summary of SIHP # -8840 Component 2 layers and features identified during the AIS

Stratum	Formal Type	Function	Test Excavation/Fea. #
IIa	Habitation layer	Habitation; human burial	T-1 through T-5, T-8 through T-12
	Pit feature (n=17)	Indeterminate (n=7)	T-2 (Fea. 5), T-2B (Fea. 9), T-2C (Fea. 11), T-9B (Fea. 15), T-10 (Feas. 16, 17), T-11 (Fea. 18)
		Historical trash pit (n=4)	T-2B (Fea. 8), T-9 (Feas. 12–14)
		Fire-related feature (n=4)	T-1 (Feas. 1–4)
		Post hole (n=1)	T-11 (Fea. 19)
		Human burial (n=1)	T-2 (Fea. 6)
IIb	Habitation layer	Habitation	T-2, T-2B
	Stacked basalt cobbles (n=1)	Indeterminate	T-2 (Fea. 7)
	Pit feature (n=1)	Indeterminate	T-2B (Fea. 10)

artifacts within the upper 4–15 cm, and/or the presence of pit features. Within five test excavations (T-3 through T-5, T-8, and T-12), the upper portion of the layer contains charcoal, red brick fragments, bottle glass, ceramic, metal, coral, and/or faunal bone. Associated features were documented within eight test excavations (T-1, T-2, T-2B, T-2C, T-9, T-9B, T-10, and T-11). As features were documented originating in different vertical portions of the stratum, it is likely the Stratum IIa sediment was not deposited all at once but rather through multiple episodes over a period of time, with features in the lower portion of the stratum pre-dating those in the upper portion; this hypothesis is supported by the results of various laboratory analyses (discussed in Section 6.2.3 below).

The Stratum IIa features consist of four fire-related features (Features 1–4), one posthole (Feature 19), four historical trash pits (Features 8, 12–14), a human burial (Feature 6), and seven pits of indeterminate function (Features 5, 9, 11, and 15–18) (see Table 29). The 17 features associated with Stratum IIa are described in detail below. Profiles, plan maps, and photographs are presented in Section 4.3 Subsurface Testing Results and are referenced in the descriptions below.

Feature 1 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 41). It was documented between 77 and 93 cmbs and measures 35 cm across. A thin, heat-altered band of reddened sediment, a fire-affected basalt cobble, and a 6-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 2 is a basin-shaped pit feature identified in the northeast wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 36, Figure 37, and Figure 42). It was documented between 71 and 115 cmbs and measures 1 m across. A thin, heat-altered band of reddened sediment and a 4-cm thick layer of charcoal were observed at the base of the pit, which is interpreted as a fire-related feature. Several small, non-diagnostic bottle glass fragments (not collected) and fire-affected basalt cobbles were also observed within the pit. A charcoal sample was collected.

Feature 3 is a basin-shaped pit feature identified in the southwest wall of T-1, at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 (see Figure 39 and Figure 43). It was documented between 76 and 120 cmbs and measures 1.5 m across. Multiple heat-altered bands of reddened sediment and layers of charcoal ranging from 510 cm thick were observed within the pit, which is interpreted as a fire-related feature. A charcoal sample was collected.

Feature 4 is a pit feature identified in both sidewalls of T-1, within Stratum IIa/SIHP # -8840 Component 2 (see Figure 37 and Figure 44). It was documented between 111 and 127 cmbs and measures 55 cm across; the exposed portion is 85 cm long, spanning the width of the trench. The pit is lined with fire-affected basalt cobbles, and charcoal flecking was observed in the matrix surrounding the cobbles. This is interpreted as a fire-related feature.

Feature 5 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 within both sidewalls of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 60 and 103 cmbs and measures 85 cm across. The exposed portion is 76 cm wide, with the feature spanning the width of the trench. The feature contains red brick, glass, metal, charcoal, FAR, and coral gravel. Its function is indeterminate.

Feature 6 is a small pit feature containing human skeletal remains (see Figure 45, Figure 46, Figure 55 through Figure 57). It was documented between 120 and 127 cmbs within the southwest wall of T-2, near the southeast end of the excavation. It originates at the base of Stratum IIa/SIHP # -8840 Component 2 and terminates in the underlying Stratum IIb/ SIHP # -8840 Component 2. The pit measures 26 cm across and contains the remains of a single fetal individual (at or near birth). Observed skeletal elements comprise the lower limbs; the upper body likely remains in situ within the southwest sidewall (see Figure 56). The remains are in good condition, and the individual is approximately 85% complete.

The majority of the remains were observed in situ (i.e., within the burial pit) and were left in place. Several additional small fragments which had been displaced by cleaning of the sidewall were recovered and reinterred 15 cm northeast of the Feature 6 pit feature, within a small, hand-carved niche. A burial treatment plan (BTP) addressing this human burial site is forthcoming.

Feature 8 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 70 and 145 cmbs at the upper boundary of Stratum IIa/SIHP # -8840 Component 2. Glass, metal, ceramic, and bone artifacts were collected from this feature, which is interpreted as a historical trash pit. A machine-made glass marble (Acc. # 37) dates to post-1910, indicating use of the feature after that date. Feature 8 truncates and therefore post-dates Feature 9, discussed below.

Feature 9 is a large pit feature identified at the *mauka* (northeast) end of T-2B in the southeast sidewall (see Figure 58, Figure 59, and Figure 62). It was documented between 115 and 191 cmbs, originating in Stratum IIa/SIHP # -8840 Component 2, intrusive through Stratum IIb, and terminating in Stratum IIc. It is truncated by Feature 8 (described above), which it therefore pre-dates. The exposed portion of the feature is approximately 2 m long. No cultural materials were identified within the feature; its function is indeterminate.

Feature 11 is a small pit feature identified in the southeast sidewall of T-2C (see Figure 65 and Figure 66). It was documented between 137 and 152 cmbs, originating in Stratum IIa/SIHP # -8840 Component 2 and terminating in Stratum IIb. It measures 30 cm across. No cultural materials were observed within the feature; its function is indeterminate.

Feature 12 is a large pit feature identified in both sidewalls of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIb–III and continuing beyond the base of excavation (see Figure 92 through Figure 96). It was documented between 45 and 196 cmbs and measures 65–100 cm across (*mauka-makai*). The exposed portion of the feature is 80 cm wide, spanning the width of the trench. Feature 12 contains abundant bottle glass and ceramics, as well as marine shell midden, faunal bone, charcoal, and FAR. It is interpreted as a historical trash pit. The faunal bone and a grab sample of glass, ceramics, and shell midden were collected. Diagnostic artifacts are mainly of European and Euro-American origin and date from the late nineteenth to possibly early twentieth century. One item, a Dutch glass gin bottle (Acc. #55), dates between 1890 and 1910, placing use of the feature firmly post-1890. The completeness, lack of damage, and consistent size of the collected shells similarly indicate this is historical (i.e., post-Contact) midden.

Feature 13 is a shallow pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northwest sidewall of T-9 (see Figure 93, Figure 95, and Figure 97). It was documented between 45 and 67 cmbs and measures 1.7 m across. It truncates and therefore post-dates the underlying Feature 14 (see description below). Feature 13 contains metal, glass, ceramic, bird (Aves) and cow (*B. taurus*) bone, and charcoal. The faunal bone was collected.

Feature 14 is a large pit feature identified in the northwest sidewall of T-9, originating at the upper boundary of Stratum IIa/SIHP # -8840 Component 2, intruding through Strata IIa–IIc, and terminating in Stratum IId/SIHP # -8840 Component 1 (see Figure 93, Figure 95, and Figure 97). It was documented between 44 and 137 cmbs and measures 1.8 m across. The feature contains metal, ceramic, faunal bone, charcoal, and FAR. It is interpreted as a historical trash pit. The faunal bone and a grab sample of metal, glass, and ceramics were collected. Diagnostic artifacts are Euro-American dating from the late nineteenth to possibly the early twentieth century. One glass bottle fragment (Acc. # 159) dates between 1880 and 1920, indicating use of the feature post-1880.

Feature 15 is an oblong pit feature identified in the southeast wall of T-9B. It extends from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum IIe (see Figure 100 and Figure 101). It was documented between 65 and 150 cmbs and measures 35–45 cm across. No cultural materials were identified within the feature; its function is indeterminate.

Feature 16 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the northeast wall of T-10 (see Figure 105 and Figure 108). It was documented between 46 and 99 cmbs, overlying and therefore post-dating Feature 17 (see description below). It measures 65 cm across. No cultural materials were observed within the feature; its function is indeterminate.

Feature 17 is a large pit feature identified in the northeast wall of T-10, below Feature 16 (described above), which it therefore pre-dates (see Figure 105 and Figure 108). It extends from the lower boundary of Stratum IIa/SIHP # -8840 Component 2, intrudes through Strata IIb and IIc, and terminates in Stratum III. It was documented between 60 and 110 cmbs and measures 95 cm across. Several pieces of bottle glass and FAR were identified at the base of the feature. The bottle glass was collected; two diagnostic fragments date to 1800-1910, indicating use of the feature post-1800. The function of this feature is indeterminate.

Feature 18 is a basin-shaped pit feature identified at the upper boundary of Stratum IIa/SIHP # -8840 Component 2 in the west corner of T-11 (see Figure 109, Figure 110, and Figure 112). It was documented between 61 and 105 cmbs within the northwest sidewall and southwest endwall. The exposed portion of the feature is 70 cm long (northwest-southeast) by 60 cm wide (northeast-southwest). The feature contains charcoal. Its function is indeterminate.

Feature 19 is a long, rectangular pit feature identified in the northwest wall of T-11 (see Figure 109, Figure 110, and Figure 113). It was documented between 85 and 156 cmbs, originating in Stratum IIa/SIHP # -8840 Component 2, intrusive through Stratum IIb, and terminating in Stratum III. Based on morphology, this feature is interpreted as a posthole. The darker, organic-stained portion at the center of the feature represents the location of the former post, while the surrounding pit matrix is lighter in color (see Figure 113). A small amount of charcoal was observed near the base of the feature.

6.2.2 Stratum IIb

Stratum IIb consists of a fairly homogenous, dark brown to dark yellowish brown fine silty clay loam. Based on its homogeneity and fine silts, it appears to represent a low energy deposit. Stratum IIb was documented within all AIS test excavations; however, it is only designated as part of SIHP # -8840 Component 2 where it contains evidence of human activity, within T-2 and the adjacent T-2B. Within T-2, Stratum IIb contains three stacked waterworn basalt cobbles of indeterminate function (Feature 7). Within T-2B, it contains an angled pit, also of indeterminate function (Feature 10). These two features are described in detail below. Profiles, plan maps, and photographs are presented in Section 4.3: Subsurface Testing Results and are referenced in the descriptions below.

Feature 7 comprises three stacked basalt cobbles identified within Stratum IIb/SIHP # -8840 Component 2 in the northwest wall of T-2 (see Figure 47, Figure 48, and Figure 54). It was documented between 124 and 160 cmbs and measures 25 cm across. Its function is indeterminate.

Feature 10 is an oblong pit feature identified in the southeast wall of T-2B (see Figure 58, Figure 59, and Figure 63). It was documented at the upper boundary of Stratum IIb/SIHP # -8840 Component 2 between 117 and 171 cmbs and measures 25 cm across. Its function is indeterminate.

6.2.3 Laboratory Analyses

Two charcoal samples, collected from SIHP # -8840 Component 2, Features 2 and 4, were submitted to the Wood Identification Laboratory at IARII for taxa identification (see Section 5.4.2 for full results). Features 2 and 4 are both fire-related features identified in T-1 Stratum IIa. Feature 2 was documented at the upper boundary of the stratum, while Feature 4 was documented in the lower-middle portion of the stratum; hence, Feature 2 post-dates Feature 4.

Most of Sample 1 (Feature 2) was identified as *kiawe* (*P. pallida*), while the rest is indeterminate hardwood. As *kiawe* was likely introduced to Hawai‘i in 1828, Feature 2 therefore post-dates that time and dates securely to the post-Contact period. In contrast, Sample 2 (Feature 4) contains wood from native species including *‘ōhi‘a lehua* (*M. polymorpha*), *koa* (*Acacia* cf. *koa*), *kōpiko* (*Psychotria* sp.), and possibly *hau* (*Hibiscus* sp.); no post-Contact introductions were identified. These results suggest Feature 4 may date to the pre- or early post-Contact period; hence, a subsample recovered from Sample 2 (Feature 4) was submitted to Beta Analytic, Inc., for radiocarbon dating analysis.

The radiocarbon analysis yielded two-sigma calibrated date ranges of AD 1728-1810 (53.5% probability), 1646-1690 (26.0%), and 1925-post 1950 (15.9%). However, the most recent date range (1925-post 1950) can likely be discarded. Although diagnostic artifacts recovered from overlying fill deposits suggest Stratum IIa functioned as a surface into the 1930s (see Section 5.2.4), the identification of pit features within different vertical portions of the quite thick stratum indicates the layer was not deposited all at once but rather over a (potentially extended) period of time. As Feature 4 was identified within the lower portion of Stratum IIa, it would therefore date to the early part of that time period. Hence, the radiocarbon analysis, like the wood taxa analysis (discussed above), supports a pre- or early post-Contact date for the lower portion of Stratum IIa.

The artifact assemblage further supports the timeline suggested by radiocarbon dating and wood taxa identification. Artifacts were collected and analyzed from four pit features associated with the Stratum IIa/SIHP # -8840 Component 2 habitation layer. Two diagnostic glass fragments (Acc. #s 74 and 76) collected from Feature 17, documented at the lower boundary of Stratum IIa, date to 1800-1910, indicating use of the feature during that time period and consistent with an early post-Contact date for that portion of the layer. In contrast, diagnostic artifacts collected from Features 8, 12, and 14, documented at the upper boundary of the stratum, indicate use of these features post-1910 (Acc. #s 37, 41, and 47), post-1890 (Acc. # 55), and post-1880 (Acc. # 159), respectively, reflecting more recent use of that portion of the layer. Although shell midden (*P. reticulata*) was retrieved from Feature 12, it was assessed as likely historical (i.e., post-Contact), rather than traditional Hawaiian, and therefore not in conflict with the interpretation of the feature as a post-1890 historical trash pit.

Stratum IIb underlies and therefore pre-dates Stratum IIa. Based on the radiocarbon dating of the lower portion of Stratum IIa to the pre- or early post-Contact period and the lack of historical materials identified within Stratum IIb and its associated features, Stratum IIb likely dates to the pre- or very early post-Contact period. It is worth noting that this timeline places Stratum IIa during the time of Marín’s Vineyard, which was planted in 1815; however, no evidence of grape cultivation was identified within Stratum IIa. It is possible this portion of Marín’s land was not in active cultivation.

6.3 SIHP # 50-80-14-8840 Component 3

FORMAL TYPE:	Infrastructure remnants
FUNCTION:	Habitation; commercial
AGE:	Post-Contact
NUMBER OF FEATURES:	6
TEST EXCAVATIONS:	T-1, T-2, T-2B, T-4, T-10, and T-11
DIMENSIONS	0.2 acre
TAX MAP KEY:	[1] 1-7-006:012
LAND JURISDICTION:	City and County of Honolulu
PREVIOUS DOCUMENTATION:	N/A

SIHP # -8840 Component 3 consists of historical infrastructure remnants, documented within roughly the *makai* (southwest) half of the AIS study area (see Figure 35 and Figure 162 through

Figure 166). These remnants consist of an oil-rolled crushed coral surface with associated base course (Feature 1; T-1), a hollow tile wall with concrete base (Feature 2; T-2 and T-2B), a concrete footing (Feature 3; T-4), an etched concrete surface (Feature 4; T-10 and T-11), a mortared brick structure (Feature 5; T-10), and a burnt trash fill (Feature 6; T-11). These are summarized in Table 30 and are described in detail in the following subsections. Profiles, plan maps, and photographs are presented in Section 4.3: Subsurface Testing Results and are referenced in the descriptions below.

It should be noted that various demolition layers identified throughout the AIS study area are not included in SIHP # -8840 Component 3. These layers contain concrete, brick, metal, and hollow tile debris, as well as ceramics and bottle glass. They likely represent the remains of previous structures within the AIS study area; however, due to lack of integrity and association, they are not included within SIHP # -8840. Demolition layers were documented within eight test excavations (T-2, T-2B, T-2C, T-3, T-4, T-6, T-10, and T-12).

6.3.1 SIHP # -8840 Component 3, Feature 1, Oil-rolled Crushed Coral Surface with Associated Base Course

An oil-rolled crushed coral surface and associated basalt gravel base course (Strata If and Ig) were identified within T-1, near the southwestern boundary of the AIS study area. They are designated as SIHP # -8840 Component 3, Feature 1. Feature 1 was documented within all four trench walls, although it was absent from the northeastern corner of the excavation (see Figure 36 through Figure 40). Strata If and Ig are each approximately 10 cm thick, and Stratum Ig contains brick, glass, and ceramic fragments, as well as pig (*S. scrofa*) bone. The pig bone and a grab sample of artifacts were collected. Diagnostic artifacts are of primarily Asian origin and date from the mid-nineteenth to twentieth century. One machine-made bottle fragment (Acc. # 132) dates to post-1908, indicating the layer was deposited after that time.

According to an RLS of the project area by Fung Associates (Hibbard and Chiu 2016; see Appendix A), the parking lot was improved in 1966, and aerial photographs (see Figure 25 and Figure 29) indicate the AIS study area was asphalt-paved sometime between 1941 and 1968. Hence, SIHP # -8840 Component 3, Feature 1, likely functioned as a surface for some period of time between 1908 and 1966.

6.3.2 SIHP # -8840 Component 3, Feature 2, Hollow Tile Wall with Concrete Base

A hollow tile wall with concrete base was identified within two adjacent test excavations, T-2 and T-2B, near the southern corner of the AIS study area. It is designated as SIHP # -8840 Component 3, Feature 2. A review of historical maps suggests this wall may have served as a boundary marker between dwellings in the southeastern portion of the AIS study area and tenements in the central portion of the study area. This boundary is indicated with a solid line on the 1906 Dakin map (see Figure 163) and the 1914, 1927, and 1950 Sanborn maps (see Figure 164 through Figure 166). A line in approximately the same location appears on the 1893 Dodge and Wall map (see Figure 162), suggesting the boundary (if not the wall) dates back to at least the nineteenth century, when it appears to have been associated with agricultural and/or house lots of LCA 2938 (see Section 3.1.2.1 discussion). However, it should be noted that although the portion of Feature 2 within T-2 lines up quite well with the boundary on the 1950 Sanborn map (see Figure 166), the portion within T-2B does not line up as well. On the earlier maps, both remnants appear

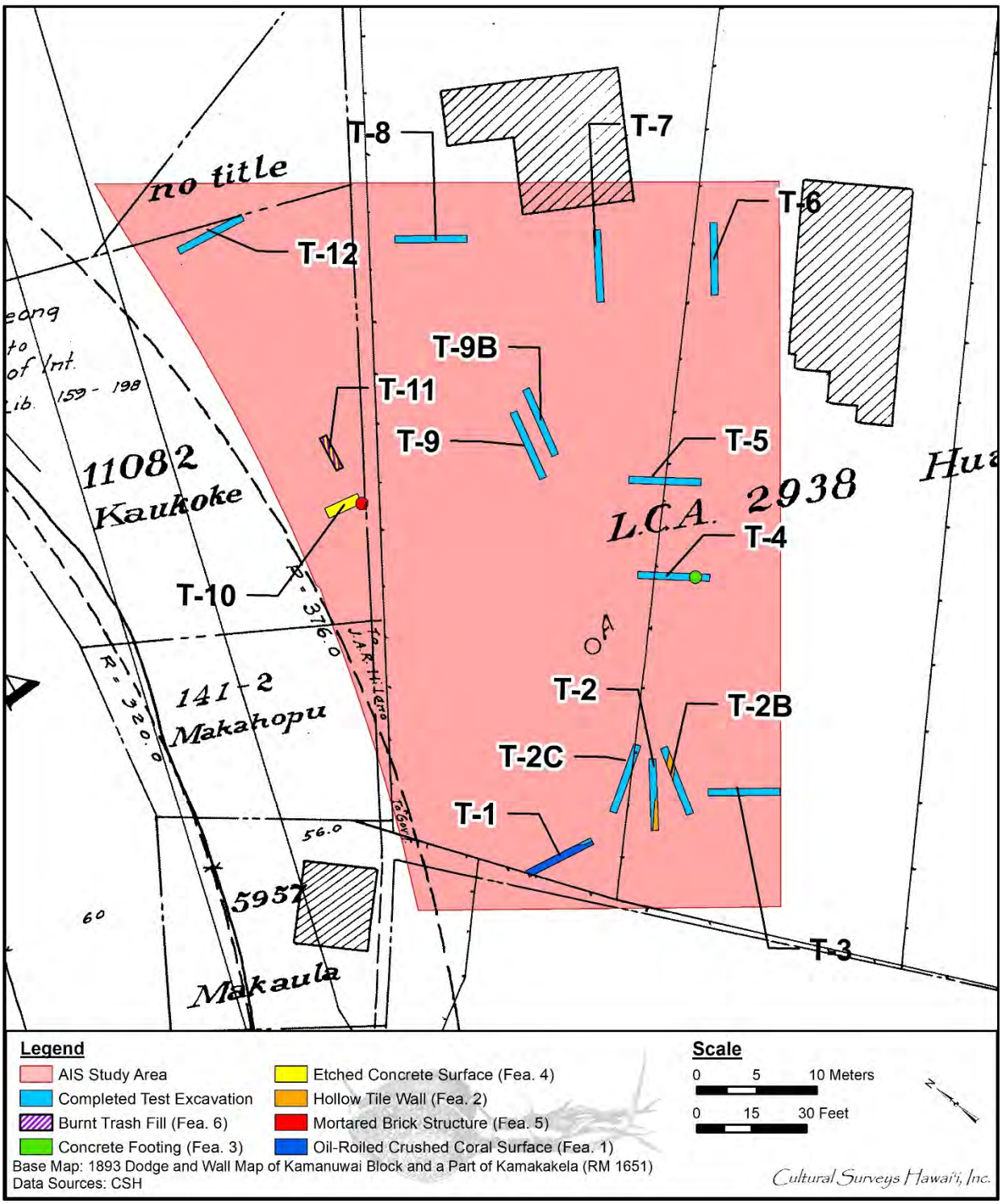

Figure 162. 1893 Dodge and Wall map of Kamanuwai Block and a part of Kamakakela (RM 1651), with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

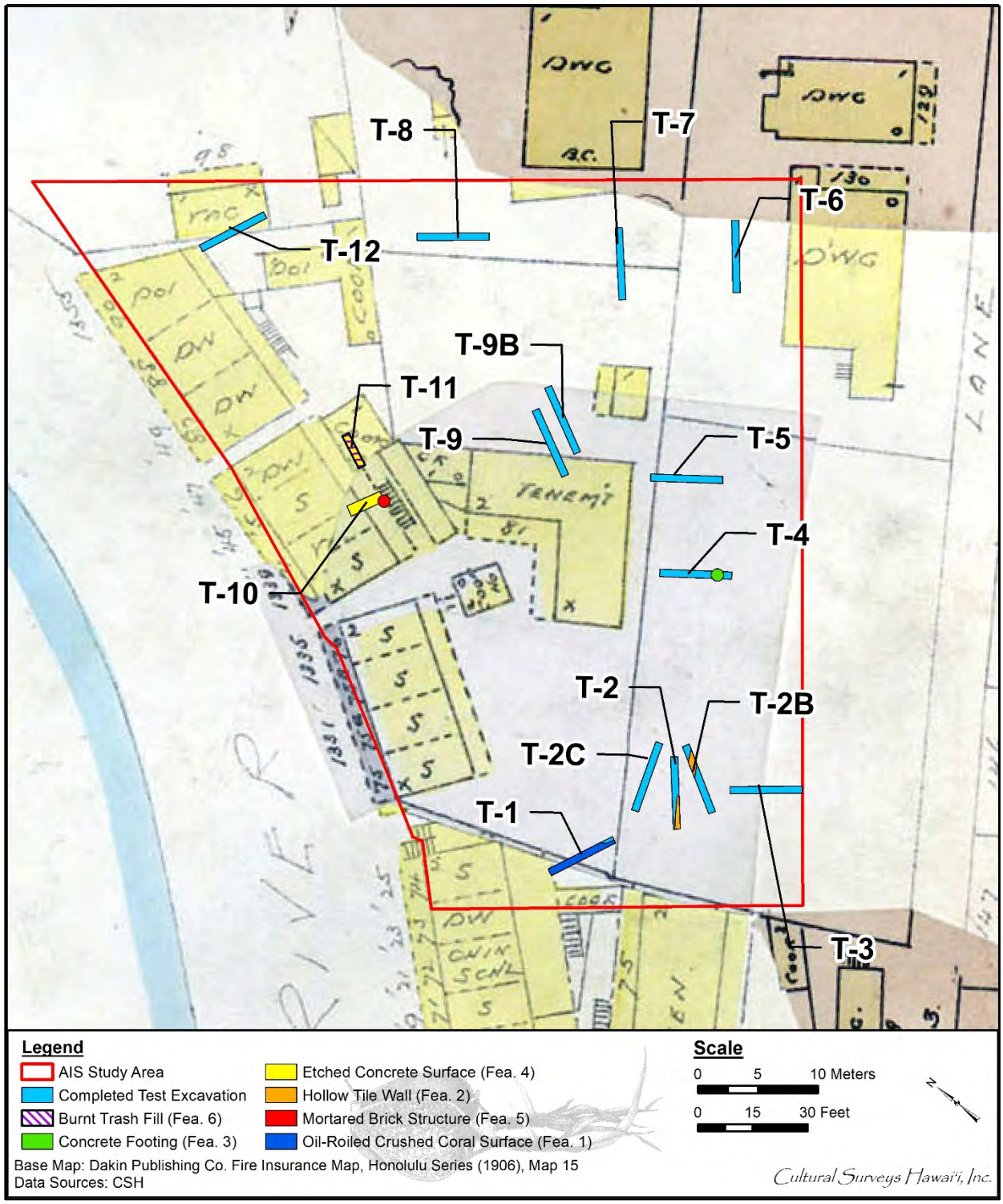

Figure 163. 1906 Dakin Publishing Company fire insurance map, Honolulu series, Map 15, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

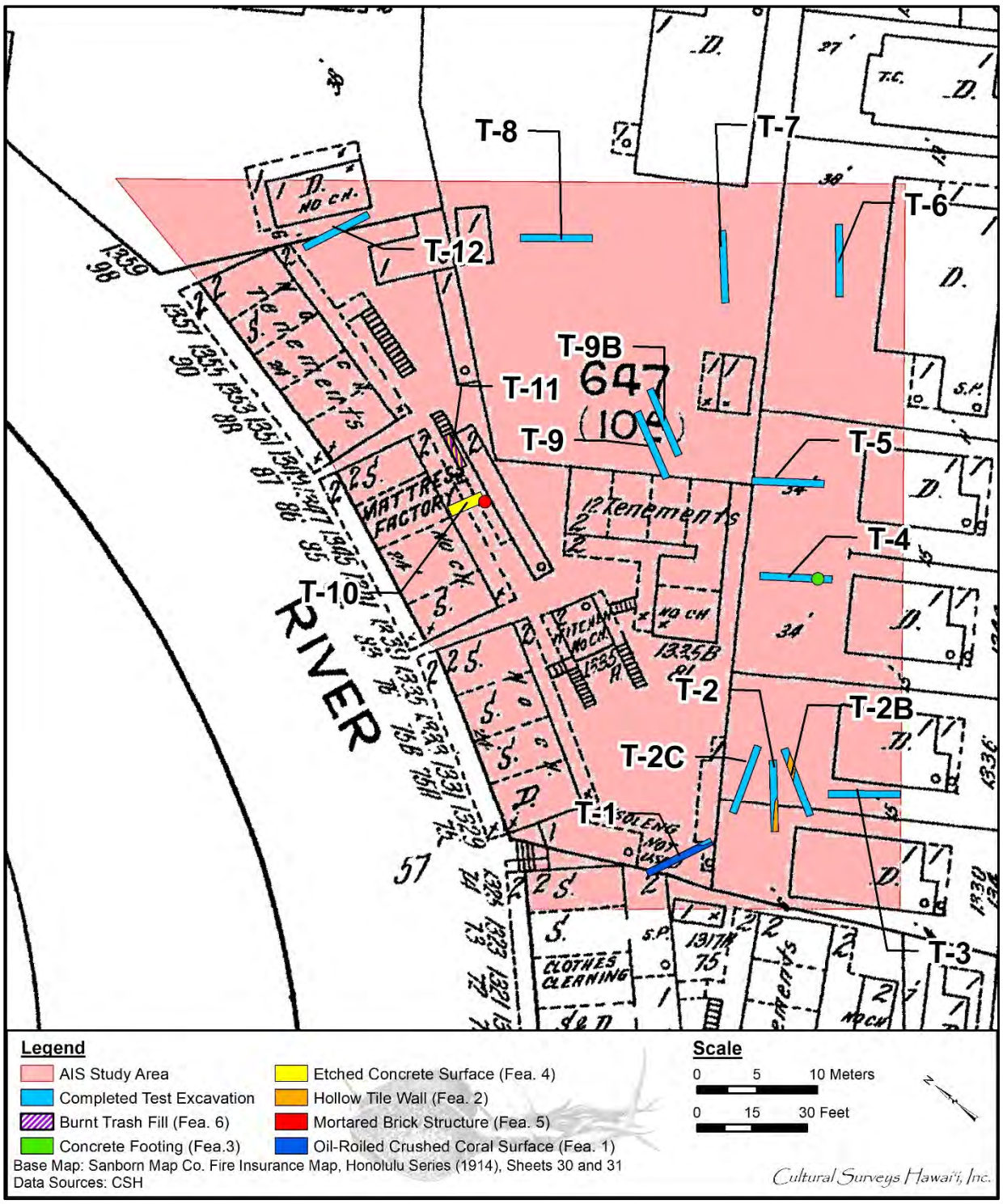

Figure 164. 1914 Sanborn Map Company fire insurance map, Honolulu series, Sheets 30 and 31, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

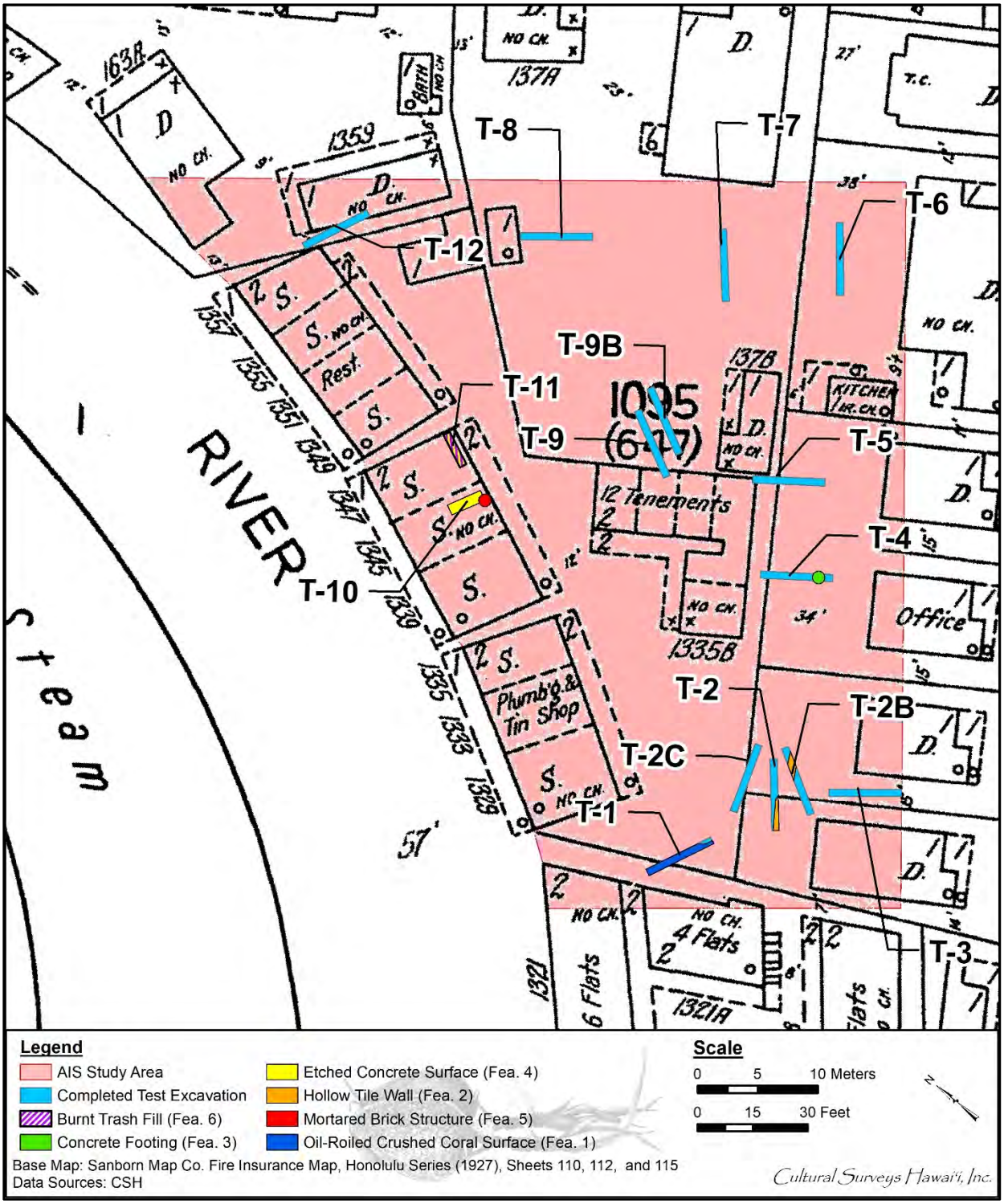

Figure 165. 1927 Sanborn Map Company fire insurance map, Honolulu series, Sheets 110, 112, and 115, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

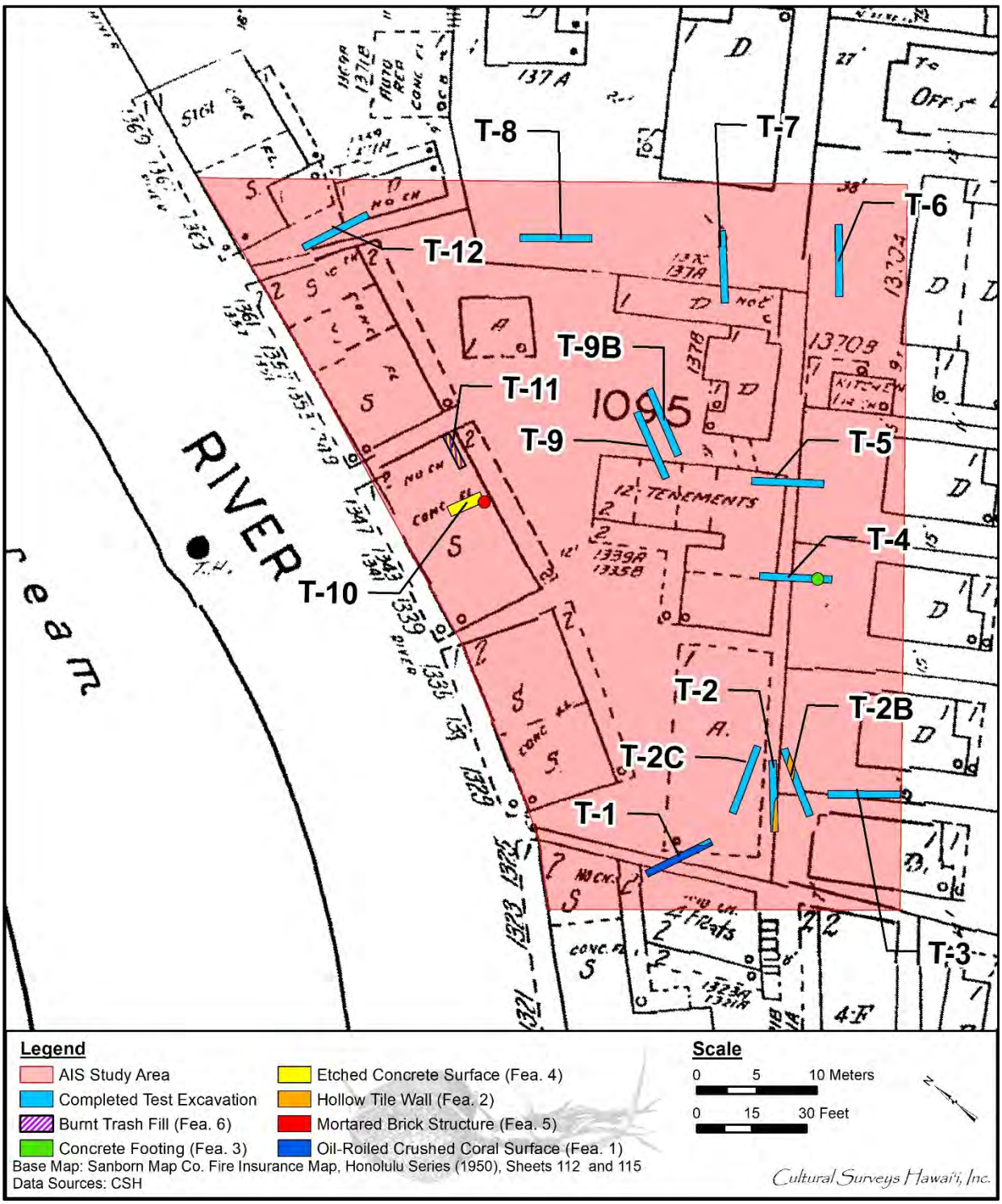

Figure 166. 1950 Sanborn Map Company fire insurance map, Honolulu series, Sheets 112 and 115, with overlay of completed test excavations and SIHP # -8840 Component 3, Features 1–6

Table 30. SIHP # -8840 Component 3 features identified during the AIS

Fea. #	Formal Type	Test Excavation	Comment
1	Oil-rolled crushed coral surface and associated base course	T-1	Functioned as a surface for some period of time between 1908 and 1966
2	Hollow tile wall with a concrete base	T-2, T-2B	Possible boundary wall between dwellings and tenements (see Figure 166*)
3	Concrete footing	T-4	Possibly concrete portion of the above hollow tile boundary wall
4	Etched concrete surface	T-10, T-11	Unspecified store fronting River St, present by 1950 (see Figure 166*)
5	Mortared brick structure with a concrete foundation	T-10	Likely constructed between 1847 and 1906
6	Burnt trash fill	T-11	Likely deposited between 1935 and 1950

*Sanborn Map Company fire insurance map, Honolulu series (1950), Sheets 110, 112, and 115

to be several meters southeast of the indicated boundary, although the margin of error for these maps is unknown. Hence, the association between Feature 2 and this former boundary cannot be stated definitively.

SIHP # -8840 Component 3, Feature 2, as identified in T-2 and T-2B, is described in detail below.

6.3.2.1 SIHP # -8840 Component 3, Feature 2 within T-2

SIHP # -8840 Component 3, Feature 2, was documented at the *makai* (southwest) end of T-2, extending roughly east-west from the southwest endwall into the southeast sidewall (see Figure 49 through Figure 52). It was documented between 37 and 70 cmbs. The exposed portion is 3.1 m long with a maximum width of 20 cm. The hollow tile portion comprises a single course and is approximately 20 cm thick. The underlying concrete base is 15 cm thick. No associated builder’s pit was observed; rather, it appeared the wall was founded on Stratum IIa (SIHP # -8840 Component 2, habitation layer; see Section 6.2 above) prior to the deposition of the Stratum Id fill.

6.3.2.2 SIHP # -8840 Component 3, Feature 2 within T-2B

Within T-2B, Feature 2 was documented between 22 and 73 cmbs, extending roughly east-west from near the east corner of the trench into the northwest sidewall (see Figure 58 through Figure 61, and Figure 62). The exposed portion is approximately 2.5 m long, with a maximum width of 35 cm. The hollow tile portion is discontinuous, comprising 1–2 courses where it was observed, with a maximum thickness of 35 cm. The underlying concrete base is approximately 18 cm thick. No associated builder’s pit was observed; rather, it appeared the wall was founded on Stratum IIa (SIHP # -8840 Component 2 habitation layer [see Section 6.2]) prior to the deposition of the Strata Ie and If fills.

Within T-2B, Feature 2 directly overlay a pit feature interpreted as a historical trash pit (SIHP # -8840 Component 2, Feature 8). Artifact analysis indicates use of the underlying pit feature no earlier than 1910; hence, Feature 2 was constructed no earlier than 1910.

6.3.3 SIHP # -8840 Component 3, Feature 3, Concrete Footing

A concrete infrastructure remnant identified as a footing was documented near the southeast end of T-4, within the trench floor and extending into both sidewalls. Designated as SIHP # -8840 Component 3, Feature 3, it appeared to be founded upon Stratum IIa (SIHP # -8840 Component 2 habitation layer [see Section 6.2]) and was documented between 43 and 58 cmbs. The exposed portion is 85 cm long by 45 cm wide and 15 cm thick.

This remnant may represent the concrete base of the hollow tile wall identified in T-2 and T-2B (SIHP # -8840 Component 3, Feature 2; see Section 6.3.2 above); it is of approximately the same thickness, width, and orientation (roughly east-west), as well as being at approximately the same depth and stratigraphic position (founded upon Stratum IIa). Furthermore, the presence of hollow tile debris in the surrounding Stratum Ic fill material suggests the upper hollow tile portion was once present but had been demolished. However, as T-4 is approximately 15 m *mauka* (northeast) of T-2 and T-2B, and since the hollow tile portion was not observed in T-4, the association cannot be stated definitively.

6.3.4 SIHP # -8840 Component 3, Feature 4, Etched Concrete Surface

An etched concrete surface was identified within the two interior excavations, T-10 and T-11, and designated as SIHP # -8840 Component 3, Feature 4. A review of historical maps suggests Feature 4 is associated with a former unspecified store fronting River Street, indicated on the 1950 Sanborn map (see Figure 166) as having a “CONC FL” (concrete floor). SIHP # -8840 Component 3, Feature 5, as documented in T-10 and T-11, is described in detail below.

6.3.4.1 T-10

Within T-10, Feature 4 was documented between 28 and 43 cmbs, beneath the concrete floor of the John R. Gilliland Sr. Building and underlying fill deposit (Strata Ia and Ib) (see Figure 103 through Figure 106 and Figure 108). Feature 4 is 10–15 cm thick and extended across the entire excavation (3.05 m long [northwest-southeast] by 0.89 m wide [northeast-southwest]) prior to being removed. It overlies crushed coral fill (Stratum Id) and construction fill (Stratum Ie).

6.3.4.2 T-11

Within T-11, Feature 4, was documented between 18 and 41 cmbs, beneath the current concrete floor of the John R. Gilliland Sr. Building and associated base course layer (Strata Ia and Ib) (see Figure 109 through Figure 111). It is 15–20 cm thick and extended across the entire excavation (2.96 m long [northeast-southwest] by 0.71 m wide [northwest-southeast]) prior to being removed. As in T-10, it overlies construction fill (Stratum Id) and crushed coral fill (Stratum Ie).

6.3.5 SIHP # -8840 Component 3, Feature 5, Mortared Brick Structure with Concrete Foundation

The remnant of a mortared brick structure with a concrete foundation was identified at the southern corner of T-10, between 60 and 110 cmbs (see Figure 104, Figure 105, and Figure 107). It is designated as SIHP # -8840 Component 3, Feature 5. Each brick is 13 cm long by 10 cm wide

and 6 cm tall; no maker’s mark was observed. The concrete base is approximately 10 cm thick. A maximum of seven courses were observed within the exposed portion of the feature (within the southwest sidewall, not depicted in the profile drawing), which comprises two walls at right angles, representing the northern corner of the former building/structure. The exposed portion of the feature is 50 cm long (northeast-southwest) by 45 cm wide (northwest-southeast) and 50 cm tall. It was not possible to extend the excavation in order to expose the feature further due to the presence of an active subsurface electrical line.

SIHP # -8840 Component 3, Feature 5, appeared to be founded on Stratum IIb, natural alluvium, as no builder’s pit was identified within the surrounding Stratum IIa (SIHP # -8840 Component 2, habitation layer), suggesting Feature 5 pre-dates Stratum IIa. However, according to Lebo (1997:106–107), the first brick structure was built in Honolulu in 1847. As radiocarbon dating (see Section 5.4.3) indicates use of Stratum IIa by 1810, it appears Feature 5 post-dates at least the lower (i.e., earlier) portion of Stratum IIa. A review of historical maps dating from 1906 to 1950 (see Figure 163 through Figure 166) revealed no former brick structure or building in this location, suggesting Feature 5 dates to the period between 1847 and 1906. Furthermore, diagnostic artifacts indicate deposition of the overlying Stratum Ie sometime after 1924, which is consistent with a late nineteenth or early twentieth century date for the construction of Feature 5.

6.3.6 SIHP # -8840 Component 3, Feature 6, Burnt Trash Fill

A thin burnt trash layer (Stratum If), approximately 5–10 cm thick, was documented in T-11, between 45 and 56 cmbs (see Figure 109, Figure 110, and Figure 112). Designated as SIHP # -8840 Component 3, Feature 6, it is composed of very dark brown silty clay loam and contains bottle glass, charcoal, and ceramics; a grab sample of glass and ceramics was collected. A saw-cut faunal bone recovered from the backdirt pile may also be associated with the trash layer; however, its provenience is uncertain.

SIHP # -8840 Component 3, Feature 6, underlies and therefore pre-dates the SIHP # -8840 Component 3, Feature 4 etched concrete surface (see Section 6.3.5 above), which was likely in place by 1950. Based on artifact analysis, the underlying Stratum IIa/SIHP # -8840 Component 2 habitation layer was exposed as a surface until at least 1935. Hence, Feature 6 was likely deposited sometime between 1935 and 1950. Although none of the artifacts recovered from Feature 6 were sufficiently diagnostic to be dated to a particular year or even decade, the date ranges for the items, which fall between the 1840s and 1930s, is consistent with deposition between 1935 and 1950.

6.4 SIHP # -8840 Significance Assessment

SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to HAR § 13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. SIHP # -8840 has provided, and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town

from the nineteenth through mid-twentieth centuries; and on late pre-Contact to post-Contact burial practices. SIHP # -8840 retains integrity of location, materials, and design.

Section 7 Consultation

Consultation regarding the Halewai‘olu Senior Residences project has been ongoing since the project’s inception. This section summarizes consultation efforts among the project proponents, the SHPD, consulting parties, and the River Street community.

On 12 April 2017, Liz Char of Halewai‘olu Senior Development, LLC; Alison Chiu and Tonia Moy of Fung Associates, Inc.; and Matt McDermott of CSH met with Dr. Susan Lebo (Archaeology Branch chief), Kimi Matsushima and Stephanie Hacker (O‘ahu archaeologists), and Tanya Gumpac-Maguire (architectural historian) of the SHPD. This meeting initiated HRS §6E-8 consultation with the SHPD. Ms. Char introduced the project and provided a background of the property ownership, agency of record, proposed development, and known consulting parties. At that time, consulting parties consisted of the Chinatown Community Center Association, the Historic Hawai‘i Foundation, and Lum Sai Ho Tong. Because the demolition of the John R. Gilliland Sr. Building would likely result in an adverse effect, the SHPD staff recommended drafting an MOA in parallel with the project consultation and development and suggested additional parties for consultation. Mr. McDermott noted there was no data about subsurface archaeology within the project area, but that archaeological testing would likely yield findings. The SHPD staff recommended consultation with the O‘ahu Island Burial Council (OIBC) and proposed to meet at a later date to discuss a testing strategy for an AIS.

On 8 May 2019, Matt McDermott of CSH gave a presentation at the OIBC meeting to introduce the project, the AIS, and the consultation process. Mr. McDermott discussed the need for federal historic preservation review of the project triggered by federal funding and discussed previous land use within the AIS study area as indicated by background research. Finally, he presented the proposed subsurface testing strategy for the AIS and explained that as a part of the consultation process, letters would be sent to the OIBC, Chinatown community groups, Nu‘uanu Stream groups, architecture groups, and NHOs. Mr. McDermott asked for suggestions for additional parties to be consulted, and Board Member Aulii Mitchell suggested Kehaulani Lum. Board Member Kali Fermantez inquired as to how the effects of the proposed project on the John R. Gilliland Sr. Building would be mitigated, and Mr. McDermott emphasized the need to balance the impacts of building demolition with the good of the community. Board Chair Hina Wong-Kalu stated she looked forward to future consultation meetings and mentioned that she would come forward as a cultural descendant if she were not the Board Chair, as she is a descendant of both Hawaiian and Chinese in that area. Aulii Mitchell then offered that he is a descendant of the Tong Yees. Finally, Hina Wong-Kalu expressed concern regarding the crematorium at the Hosoi Garden Mortuary (one block Diamond Head [southeast] of the current project) and suggested including the Mortuary in the consultation process.

On 10 June 2019, invitations to the 25 June public meeting (see discussion below) were sent via email or U.S. mail to the SHPD and consulting parties; this letter formally initiated Section 106 consultation with the SHPD. Letters were sent to the following individuals/organizations:

Affiliation/Organization	Point of Contact	Method of Contact
WRNS Studio	Adam Woltag	U.S. mail
Cultural Descendant	Alika Luka	U.S. mail
Docomomo US, Hawaii Chapter	Alison Chiu	Email
Chinatown Community Center Association	Allen Stack, Jr.	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Alvin Au	Email
Chinatown Community Center Association	Alvin Ozaki	U.S. mail
City and County of Honolulu City Council	Ann Kobayashi	U.S. mail
Better Tomorrows	Anni Peterson	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Anthony Chang	Email
Halewai‘olu Senior Development, LLC	Brandon Hegland	U.S. mail
Ali‘i Pauahi Hawaiian Civic Club	Bruce Keaulani	U.S. mail
Lung Doo Benevolent Society	Buck Yong Lee	U.S. mail
State of Hawaii House of Representatives, District 20	Calvin Say	U.S. mail
City and County of Honolulu City Council	Carol Fukanaga	U.S. mail
Norman ‘Ohana	Carolyn Norman	U.S. mail
Aala Dog Park Association	Cathy Au Hoy	Email
Pacific Gateway Center	Christy MacPherson	Email
Chinatown Business and Community Association	Chu Lan Shubert-Kwock	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Chu Lan Shubert-Kwock	U.S. mail
State of Hawaii - House of Representatives, District 29	Daniel Holt	U.S. mail
Cultural Descendant	Dayleen Yokooji	U.S. mail
Chinatown Merchants Association	Denton Chun	Email
Chinatown Community Center Association	Dolores Mollring	U.S. mail
Makaiwi ‘Ohana	Donna Makaiwi	U.S. mail
SHPD Archaeology and Culture & History/Burials Program Branches	Dr. Susan Lebo	U.S. mail
Pacific Gateway Center	Dr. Tim Myaing Thein, Ph.D.	Email
Chinese Chamber of Commerce Hawaii	Eddie Flores, Jr.	Email
Borthwick Mortuary	Ennilee Anulao	U.S. mail
Friends of Chinatown	Eric Wong	Email
Neighborhood Board #13 (Downtown/Chinatown)	Ernest Caravalho	Email
Lung Kong Physical Culture Club	Ernest Loo	U.S. mail
Lam ‘Ohana	Gerald Lam	U.S. mail
Chinatown Business Association	Gifford Chang	U.S. mail
Association of Hawaiian Civic Clubs	Hailama Farden	U.S. mail
Community Engagement & Resources Group, Kamehameha Schools	Hailama Farden	U.S. mail
See Yup Benevolent Society	Henry Chan	U.S. mail
United Chinese Society	Henry Ou	Email
OIBC Kona Rep./Chairperson	Hinaleimoana Wong-Kalu	U.S. mail
Lum Sai Ho Tong	Howard Lum	U.S. mail

Affiliation/Organization	Point of Contact	Method of Contact
Neighborhood Board #13 (Downtown/Chinatown)	Jasmine Mancos	Email
Borthwick Mortuary	Jay Morford	U.S. mail
Onward Creative	Jeff Mull	Email
WRNS Studio	Jeff Warner	U.S. mail
City and County of Honolulu City Council	Joey Manahan	U.S. mail
City and County of Honolulu Department of Community Services	John Chang	U.S. mail
Friends of Chinatown	Johnny Ng	U.S. mail
Sing Tao Newspaper, LTD	Joseph Chow	U.S. mail
Honorary Mayor of Chinatown; D.D.S Retired	Joseph Young	U.S. mail
SHPD Archaeology and Culture & History/Burials Program Branches	Ka‘ahiki Solis	U.S. mail
Office of Hawaiian Affairs	Kamana‘opono Crabbe CEO	U.S. mail
Halewai‘olu Senior Development, LLC	Karen Seddon	Email
World Journal	Karl Kao	U.S. mail
State of Hawai‘i - Senate, District 13	Karl Rhoads	U.S. mail
Lum Sai Ho Tong	Kehaulani Lum	U.S. mail
Tsung Tin Association	Keith Lim	U.S. mail
Historic Hawai‘i Foundation	Kiersten Faulkner	U.S. mail
Friends of Chinatown	Kim Tran	U.S. mail
Wong Kong Har Tong Society	Kimo Wong	U.S. mail
Mun Lun School	Kin Ching	U.S. mail
Lung Kong Kung Shaw	Kristi Quon Esquef	Email
UCS and Chinatown Community Center Association	Larry Siu	U.S. mail
Chinatown Improvement District	Lee Stack	U.S. mail
Aha Moku Advisory Committee Department of Land and Natural Resources	Leimana DaMate	U.S. mail
Cultural Descendant	Leon Letoto	U.S. mail
Faith Action for Community Equity	Leotele Togafau	Email
Chinatown Community Center Association	Liana Benn	U.S. mail
Lum Sai Ho Tong	Lita Lum	U.S. mail
Lum Sai Ho Tong	Luther Chong	U.S. mail
Honolulu Police Department	Major Roy Sugimoto	Email
O‘ahu Island Burial Council	Mana Caceres	U.S. mail
Interstate Realty Management	Mary Keshishian	Email
Kuan Yin Temple	Merle Chong	U.S. mail
Cultural Descendant	Michael Lee	U.S. mail
American Savings Bank	Michelle Bartell	Email
Lum Sai Ho Tong	Milton Hee	U.S. mail
Chinese Chamber of Commerce Hawaii	Mona Choy-Beddow	U.S. mail
Cultural Descendant	Natalie Baldauf	Email

Affiliation/Organization	Point of Contact	Method of Contact
Arts District Merchants Association (ADMA)	Nicole Reid	Email
Caceres ‘Ohana	Norman “Mana” Christopher Moore Kaleilani Caceres	U.S. mail
Enterprise Honolulu	Pono Shim	U.S. mail
Halewai‘olu Senior Development, LLC	Questor Lau	U.S. mail
SHPD Archaeology and Culture & History/Burials Program Branches	Regina Hilo	U.S. mail
Izumo Taishakyo Mission of Hawai‘i	Richard Miyao	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Robert Tom	Email
Chinatown Improvement District	Robert Wu	Email
WRNS Studio	Rochelle Nagata-Wu	U.S. mail
Cultural Descendant	Roddy Akau	Email
Mun Lun School (Center Assoc. and Kalihi-Palama NB 15)	Roland Louie	U.S. mail
City and County of Honolulu	Roy K. Amemiya Jr.	U.S. mail
Hawaii Theater	Ruth Bolan	Email
Louis Pohl Gallery	Sandra Pohl	U.S. mail
Chinatown Community Center Association	Sandra Siu	U.S. mail
Nu‘uanu Valley Auwai Study Group	Shannon Wilson	U.S. mail
Care Companions and Consulting	Sharon L. Pang	U.S. mail
Hawaiian Chinese Civic Association	Sharon L. Pang	U.S. mail
Chamber of Commerce Hawaii	Sherry Menor-McNamara	U.S. mail
Association of Hawaiian Civic Clubs	Soulee LKO Stroud	U.S. mail
Interstate Realty Management	Stacie Brach	Email
Chung Wah Chung Kung Hui	Stanford Yuen	Email
Chinatown Business and Community Association	Stanley Yon (US China People’s Friend)	U.S. mail
United Chinese Society	Ted Li	U.S. mail
–	Tom Dang	U.S. mail
Neighborhood Board #13 (Downtown/Chinatown)	Tom Smyth	U.S. mail
Docomomo US, Hawaii Chapter	Tonia Moy	Email
Kaleikini, Keliinoi ‘Ohana	Tuahine Kaleikini	U.S. mail
Fort Street Mall BID Assoc.	Victor Lim	U.S. mail
United Chinese Society	Victor Lim	U.S. mail
Longevity International Enterprises Corporation dba Chinatown Cultural Plaza	Vina Quick	U.S. mail
Chinatown Community Center	Walter Chang	Email, U.S. mail
Chinatown Community Center Association	Wesley Fong	U.S. mail
Borthwick Mortuary	William Mendel	U.S. mail
Chinese Physical Culture Association	–	U.S. mail
City and County of Honolulu Department of Permitting and Planning	–	U.S. mail

Affiliation/Organization	Point of Contact	Method of Contact
Filipino Community Center - Joseph Rizal Memorial	–	U.S. mail
Foster Botanical Gardens	–	U.S. mail
Friends of ‘Iolani Palace	–	U.S. mail
Hawai‘i Chinese Association of Hawai‘i	–	U.S. mail
Hawai‘i Chinese Buddhist Society	–	U.S. mail
Hawai‘i Chinese History Center	–	U.S. mail
Hawai‘i Chinese Multicultural Museum and Archives	–	U.S. mail
Hawaiian Civic Club of Honolulu	–	U.S. mail
Japanese Cultural Center of Hawaii	–	U.S. mail
See Dai Doo Society	–	U.S. mail
Sun Yat Sen School - Cultural Language School	–	U.S. mail

On 25 June 2019, a public informational meeting was held at the Blaisdell Center. Sandra Pfund (City and County of Honolulu DLM) introduced the project and described the purpose of the meeting. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Alison Chiu and Bethany Zedalis (Fung Associates) provided an architectural background. Matt McDermott of CSH summarized the historical and archaeological background. This was followed by questions from the audience. In attendance were Liana Benn, Wesley Fong, and Roland Louie of the Chinatown Community Center Association; Jay Morford and Ennilee Anulao of Hawaiian Memorial Life Plan; Kiersten Faulkner of the Historic Hawai‘i Foundation; Honorary Mayor of Chinatown Joseph Young; Pamela Liu of the Honolulu Police Department; members of the Caceres ‘Ohana (cultural descendants); Joette Yago and Janet Meinke-Lau of the City and County of Honolulu Department of Planning and Permitting; Karl Rhoads of the Hawai‘i State Senate (District 13); Councilmember Carol Fukunaga and Kim Ribellia from her office; Cheryl Tanaka and Randall Goto of the City and County of Honolulu Department of Budget and Fiscal Services; Christy MacPherson of Faith Action; City and County of Honolulu Managing Director Roy Amemiya; Kehaulani and Howard Lum of Lum Sai Ho Tong; and Donna and Daron Makaiwi of the Marin ‘Ohana. Questions included inquiries about possible project effects on the Mun Lun School; whether the planned multi-purpose room will be used as a community center; whether the project footprint could change as a result of the AIS findings; whether the Native American Grave Protection and Repatriation Act (NAGPRA) applies to the project; and the possible effects of mortuary smoke on the new building and its residents.

On 9 July 2019, a Section 106 consultation meeting was attended by Alison Chiu and Bethany Zedalis of Fung Associates; Tanya Gumpac-Maguire of the SHPD (Architecture Branch); Sharon Har and Questor Lau of Halewai‘olu Senior Development, LLC; Keith Kurahashi of R.M. Towill; Sandra Pfund from the City and County of Honolulu DLM; and Matt McDermott of CSH. Sharon Har provided an overview of the project and comments from consulting parties, including a request to incorporate historical documentation of the presence of *ali‘i* in the area and the Battle of Nu‘uanu, how smoke from the crematorium might affect the project, questions surrounding possible NAGPRA triggers, the name of the multi-purpose room, the impacts of construction and mitigation concerns, and whether the results of the AIS could alter the footprint of the senior residences. Mr. McDermott provided an update of the ongoing AIS, including the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6). Ms. Chiu and Ms. Zedalis proposed the area

of potential effect (APE) for the project to consist of an archaeological APE and an additional architectural APE. Ms. Gumpac-Maguire concurred with the two APEs.

On 22 July 2019, Ena Sroat and Matt McDermott of CSH met with Susan Lebo of the SHPD (Archaeology Branch) to discuss the results of the AIS testing up to that point and additional testing based on the identification of an in situ burial (SIHP # -8840 Component 2, Feature 6) in T-2. Based on this discussion, it was agreed that the AIS testing strategy would be increased by three test excavations—two in the vicinity of T-2 and one in the vicinity of T-9, where a potential agricultural berm had been identified.

On 14 August 2019, Matt McDermott of CSH presented the results of the current AIS investigation at the OIBC meeting. Mr. McDermott discussed the burial find of 8 July 2019 (SIHP # -8840 Component 2, Feature 6) and how excavation of two additional trenches—one on either side of the initial trench—failed to identify any additional remains. He explained that the forthcoming burial treatment plan (BTP) will be part of the MOA and that NAGPRA does not apply as the project does not involve tribal or federal land; this is confirmed by Kamana‘o Mills (large landowner). Board Member Aulii Mitchell inquired as to whether testing would be conducted to determine the burial date, and Mr. McDermott explained that the remains were found in a sediment layer that is not pre-Contact; hence, the burial is likely historic. He stated that Board Member Mana Caceres had been involved in the early stages of consultation regarding the burial find, and that Mr. Caceres would be applying as a cultural descendant of the remains.

On 19 September 2019, a second public informational meeting was held at the Blaisdell Center. Sandra Pfund of the City and County of Honolulu DLM explained the purpose of the meeting was to provide the community with an update regarding the AIS and CIA studies and how they relate to the project’s historic preservation review process. Sharon Har (Halewai‘olu Senior Development) provided a project overview. Bethany Zedalis (Fung Associates) provided an architectural background. Matt McDermott of CSH presented the preliminary results of the project’s AIS and proposed mitigation commitments, including burial treatment. There were no questions from the audience members, who included Sharon Pang of Care Companions & Consulting; cultural descendants Mana Caceres, Logan Keola, and Gerry Lam; Jay Morford of Hawaiian Memorial Life Plan; Cheryl Tanaka and Randall Goto of the City and County of Honolulu Department of Budget and Fiscal Services; Howard Lum of Lum Sai Ho Tong; Anni Peterson of Better Tomorrows; Allen Stack and Wesley Fong of the Chinatown Community Center Association; Karl Rhoads of the Hawai‘i State Senate (District 13); and Kiersten Faulkner of the Historic Hawai‘i Foundation. Also in attendance were Tonia Moy of Fung Associates; Ben Edger and Questor Lau of Halewai‘olu Senior Development, LLC; and Chantel Spencer and Kamuela Ka‘apana of CSH.

On 6, 8, and 9 October 2019, the following notice was published in the *Honolulu Star-Advertiser*:

> NOTICE TO INTERESTED PARTIES IS HEREBY GIVEN that human skeletal remains were identified by Cultural Surveys Hawai’i, Inc. during the course of an archaeological inventory survey related to the Halewai’olu Senior Residences, Honolulu Ahupua’a, Honolulu (Kona) District, O’ahu, TMK: [1] 1-7-060:120 [sic].
>
> Following the procedures of Hawai’i Revised Statutes (HRS) Section 6E-43, and Hawai’i Administrative Rules (HAR) Chapter 13-300, these remains are considered

previously identified. Based on the context of the finds, they are over 50 years old and most likely Native Hawaiian.

Background research indicates that this burial was located in the ‘ili of Kalawahine, within the boundaries of a Land Commission Award (LCA) to Huanu for Lahilani, daughter of Francisco Manini (Francisco Marin). On an 1871 Lyons map this particular award is identified as LCA 3:189; on an 1893 Dodge and Wall map it is identified as LCA 2938. Nearby LCAs include an award to Kaukoke (identified variously as LCA 2:1025 ‘Apana 3 and LCA 11082), an award to Makahopu (LCA 141-2), and an award to Keikenui no Makahopu (LCA 141-3).

The project proponent is the City and County of Honolulu—contact the Department of Land Management, ATTN: Director, 558 S. King Street, Honolulu, Hawai’i 96813 [Tel: (808) 768-4277].

The project proponent has proposed preservation in place for these remains; however, the decision to preserve in place or relocate these previously identified human remains shall be made by the O’ahu Island Burial Council in consultation with the State Historic Preservation Division (SHPD) and any recognized lineal and/or cultural descendants, per the requirements of HAR Section 13-300-33. Appropriate treatment shall occur in accordance with HAR Section 13-300-38.

All persons having any knowledge of the identity or history of these human remains are requested to immediately contact Ms. Regina Hilo, SHPD Burial Site Specialist, at 601 Kamokila Boulevard, Room 555, Kapolei, Hawai’i 96707 [Tel: (808) 692-8015, Fax: (808) 692-8020, Email: Regina.Hilo@hawaii.gov].

All interested parties shall respond within thirty (30) days of this notice and file descendancy claim forms and/or provide information to the SHPD adequately demonstrating lineal descent from these designated burials or cultural descent from ancestors buried in the same ahupua’a or district.

At the 9 October 2019 OIBC meeting, Brandy Caceres and ‘Ohana were recognized as cultural descendants of the *‘iwi kupuna* (human remains) identified on 8 July 2019 (SIHP # -8840 Component 2, Feature 6).

On 19 November 2019, a Section 106 Consultation meeting regarding the project’s MOA was attended by Susan Lebo (Archaeology Branch) and Tanya Gumpac-McGuire (Architecture Branch [via phone]) of the SHPD; Randy Chiu of the City and County DLM; Howard and Kehaulani Lum of Lum Sai Ho Ton; Liana Benn of the Chinatown Community Center Association; cultural descendants Mana and Kalehua Caceres; Daron Makaiwi of the Marin ‘Ohana; Sharon Har, Questor Lau, and Benjamin Edger of Halewai‘olu Senior Development, LLC; Matt McDermott of CSH; Tonia Moy and Alison Chiu of Fung Associates; Jay Morford of Hawaiian Memorial Life Plan; Mel Kalahiki of Borthwick Mortuary; Kiersten Faulkner of the Historic Hawai‘i Foundation; and Sylvia Young of the HawaiiUSA Federal Credit Union. Ms. Har explained that the purpose of the meeting was to discuss mitigation. Mr. McDermott explained that the MOA is being developed to alleviate the adverse effect of the project’s construction on the John R. Gilliland Sr. Building and the archaeological historic property identified during the AIS. SHPD staff proposed that mitigation should focus on benefitting the community. Ms. Faulkner suggested this could be

achieved through a display, a video, an oral history, a traveling exhibit, or by putting funds into an adjacent building. She further emphasized that the MOA needs to be enforceable, with a timeline and specific stipulations as to who does what and to what standard. Discussion also included the proposed activity center within the senior residence, and that it will not just be for residents but also for the community at large.

On 21 November 2019, Matt McDermott and Ena Sroat of CSH met with Susan Lebo, Samantha Cragen, and Andrew McCallister of SHPD's Archaeology Branch. Discussion topics included the outstanding SIHP numbers for the historic property identified during the AIS and possible mitigation measures.

Section 8 Summary and Interpretation

At the request of Halewai‘olu Senior Development, LLC, CSH has prepared this AIS report for the Halewai‘olu Senior Residences project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 1-7-006:012. The Halewai‘olu Senior Residences project is at 1331–1347 River Street, between Vineyard Boulevard and North Kukui Street. The John R. Gilliland Sr. Building and its surrounding parking lot are planned for demolition, to be replaced by proposed affordable senior housing.

The current project is within the portion of downtown Honolulu surrounding the mouth of Nu‘uanu Stream, known to Hawaiians as “Kou.” Kou had a long tradition as a royal center, where the *ali‘i* would meet and entertain. It also possessed shoreward fishponds and irrigated fields, and nearby Honolulu Harbor was brimming with marine resources. The land surrounding Nu‘uanu Stream was particularly densely populated, with a concentration of *lo‘i* and *‘auwai*. Historical maps show the AIS study area as within that dense cluster of *lo‘i*.

By the 1830s, Western commercial and missionary interests had supplanted the Native Hawaiian traditions that once shaped the environment, and Western and urban ideals propelled Honolulu’s growth. The Organic Acts of 1845 and 1846 initiated the process of the Māhele, the division of Hawaiian lands, which introduced private property into Hawaiian society. Historical maps indicate the majority of the AIS study area was within LCA 2938 to Huanu, for the heirs of Lahilahi (Gilliland ‘Ohana). Huanu was the grandson of Francisco de Paula Marín, whose land within the current study area was known as “The Vineyard.” Marín had planted his vineyard with grape cuttings sourced from California in 1815.

A review of twentieth century historical maps and aerial photographs indicates modern development within the study area by 1906. At that time, a tenement was at the center of the study area, while several dwellings and stores were along the northwestern boundary. By 1950, additional dwellings were present in the eastern and southeastern portions of the study area, and a parking area for automobiles was in the southern corner. The John R. Gilliland Sr. Building was constructed within the study area in 1958. In 2016, Fung Associates assessed this two-story commercial building as eligible inclusion on the National Register under Criterion C, as a very good example of a small retail/office building constructed in Hawai‘i in a modern style in the 1950s.

Based on background research, it was anticipated that the current AIS could identify buried agricultural deposits and features associated with taro and/or grape cultivation; pre- and/or post-Contact habitation layer(s) with associated features, potentially including human remains; landscape features or structural remnants associated with LCA boundaries; and nineteenth and twentieth century structural remnants with associated artifacts and/or historical trash pits. As the AIS study area consists of a two-story commercial building (the John R. Gilliland Sr. Building) and associated asphalt parking lot, no surface archaeological historic properties were anticipated.

Fifteen test excavations (T-1 through T-12, including T-2B, T-2C, and T-9B) were completed. In general, the observed stratigraphy consists of the modern land surface, fill deposits, and infrastructure remnants (Stratum I); a vertical series of natural alluvium (Stratum II); and a buried streambed, likely associated with a former braid of Nu‘uanu Stream (Stratum III). In addition, one

archaeological historic property was identified: SIHP # -8840, subsurface cultural deposits, documented in all 15 test excavations.

SIHP # -8840 is a newly identified historic property with three components spanning the pre-Contact period through the mid-twentieth century. Component 1 consists of agricultural deposits, likely representing pre-Contact taro farming along the banks of Nu‘uanu Stream; these comprise the deeper alluvial deposits (Strata IIc–IIg) and reflect at least three periods of agriculture. Associated berm structures (Stratum IId) were identified in two adjacent test excavations (T-9 and T-9B), indicating that area may represent the intersection of two or more agricultural plots.

Component 2 consists of habitation layers with associated pit features, including a human burial site (Feature 6). This component comprises the upper alluvial deposits (Strata IIa and IIb), which likely functioned as living surfaces from the late pre-Contact period at least into the 1930s. The uppermost alluvial deposit, Stratum IIa, is a thick layer with pit features documented throughout its vertical extent. This layer likely accumulated over an extended period of time and, based on radiocarbon dating, functioned as a surface by 1810. Hence, Stratum IIa was likely contemporaneous with Marín’s Vineyard, although no evidence for grape cultivation was identified within the layer. It is possible this portion of the Vineyard was not actively cultivated.

Component 3 consists of historical infrastructure remnants, including an oil-rolled crushed coral surface, a hollow tile wall remnant, a concrete footing, an etched concrete surface, a mortared brick structural remnant, and burnt trash fill. Based on stratigraphic context and analysis of associated artifacts, all of these remnants date to the twentieth century, except possibly for the brick structural remnant (Feature 5), which may date to the nineteenth century (post-1847, the date of the first brick structure in Honolulu).

SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to HAR §13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. SIHP # -8840 has provided, and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town from the nineteenth through mid-twentieth centuries; and on late pre-Contact to post-Contact burial practices. SIHP # -8840 retains integrity of location, materials, and design.

Section 9 Significance Assessment

Once a historic property is identified, then an assessment of significance shall occur pursuant to HAR §13-275-6. To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following significance criteria:

a. be associated with events that have made an important contribution to the broad patterns of our history;
b. be associated with the lives of persons significant in our past;
c. embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master, or possess high artistic value;
d. have yielded, or is likely to yield, information important for research on prehistory or history; or
e. have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations being important to the group's history and cultural identity.

Table 31 presents the significance assessment and mitigation commitments for the historic property identified during the Halewai‘olu Senior Residences AIS, SIHP # -8840 (subsurface cultural deposits). This significance assessment is included in this AISR for the review and concurrence of the SHPD. In addition, historic property integrity, which is the ability of a property to convey its significance, was assessed based on the guidance provided in National Register Bulletin #15, "How to Apply the National Register Criteria for Evaluation" (NPS 1997) and "Assessing Site Significance: A Guide for Archaeologists and Historians" (Hardesty and Little 2000). The seven aspects of integrity and their descriptions are as follows:

- *Location* is the place where the historic property was constructed or the place where the historic event occurred
- *Design* is the combination of elements that create the form, plan, space, structure, and style of the property
- *Setting* is the physical environment of a historic property
- *Materials* are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property
- *Workmanship* is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory
- *Feeling* is a property's expression of the aesthetic or historic sense of a particular period of time
- *Association* is the direct link between an important historic event or person and a historic property (NPS 1997; Hardesty and Little 2000)

Table 31. Archaeological historic property integrity, significance, and mitigation commitments

SIHP # 50-80-14-	AIS Test Excavations	Formal Type/Name	Function	Age	Integrity							Hawai‘i State Significance Criteria	National Register Eligibility Criteria	Mitigation Commitments
					Location	Design	Setting	Materials	Workmanship	Feeling	Association	HAR §13-275-6	36 CFR 60.4	
8840	T-1 through T-12	Subsurface cultural deposits	Agriculture, habitation, human interment, commercial and residential infrastructure	Pre-Contact to mid-twentieth century	Y	Y	N	Y	N	N	N	d and e	D	Archaeological monitoring; burial treatment (BTP forthcoming)

SIHP # -8840, subsurface cultural deposits, has three components, designated as Components 1–3. Component 1 comprises agricultural deposits. Component 2 comprises habitation layers with associated pit features, including a human burial. Component 3 comprises historical infrastructure remnants. SIHP # -8840 is assessed as significant under Hawai‘i State historic property significance Criterion d (has yielded information important for research on prehistory or history) and Criterion e (has an important value to the native Hawaiian people or another ethnic group of the state), pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6. Additionally, it is recommended eligible for inclusion on the Hawai‘i and National Registers under Criterion D. This assessment is based on the historic property’s association with the extensive traditional Hawaiian agricultural system and habitation along Nu‘uanu Stream and the urban development of Honolulu. SIHP # -8840 has provided, and can potentially provide additional information on traditional Hawaiian agricultural practices and chronology; on the residential and commercial growth and ethnic distribution of Honolulu Town from the nineteenth through mid-twentieth centuries; and on late pre-Contact to post-Contact burial practices. SIHP # -8840 retains integrity of location, materials, and design.

Section 10 Project Effect and Mitigation Commitments

The following project effect and mitigation commitment discussions are intended to facilitate project planning and to support the proposed project's required historic preservation consultation. It is also intended to provide specific mitigation commitments for the Halewai‘olu Senior Residences project.

10.1 Project Effect

Under Hawai‘i State historic preservation review legislation, one of two project effect determinations must be established: 1) "No historic properties affected," the project will have no effect on significant historic properties; or 2) "Effect, with proposed mitigation commitments," the project will affect one or more significant historic properties, and the effects will potentially be harmful. However, the agreed upon mitigation commitments involving one or more forms of mitigation will reasonably and acceptably mitigate any harmful effects (HAR §13-275-7).

One significant archaeological historic property (SIHP # -8840) was documented during the Halewai‘olu Senior Residences AIS, and the proposed project has the potential to affect this historic property. Based on the AIS investigation, the project effect determination per HAR §13-275-7 is "effect, with agreed upon mitigation commitments." In addition, under Section 106 of the NHPA, the proposed project will have an "adverse effect" on the identified archaeological historic property, SIHP # -8840. The mitigation commitments outlined below will reduce the project's potential adverse effect on SIHP # -8840, subsurface cultural deposits.

10.2 Mitigation Commitments

Under Hawai‘i State historic preservation review legislation, if a project will have an "effect" (impact) on significant historic properties, then a mitigation commitment proposing the form of mitigation to be undertaken for each significant historic property shall be submitted for SHPD review and acceptance. Mitigation may occur in the following five forms: A) Preservation, B) Architectural Recordation, C) Archaeological Data Recovery (which includes archaeological monitoring), D) Historical Data Recovery, and E) Ethnographic Documentation (HAR §13-275-8).

This AIS indicates the Halewai‘olu Senior Residences AIS study area contains one archaeological historic property: SIHP # -8840, subsurface cultural deposits. SIHP # -8840 was identified in all 15 test excavations. Under Section 106 of the NHPA, the proposed project will have an "adverse effect" on this archaeological historic property. In addition, due to the inherent limitations of any sampling strategy, it is possible additional historic properties may be identified during construction activities.

Based on the AIS results, the agreed upon mitigation commitments consist of a burial treatment plan (BTP) addressing the previously identified human burial site (SIHP # -8840 Component 2, Feature 6) and data recovery in the form of archaeological monitoring for SIHP # -8840 Components 1–3 (see Table 31). Mitigation measures will be detailed in the MOA currently being prepared pursuant to 36 CFR Part 800.6.

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Appendix A Gilliland Building RLS

HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM – Reconnaissance Level

FOR SHPD USE ONLY:	Site # Click here to enter text.	TMK # Click here to enter text.

I. GENERAL INFORMATION

Common / Present Name:	John R. Gilliland Building
Historic Name:	Same
Property Owner:	City and County of Honolulu
Address:	1331 River Street / Units 1331, 1341, 1343, 1347, 201 through 216
City/ Town/ Location:	Honolulu
County:	Honolulu
TMK [(X)-X-X-XXX:XXX)]:	(1)-7-0-060: 120: 000 through 020
Subdivision/Neighborhood:	Chinatown
Latitude:	157°51'35"W
Longitude:	21°18'56"N
Parcel Number:	
Historic District:	N/A
Original Use:	Commercial
Current Use:	Commercial
Architect/ Builder (if known):	Kenneth Sato
Date of Construction (if known):	1958

II. Photograph of Resource



Prepared By: Don Hibbard and Alison Chiu **Consulting Firm:** Fung Associates, Inc.
Address: 1833 Kalakaua Avenue, Suite 1008, Honolulu, HI 96815
Telephone Number: (808) 941-3000 **Email:** Alison@funghawaii.com **Date:** 09/09/2016

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HAWAII STATE HISTORIC PRESERVATION DIVISION
HISTORIC RESOURCE INVENTORY FORM – Reconnaissance Level

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III. CONDITION ASSESSMENT

Category (select all that apply):

- ☐Building(s)
  - ☐Residential ☒**Commercial** ☐Educational ☐Public/Civic ☐Religious
- ☐Structure(s)
- ☐Object(s)
- ☐Site(s)/Landscape(s)
- ☐Archaeology or potential for archaeology (Please provide a description of the potential for archaeology within VI. Description of Resource Features below.)

Condition:

- ☐Excellent
- ☐Good
- ☒**Fair**

Eligibility (select all that apply):

- ☐National Register of Historic Places
- ☐State Register of Historic Places
  - ☐Not Eligible
  - ☒**Eligible**
  - ☐Listed
  - ☐Contributing to Historic District:
    Name of District: Click here to enter text.
  - ☐Unknown

Criteria of Significance (select all that apply)

- ☐A: Associated with Events
- ☐B: Associated with Significant Person(s)
- ☒**C: Distinctive characteristics of a type, period or method of construction; work of a master; possess high artistic values (Architecture, Engineering, Design)**
- ☐D: Have yielded or may be likely to yield information important to history or prehistory.

IV. MAP



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V. DESCRIPTION

Materials (please check those materials that are visible):

Height

☒**Stories: 2**	☐N/A
☐Below Ground	☐Other:

Exterior Walls (siding):

☐Aluminum Siding	☐Metal	☐Plywood
☐Asbestos	☐Shingles-Asphalt	☐OSB
☐Brick	☐Shingles-Wood	☐Fiberboard
☐Ceramic	☐Stone	☐Fiber Cement
☒**Concrete**	☐Stucco	☐Vinyl Siding
☐Horizontal Wood Siding	☐Vertical Wood Siding	☐Other:
☐Log	☐Engineered Siding	

Roof

☐Asphalt, shingle	☐Slate	☐Wood Shingle
☐Asphalt, roll	☒**Built Up**	☐None
☐Metal	☐Ceramic Tile	
☐Other:		

Foundation

☐Brick	☒**Concrete Slab**	☐Stone
☐Concrete Block	☐Poured Concrete	☐Raised/Pile
☐Other:		

Structural Support

☐Baled Hay	☐Frame-wood	☐Puddled Clay
☐Concrete Block	☐Frame-metal/steel	☐Rammed Earth
☐Concrete Framed	☐Brick-load bearing	☐Sod
☒**Concrete Poured**	☐Stone-load bearing	
☐Other:		

Windows

☐Double Hung Sash	☒**Jalousie**	☐Stained Glass
☐Single Hung Sash	☐Glass Block	☐Replacement
☐Casement	☐None/Unknown	☐Aluminum
☒**Fixed**	☐Ribbon	☐Vinyl
☐Other:		

Lanai(s)

☐Arcade	☐Recessed	☐Wrap-around
☐Balcony	☐Stoop	☐Verandah
☐Porte-Cochere	☐Portico	☒**None**
☐Other:		

Chimney

☐Brick	☐Stuccoed Masonry	☐Stove Pipe
☐Concrete	☐Stone	☐Siding
☒**None**	☐Other:	

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VI. Narrative Description

Include within the description of resource features any changes to the resource that have been made over time.

A. Describe exterior features:

This two-story modern style building is distinguished by a canopy between the first and second stories that runs the length of the façade and has a folded plate roof with a drip edge. The façade is further enriched by the roof, which is a series of front-facing, segmental-arched, barrel vaults with overhanging eaves on both the front and rear elevations of the structure. The reinforced concrete building is eight bays wide, with all the bays being of similar width except the northeast-most bay, which is narrower. The barrel vaults define the bays with one covering each bay. On the second story each bay features a picture window, flanked on either side by a pair of jalousie windows. A window air-conditioning unit is set in the lower half of one jalousie window in each bay. At ground level, each bay contained a store front, but the three southeast bays have been modified to address the consolidation of the interior spaces to develop a larger restaurant area. The original store fronts have a hinged door to the north with an adjoining display window to the south. The windows have been modified over time. The kick plate below the windows is simply the flat wall, which is composed of concrete masonry units (CMU) blocks. The narrower, north bay has a set of three jalousie windows on the second story and on the first a tri-fold door, opening the store space to the sidewalk. The three south bays each have six panels. The six north-most panels are solid, while in the middle bay each panel contains a fixed, plate glass window in its upper portion. The south-most bay has a north of center, recessed doorway with a fixed plate glass window to the entry's south. A box neon sign is suspended from the canopy above the entry and reads, "Uptown Café." A second box neon sign is similarly suspended from the canopy in the third bay from the north and this one reads, "Hanagasa Inn."

The rear, southeast side of the building on the ground level has a single door entry in each bay at its south side. The second story is handled the same as the façade's second story. A 3'-6" concrete sidewalk runs the length of the rear elevation and is defined by a 3" curb on its parking lot edge. The parking lot is elevated above the sidewalk and is flush with the top of the curb. Air conditioning/ventilation duct work, conduits, and electrical equipment protrude from the face of the rear elevation.

At either end of the building a double stair, each stair having eighteen steps, leads up to the second floor. The steps are concrete, and a flat roof extends 3'-9" from the sides of the end barrel vaults to protect the stairs from the elements. The space under the stairways has been enclosed with T-111 in recent years, to provide storage areas. The storage spaces are accessed by a centered, hinged, T-111 door. The stairways retain their wrought iron railings with their stylized post and rail pattern. A hinged, metal, security screen door is at the head of the stair.

B. Describe distinguishing interior features:

The screen doors at the head of the stairs provide access to a double-loaded, central hallway. The hall is approximately 4'-0" wide and curves to follow the line of the street. The ceiling in the hallway follows the vaulting of the roof and is approximately 20'-6" high at its apex. The concrete floor has been covered by modern tiles. There are eight doors on each side of the hall, which lead into office spaces. Nine of the doors are original and feature four horizontal-paned windows. At the bottom of some of the doors is a gravity flap letter plate. None of the original doors retain their original knobs. Each office has a picture window flanked on either side by a pair of jalousie windows, except the narrower, northern-most offices which only have a set of three jalousie windows. In a corner of each office is a half bath, which is entered via a single panel door. None of these doors have their original knobs. The offices have 9'-4" high dropped ceilings and originally had connecting doors in the plastered partition walls to allow access to the other office spaces. A number of these openings have been sealed up, but some original single panel doors still remain, again minus their original knobs.

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On the ground floor only two spaces are occupied: the Uptown Café and Hanagasa Inn. The former occupies the three southern-most bays of the building. It has an L-shaped dining area with a bar niche at the north end of the dining room. It was remodeled around 2000. The Hanagasa Inn occupies the second and third bays from the north. It was remodeled in the 1990s. Chikara Mochi occupied the space south of Hanagasa Inn. It still retains obscure, wire fire glass jalousie windows in its front and rear walls, a material which is rarely found today.

C. Describe the landscape and setting (include adjacent sites/resources):

This commercial building sits on a flat, 26,925 square foot lot, and fronts on River Street with vacant lots to either side. Three Royal Poincianna trees (*Delonix regia*) line the sidewalk in front of the building. A blacktop-paved parking lot occupies the rear of the property behind the building. The rear parking lot was improved and enclosed in 1966 by a CMU retaining wall.

VII. Statement of Significance

The Gilliland Building was constructed in 1958, following designs prepared by Kenneth Sato. It is architecturally significant as a very good example of a small retail/office building constructed in Hawaii in a modern style in the 1950s. It is typical of its period in its design, materials, workmanship, and construction methods. It is also important as a very good example of the architectural work of Kenneth Sato.

The façade of the building is distinguished by its folded plate canopy and segmental arched barrel vaulted roof. Folded plate technology originated in Germany in 1925 when it was utilized to cover a coal bunker. The idea spread to Russia and its earliest known use in the United States was in a 44'-0" x 77'-0" San Francisco warehouse in 1935. Other warehouses in California utilized this new type of roof, but as late as 1949, it was still not well known in the United States. An assembly of flat plates, or slabs, inclined in different directions and joined along their longitudinal edges, the folded plate structural system is capable of carrying loads without the need for additional supporting beams along mutual edges. Typically made of cast *in situ* or precast reinforced concrete, these roofs require less material, are cheaper to construct, are simpler to manufacture than other shells and are economical over long spans that need to be free of internal columns. Following World War II the distinctive, eye catching appeal of the form slipped nicely into the mid-century modern architectural vocabulary, celebrating the new age, the wonders of technology and its accompanying affluence. The only other use of a folded plate canopy utilized on a commercial building in Honolulu's downtown area is at 1165 Bethel Street.

The segmental ached, barrel-vaulted, concrete roof also enunciated the advances in concrete technology as applied to the building trade. The designer of the building, Kenneth Sato, also utilized this form at the Waimalu Shopping Center in both the roof and first-story canopy.

As such the building stands as an excellent example of the dramatic and eye-catching mid-century modern movement in Hawaii. The building's folded plate canopy, combined with its concrete barrel vaulted roof, make it a distinctive architectural statement, celebrating the plastic qualities of concrete and the variety of forms it could assume. There are no other comparable buildings in the city.

Kenneth Sato (1908-2006) was born in Kahuku, on Oahu, graduated from McKinley High School, and received a degree in civil engineering from the University of Hawaii in 1930. He owned the Kewalo Steel Company, and designed a number of churches, apartments, and low rise commercial buildings, and worked on a number of public schools and bridges for the Territory of Hawaii. Other works include the Waiola Congregational Church in Lahaina, the Miyamoto Buildings at 1331 Nuuanu Avenue, and the Door of Faith Church on Young Street in Honolulu.

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VIII. Survey Analysis

Please provide your observations about the survey; including constraints and opportunities for future research and/or survey in connection to this site.

The survey was straight-forward and encountered no problems. Two of the ground floor commercial spaces were boarded up and could not be accessed. It would be of value to learn more about the designer of the building, Kenneth Sato, and at some point an inventory should be compiled on folded plate roofs in Honolulu.

IX. References

City and County of Honolulu Real Property Tax records.

Polk's City Directories for Honolulu, 1957-1965.

Building Permit 142902.

"Kenneth Kenkichi Sato," obituary. *Honolulu Advertiser*, June 28, 2006: p. B-2.

Hibbard, Don. *Buildings of Hawaii*. Charlottesville, Virginia: University of Virginia Press, 2011.

Wang, Y. P. (1965). *Analysis of Continuous Folded Plate Roofs (Master Thesis), Missouri University of Science and Technology*. Accessed on September 16, 2016 at http://scholarsmine.mst.edu/cgi/viewcontent.cgi?article=7693&context=masters_theses.

Wilby, C. B. *Concrete Folded Plate Roofs*. Burlington, Massachusetts: Elsevier Butterworth-Heinemann, 1998.

Internet Archive. "Concrete Shell and Barrel Roofs." Accessed on September 16, 2016 at https://archive.org/stream/ConcreteShellAndBarrelRoofs/ConcreteShellAndBarrelRoofsCca113193_djvu.txt.

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X. Continuation Sheet

Please use this sheet those that follow to attach additional information about the site; including, but not limited to additional floor plans, drawings, photographs, maps, etc.



Figure 1: View of River Street façade, showing typical store front spaces with folded plate concrete awning at first floor and second floor offices with thin shell concrete barrel arched roof. View facing southeast.

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Figure 2: “John R. Gilliland Sr. Building, 1958” nameplate and stair railing detail. View facing northeast.

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Figure 3: Open entry door detail at south end of second floor hallway. View facing southwest.

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Figure 4: Overall at second floor hallway, showing original 4-pane office door and barrel arched roof.

View facing southeast.

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Figure 5: Typical second floor office space with barrel arched roof. View facing east.

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Figure 6: First floor former Chikara Mochi commercial space. View facing southeast.

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Figure 7: First floor New Hanagasa Inn. View facing northeast.

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Figure 8: First floor Uptown Café bar. View facing northeast.

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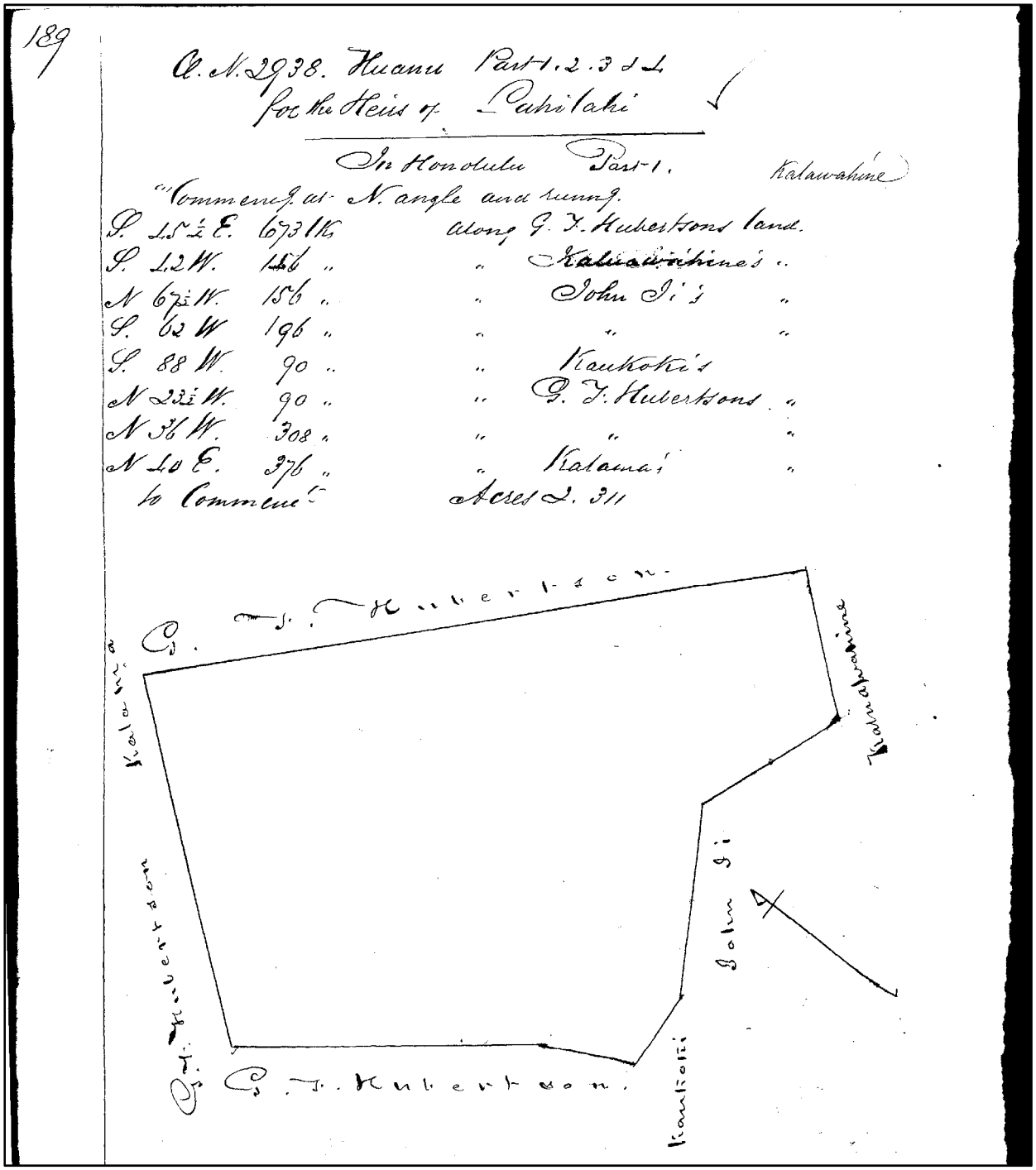
Appendix B LCA Documentation

LCA 2938:1


189

R. N. 2938. Kuanu Part 1. 2. 3 & 4
for the Heirs of Pahi'ahi

In Honolulu Part 1. Kalawahine

"Commencing at N. angle and running.

S. 15½ E.	673 lks	along	G. J. Hutchinson's land.
S. 12 W.	156 "	"	Kaliawahine's "
N 67½ W.	156 "	"	John Ii's "
S. 62 W.	196 "	"	" "
S. 88 W.	90 "	"	Kaukoki's
N 23½ W.	90 "	"	G. J. Hutchinson's "
N 36 W.	308 "	"	" "
N 40 E.	376 "	"	Kalamai "
to Commence		Acres 2. 311	

LCA 11082

1025

Helu 11,082. Kaukoke.

Ua koi mai oia no kona Mau **wahi ma** Kalawahine, Honolulu Aina **no ka mea, ua loaa ia ia keia** Mau **wahi** no Makahopu i ka M. H. 1836.

a ua noho keakea ole ia a hiki i keia manawa.

Oia ka makou e hooko nei no Kaukoke **he kuleana hoi kona malalo o ke ano Alodio. Ina e uku mai oia i ko ke Aupuni hapa ; alaila, ua ku pono ia ia ka palapala sila Alodio.**

Pono nae ia ia ke uku no ka hookolokolo a me ka hooholo ana i ka olelo. Penei,

		$	ken.
W. L. Lee	*No ka rumi a me ke pai ana i ka olelo ma ka Nupepa,*	1	
G. M. Robertson	*No ke kope ana i ka olelo koina* 1 *aoao,*		50
J. H. Smith	*No ka palapala kii,*		50
	No ka hana ana i ka la 3. Mei 1850	1	
	No ke kope ana i na olelo a na hoike, 2 aoao.	1	50
Joane di	*No ka ana ana i ka la* 20, Novemaba 1850, 3 Aina	7	50
J. Kekaulahao	*No ke kope ana,*	1	50
	No ka hooholo ana i ka olelo, 2 Dekemaba 1850.	2	50
		$ 16.00	

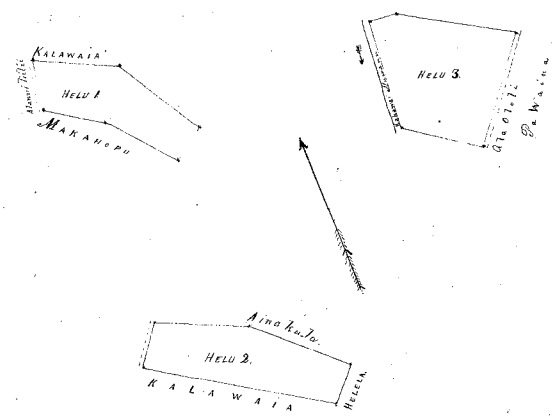
Eia na palena,

Anaia e James Dillon

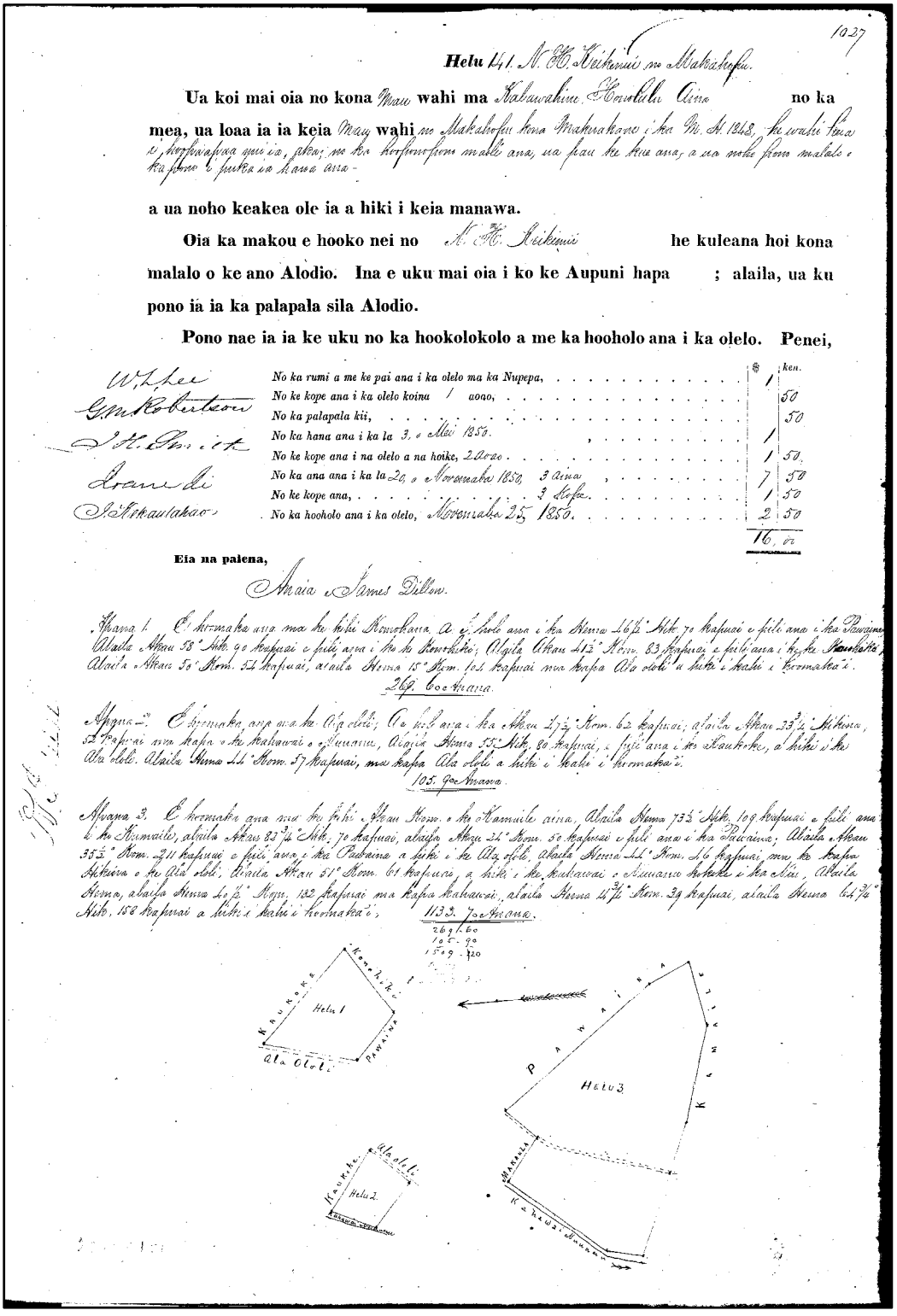
Helu 1. E hoomaka ana ma ke kihi Hema. A e holo ana i ka Akau 41½° Kom. 83 kapuai, e pili ana i ko Makahopu. Alaila holo Akau 50° Kom. 54 kapuai, alaila Akau 15° Hik. 48 kapuai e pili ana i ke Alanui hilii. Alaila Hema 57° Hik. 80 kapuai e pili ana i ko Kalawaia; alaila Hema 21° Hik. 95 kapuai, alaila Hema 61° Kom. 37 kapuai a hiki i kahi i hoomaka'i.
194 Anana

Helu 2. E hoomaka ana ma ke kihi Hema; A e holo ana i ka Akau 53° Kom. 174 kapuai e pili ana i ko Kalawaia; Alaila Akau 32½° Hik. 46 kapuai, e pili ana i ke Ala olelo. Alaila Hema 58½° Hik. 90 kapuai. Alaila Hema 39½° Hik. 102 kapuai e pili ana i ka aina kula; Alaila Hema 47° Kom. 40 kapuai e pili ana i ko Helela.
247¼ Anana.

194
247.25
Helu 3. E hoomaka ana ma ke kihi Komohana A e holo ana i ka Akau 5° Hik. 107 kapuai e pili ana i ke kahawai o Nuuanu. Alaila i ka Hema 79¾° Hik. 26 kapuai. Alaila Hema 60¼° Hik. 114½ kapuai a hiki i ke Ala olelo; alaila Hema 38½° Kom. 118 kapuai ma ke Ala olelo, a me ka Pawaina; alaila Akau 55° Kom. 80 kapuai a hiki i kahi i hoomaka'i.
330.8 Anana.



LCA 141



1027

Helu 141. M. H. Keikumii no Makahapu.

Ua koi mai oia no kona Mau **wahi ma** Kahauhimu Honolulu Aina **no ka mea, ua loaa ia ia keia** Mau **wahi** no Makahapu kona Makuakane i ka M. H. 1848, he waahi kona e hoopaapaa mai ia, aku; no ka hoopomopomo mahele ana, ua pau ke kua ana, a ua noho kona malalo o kapono e pukaa na kanaka ana -

a ua noho keakea ole ia a hiki i keia manawa.

Oia ka makou e hooko nei no M. H. Keikumii **he kuleana hoi kona malalo o ke ano Alodio. Ina e uku mai oia i ko ke Aupuni hapa ; alaila, ua ku pono ia ia ka palapala sila Alodio.**

Pono nae ia ia ke uku no ka hookolokolo a me ka hooholo ana i ka olelo. Penei,

W. L. Lee
G. M. Robertson
I. H. Pi. ke
Loane Ii
I. Kanaulakao

		ken.
No ka rumi a me ke pai ana i ka olelo ma ka Nupepa,	1	
No ke kope ana i ka olelo koina / aono,		50
No ka palapala kii,		50
No ka hana ana i ka la 3, o Mei 1850.	1	
No ke kope ana i na olelo a na hoike, 2 Aoao	1	50
No ka ana ana i ka la 20, o Novemaba 1850, 3 Aina	7	50
No ke kope ana, 3 Aoao	1	50
No ka hooholo ana i ka olelo, Novemaba 25 1850.	2	50
	16	00

Eia na palena,

Maia James Dillon.

Apana 1. E hoomaka ana ma ka kihi Komohana a E. hele aku i ka Akau i ka Hema 16½° Hik. 70 kapuai e pili ana i ka Pauma Alaila Akau 58° Hik. 90 kapuai e pili aku i ka ko Konohiki; Alaila Akau 41½° Kom. 83 kapuai e pili ana i ka Kuahaka, Alaila Akau 50° Kom. 55 kapuai, alaila Hema 15° Kom. 50 kapuai ma kapa Ala olelo a hiki i kahi i hoomaka'i.

269. 60 Aoana.

Apana 2. E hoomaka ana ma ke Ala olelo; A e hele aku i ka Akau 2½° Kom. 62 kapuai; alaila Akau 23½° Hikina, 52 kapuai ma kapa o ke Kuahawai o Kuwanua, Alaila Hema 55° Hik. 80 kapuai, e pili ana i ko Kauhoke, a hiki i ke Ala olelo. Alaila Hema 11 Kom. 57 kapuai, ma kapa Ala olelo a hiki i kahi i hoomaka'i.

105. 90 Aoana.

Apana 3. E hoomaka ana ma ke kihi Akau Kom. o ka Kamaile aina, Alaila Hema 73½° Hik. 109 kapuai e pili ana i ka Kamaile, alaila Akau 83¾° Hik. 70 kapuai, alaila Akau 24° Kom. 50 kapuai e pili ana i ka Pukaina; Alaila Akau 35½° Kom. 211 kapuai e pili ana i ka Pukaina a hiki i ke Ala olelo, alaila Hema 11° Kom. 46 kapuai, ma ke kapa Hikina o ke Ala olelo. Alaila Akau 51° Kom. 61 kapuai, a hiki i ke kuahawai o Kuwanua hoheke a ka Kai, Alaila Hema, alaila Hema 64½° Kom. 132 kapuai ma Kapa kuahawai, alaila Hema 41¾° Kom. 39 kapuai, alaila Hema 64¾° Hik. 158 kapuai a hiki i kahi i hoomaka'i.

1132. 70 Aoana.

269. 60
105. 90
1509. 20

LCA 715

99

Helu 715 Kalama

Ua koi mai oia no kona hau wahi ma Makaaku Honolulu aina no ka mea, ua loaa ia ia keia hau wahi mamua o ke kau ana o na Kanawai i ka wa o Kaahumanu I e ola ana.

a ua noho keakea ole ia a hiki i keia manawa.

Oia ka makou e hooko nei no Kalama he kuleana hoi kona malalo o ke ano Alodio. Ina e uku mai oia i ko ke Aupuni hapa ; alaila, ua ku pono ia ia ka palapala sila Alodio.

Pono nae ia ia ke uku no ka hookolokolo a me ka hooholo ana i ka olelo. Penei,

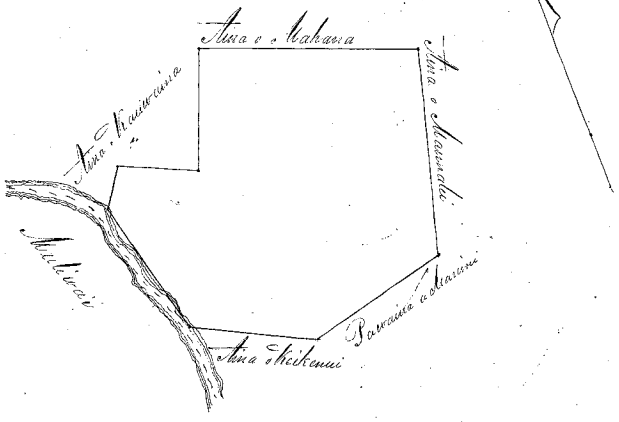
Wm L. Lee
Ke Kakauolelo
M. M. Kanaka
o Honolulu

	$	ken.
No ka rumi a me ke pai ana i ka olelo ma ka Nupepa,	1	
No ke kope ana i ka olelo koina 1 aoao,	1	
No ka palapala kii,		50
No ka hana ana i ka la 16 Pepeluari 1848	1	
No ke kope ana i na olelo a na hoike, 1 aoao		75
No ka ana ana i ka la 20, 29 Novemaba 1848	2	50
No ke kope ana,		50
No ka hooholo ana i ka olelo, Apelila 10, 1849	2	50
	9	75

Eia na palena, Anaia e D. Kalanikahua

Apana 1.

Ke ano o ka ana ana i ka aina o Kalama ma Makaaku o Honolulu mokupuni Oahu. E hoomaka ana i ke ana ana ma ke kihi o Ahaa o ka pa waina a Manini, ma ke kihi Komohana hui o ka aina o Maunalei. A hiki aku ka waa mua ma kahi a Manini olelo ma ke kuauna hui o ka Aina 17° Hikina 2 Kaulahao 16 1/2, hiki i ke kihi Hema o ka aina o Makaaku, huli Akau 67° Komohana 2 Kaulahao 22 3/12 kapuai, hiki i ke kihi Hikina o ka aina o Kauwaina, huli Hema 23° Komohana 1 Kaulahao 19 10/12 kapuai, hiki i ke kihi Hema o ka aina o Kauwaina, huli Akau 61° 30' Komohana 88 1/2 kapuai, hiki i ke kihi Komohana o ka aina o Kauwaina, huli Hema 31° 30' Komohana 28 5/12 kapuai, hiki i ka lepo mauka o ka mullwaa e kahe ana i kahi e kau ai na moku, huli Hema 12° 30 Hikina 1 Kaulahao 31 4/12 kapuai, hiki i ke kihi Akau o ka Aina o Keikemui, mauka hui o ka mullwai, huli Hema 61° 30' Hikina 1 Kaulahao 25 9/12 kapuai, hiki i ke kihi Hikina o ka aina o Keikemui e pili ana i ka pa waina a Manini; alaila huli i kahi e hoomaka'i ke ana ana Akau 75° 30' Hikina 1 Kaulahao 38 1/2 kapuai. Eia ka ili 5 Kaulahao, 82 Anana 31 kapuai.



Appendix C Pollen Analysis

Pollen Analysis

Bruce G. Phillips
BGP Consulting LLC

In advance of development at the Halewai‘olu Senior Residences, Honolulu *ahupua‘a*, Honolulu District, Island of O‘ahu, Cultural Surveys Hawai‘i (CSH) identified multiple buried agricultural deposits, designated CSH 1. Also identified were habitation layers, designated CSH 2. Trench 7 was excavated in the area consisting primarily of agricultural deposits (CSH 1); six sediment samples were collected from Trench 7. Trench 9 was excavated an area where both habitation and agricultural layers were found (CSH 2); four sediment samples were collected. Subsequently, the ten sediment samples were submitted to BGP Consulting for pollen analysis, with the goal of identifying past cultural activities in the area and characterizing vegetation communities at the time of deposition.

The project area is situated on former floodplain of and immediately adjacent to Nu‘uanu Stream. Elevation is approximately 10 feet above mean sea level. Annual rainfall averages 24 to 31 inches (Giambelluca et al. 1986). Soils in the project area are mapped as Ewa silty clay loam, deep, well drained soils that formed in alluvium on alluvial fans and river terraces (Soil Survey Staff 2019). *Mauka* of the project area are soils classified as Kaena clay, deep, poorly drained soils that formed in alluvium and colluvium, primarily found on alluvial fans. Prior to urban development and channelization of Nu‘uanu Stream in the early 20th century, the area served for many centuries as irrigated *lo‘i kalo* (taro wetland fields).

Before Polynesian agriculture transformed coastal lowlands, natural vegetation along the coastline would have primarily been characterized as Coastal Dry communities, having elevations less than 50 feet and rainfall less 47 inches per year (Gagne and Cuddihy 1990). Local edaphic conditions determine the makeup of various herblands, grasslands, shrublands, forests, and mixed communities. In turn, these communities can be further differentiated based on dominant species, such as *‘aki ‘aki* Grassland dominated by *Sporobolus virginicus*. Many areas once covered with extensive grasslands are now dominated by alien species, such as *kiawe* (*Prosopis pallida*) forests.

Coastal Wet communities occur on all of the main islands. Native examples, however, were much disturbed by the early Hawaiians, as nutrient-rich floodplains, marshes, and lowland riparian areas were turned into fishponds and irrigated farmlands (*lo‘i*) for the cultivation of *kalo* (taro; *Colocasia esculenta*). Much of these same farmlands were subsequently turned into rice fields. Common natural constituents would have included members of the sedge family (Cyperaceae) and grass family (Poaceae).

Methods

Sediment samples were sent to the Palynology Laboratory, Texas A&M University, College Station, for pollen extractions (fern-type spores are herein included under “pollen”). Sample bag contents were thoroughly mixed and 10-gram subsamples were taken. Approximately 19,666

grains of *Lycopodium* were added to estimate pollen concentration. Samples were then treated with 10 percent hydrochloric acid to reduce carbonates, followed by a swirl-and-decant step (Mehringer 1967):136–137) to reduce the heavier matrix fraction (greater than 180 µm). Silicates were reduced by a hydrofluoric acid treatment of approximately 20 hours. Heavy liquid flotation in zinc bromide (with a specific gravity of 1.9) was followed by acetolysis to further reduce organics. The remaining residues were washed with water and alcohol, stained with saffranin, and suspended in glycerol.

At BGP Consulting facilities, extracts were mounted and examined at a viewing power of 400X on an Olympus BHTU compound microscope. Typically, standard counts of 100- to 200-pollen grains are conducted. In the current project, however, total pollen concentrations were insufficient for standard counts. In this case, entire slides were scanned and all grains were counted. Identifications were aided by BGP Consulting reference material and by keys (Selling 1946, 1947; Moore et al. 1991). Each fossil pollen grain was identified to the generic level when possible. If a grain could not be differentiated from similar genera, it was identified to the family level. Pollen grains that were broken, corroded, or degraded beyond recognition were assigned to the "degraded" category. Percentages of types were calculated for each sample. Pollen concentrations were calculated with the following formula:

$$\text{Concentration (grains/gram)} = \frac{\text{pollen grains counted}}{\text{tracers counted}} \times \frac{\text{tracer concentration}}{\text{sample weight}}$$

Results

No samples were sufficient for standard counts and pollen was entirely absent from four samples. Twenty-five types of pollen and spores are identified (Table 1). The assemblage is diverse, primarily reflecting relatively dry shrub-covered terrain; forested land upslope is indicated by fern spores. In samples containing pollen, the percentages of degraded grains range from relatively high (19.3) to very high (39.5), indicating poor preservation within the sample set (Tables 2 and 3). Therefore, the data likely are not an accurate reflection of the original pollen assemblage. That is, they probably do not convey a realistic scenario of the former floral landscape.

The most common types are low-spine Asteraceae (*Ambrosia* type), Cheno-Am (*aweoweo*), spurge family, and grass family, all in variable percentages. Sedge family pollen, representing wetlands, is present, but found in relatively low percentages. Polynesian introductions include *niu* (coconut), *wauke* (paper mulberry), and possibly *ti*. Historic introductions are pine and *kiawe* (mesquite). Large grass pollen grains could represent *laiki* (rice) and/or *ko* (sugarcane) farming in the area, or the collection of *pili* grass (*Heteropogon contortus*). In practice, *laiki*, *ko*, and *pili* grass pollen grains have common traits under light microscopy and cannot be distinguished (Moore et al. 1990); SEM is required.

Considerations

Despite the widespread practice of *lo'i kalo* cultivation across O'ahu, *Colocasia* pollen is rare in suspected and even known agricultural settings, such as the current project area. Typically propagated from a corm/root cutting or from a shoot, *kalo* rarely blooms or sets seed naturally (Onwueme 1999). Like other members of the Araceae (arum family), *kalo* produces relatively small quantities of pollen when in bloom. Some varieties have never been known to flower. *Kalo* is harvested at a time when the edible corm has its highest nutritional content and is most viable for propagation. This occurs before flowering, further reducing the possibility of pollen deposition.

Degraded pollen assemblages are not uncommon in archaeological contexts (Hall 1981, 1985; Holloway 1981). Unfortunately, there currently are no standards and guideline by which analysts record and report degraded pollen grains (Bryant and Hall 1993), often making comparisons difficult. Many factors cause pollen deterioration, and the process is not well understood. Mechanical factors can cause grains to be crushed or torn apart, whereas chemical agents can affect their structural integrity. Chief among chemical agents is the cycle of wetting and drying (Holloway 1989). It is possible that pollen in sediments at or near the water table have suffered deterioration due to fluctuations in groundwater level, caused by climatic (e.g., rainfall) and/or oceanic (e.g., sea levels) factors, or possibly even tides. Also affecting the number and distribution of pollen types is the amount of sporopollenin in grains of different plants. Sporopollenin is a highly resistant organic compound that allows pollen to be preserved in sediments and other settings. Because Cheno-Ams and Asteraceae have large amounts of the compound and hence preserve well, they are often over-represented in the pollen record. Soil chemistry can also cause pollen to degrade. For example, ancient soils in the American Southwest are highly basic, causing deterioration. This likely is not the case in young A and C horizons along the O'ahu coast. Mechanical processes include degradation during fluvial transport and repeated trampling in high-traffic areas. Although technically not a process of degradation, mechanical sorting can affect the amount of pollen in sediment samples. That is, during fluvial transport, pollen acts like clastic particles, moving and settling according to water velocity; the largest grains are deposited in coarse silt and fine sand, while smaller grains settle in fine silt and clay. As most samples come from clay layers, mechanical sorting likely is not responsible for the differences in pollen concentrations. Although Stratum IIc is somewhat gravelly and potentially affected by sorting, the layer in Trench 7 has the highest pollen concentration in the assemblage (296 grains per gram), albeit extremely low. Although soil pH may not have caused pollen deterioration, some other chemical factor might be to blame, such as reduction/oxidation reactions. A likely cause is repeated cycles of wetting and drying near the water table, though this may not be the only cause.

Discussion

Within Trench 7, no data is available for Strata IIa and IIb, the habitation layers (CSH 2). Representing CSH 1, Stratum IIc contains a single large grass grain, potentially reflecting nearby *laiki* or *ko* farming. The grain might also be intrusive. In the lower portion of the sample column (Stratum IIe), Asteraceae and Cheno-Ams dominate, suggesting a shrubland environment. Grass pollen gradually increases over time, becoming dominant in Stratum IIc. If taken at face value,

the data suggest a shift from shrubland to grassland. A high portion of fern spores in Stratum IIc might reflect increased input from upslope, and more overbank flooding.

The Trench 9 assemblage is more diverse than Trench 7, having greater numbers of types in every productive sample. No distinct temporal trends are apparent. Rather, the assemblage is characterized by a relative abundance of less common types, particularly the spurge and madder families. A spike of *Helianthus*-type pollen in Stratum IId also is unusual. Under normal circumstances, these data would be interpreted as reflecting local stands of herbs and shrubs. Preservation, however, must be taken into account. Higher percentages of large grass grains in Strata IIb and IIc than in Trench 7 are stronger evidence for *laiki* or *ko* farming. *Kiawe* pollen in Stratum IIb and pine pollen in Stratum IId indicate disturbance throughout the sample column.

Although preservation must be considered, there are some distinct differences between the Trench 7 and Trench 9 assemblages. As mentioned above, the Trench 9 assemblage is more diverse, suggesting a richer flora. Trench 7 is dominated by grass and shrub pollen versus the abundance of rather unusual types in Trench 9, further suggesting contrasting vegetation. Given the proximity of the trenches, these differences are more likely the result of taphonomic factors than actual variation on the former landscape.

In recent investigations of suspected *lo‘i kalo* fields in Waikiki (e.g., Phillips 2019), the common element of pollen assemblages was high proportions of sedge family pollen, often in excess of 60 percent. While *kalo* pollen was extremely rare or absent, the abundance of sedge pollen reflected the wetland environment in which the staple was cultivated. In some cases, relatively high percentages of large grass grains indicated samples were from *laiki* fields. In the current project, sedge pollen is found low percentages or absent, suggesting sample columns in neither trench represented wetland environments.

Regarding pollen preservation, although degradation such as that found in the current assemblage is uncommon, it is not unprecedented. As part of the Transit Corridor Project (Phillips 2016), a highly degraded assemblage was obtained from a site in Waikele *ahupua‘a*: only five of ten samples contained pollen. The norm, however, are pollen-rich assemblages with concentrations in excess of 5,000 grains per gram in nearly every sample (e.g., Phillips 2018).

In summary, six of ten samples contain pollen. Within the six, the percentages of degraded grains are very high and total pollen concentrations extremely low, both indicating very poor preservation. The pollen data should be viewed in this light. Polynesian introductions include *niu, wauke,* and possibly *ti*, all found in scarce quantities. Large grass pollen grains might reflect *laiki* and/or *ko* farming in historic times. If taken at face value, pollen data from the Trench 7 sequence suggest a change over time from shrublands to grasslands. No such landscape change transformation is seen in Trench 9. Rather, a diverse assemblage and a relative abundance of otherwise unusual types reflects a rich local flora. Given the proximity of the trenches, the differences likely are due to poor pollen preservation rather than actual conditions of former vegetation. Sedge pollen is scarce and no distinct indication of a former *lo‘i* is present.

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Soil Survey Staff

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Appendix D Wood Taxa Identification

IARII INTERNATIONAL ARCHAEOLOGICAL RESEARCH INSTITUTE, INC.
ARCHAEOBOTANICAL SERVICES • WOOD IDENTIFICATION LABORATORY

October 3, 2019

Ena Sroat
Cultural Surveys Hawai‘i, Inc.
P.O. Box 1114
Kailua, Hawaii 96734

RE: Analysis of charcoal samples from Halewaiolu Senior Housing Project, Honolulu, HONOLULU 87 [WIDL1916]

Greetings Ena,

The report for analysis of your charcoal samples from the Halewaiolu Senior Housing Project, Honolulu (HONOLULU 87) is attached. Don't hesitate to contact me if you would like to discuss the results. Digital microscope photographs of some of your specimens have been archived at IARII. Should you wish to view the images or use them in a report, please let me know.

Best regards,

Jennifer Huebert
(808) 946-2548, Ext. 107
jhuebert@iarii.org

* * * * * * * * *

METHODS

The freshly fractured transverse, tangential, and radial facets of selected charcoal fragments were examined with an epi-illuminated microscope at magnifications of 50–500X. Taxonomic identifications were made by comparing observed anatomical characteristics with those of woods in the IARII reference collection. Vouchers associated with this collection have been verified and archived at the Department of Botany, University of Hawai‘i at Mānoa. Other published references, including books, journal articles, technical documents, and wood atlases, were also consulted. Material that was not examined was returned to its original packaging and marked as residual.

PREHISTORIC & HISTORIC INVESTIGATIONS • CULTURAL RESOURCES ASSESSMENTS & PLANNING • PALEOENVIRONMENTAL STUDIES

HAWAI'I: 2081 Young Street, Honolulu, Hawai'i 96826-2231 - Tel: (808) 946-2548 - Fax: (808) 943-0716 - E-mail: HonoluluOffice@iarii.org
GUAM: P.O. Box 22621, GMF, Guam 96921 - Tel/Fax: (671) 646-7552 - E-mail: GuamOffice@iarii.org

RESULTS

WIDL No.	Taxon	Plant Part & State of Preservation	Count	Weight (g)	Comment
Sample 1, Fe.2, Test Unit 1, 111 cmbs, IIIa					
1916-1	*Prosopis pallida* (*kiawe*)	Wood charcoal	18	0.4	
1916-2	Indeterminate hardwood	Wood charcoal	1	0.01	
Sample 2, Fe.4, Test Unit 1, 128-131 cmbs, IIIa					
1916-3	*Metrosideros polymorpha* (*‘ōhi‘a lehua*)	Wood charcoal	2	0.06	
1916-4	Indeterminate	Parenchyma charcoal	1	0.01	Thin; superficially resembles nutshell but is not endocarp
1916-5	*Psychotria* sp. (*kōpiko*)	Wood charcoal	1	0.01	
1916-6	*Hibiscus* sp. (*hau* and others)	Wood charcoal	1	0.04	
1916-7	*Acacia* cf. *koa* (*koa* and others)	Wood charcoal	5	0.08	
1916-8	Indeterminate hardwood	Wood charcoal	4	0.06	

The two submitted samples were moist and were dried before analysis. Many fragments became quite brittle and/or crumbly; this can occur naturally when charcoal is subject to wetting and drying while in the ground, or when it is dried too quickly after recovery from a moist matrix. Most of the examined material was small, well under 1 cm, and all fragments but one were wood charcoal.

Most of Sample 1 is *kiawe*. The unidentified residual fragments are all extremely small; they all appear to more *kiawe* charcoal. Sample 2 contained a variety of wood from native taxa, including *‘ōhi‘a lehua*, *koa*, possibly *hau*, *kopiko*, and a fragment of some type of thin parenchymous (storage) tissue.

None are the short-lived materials preferred for radiocarbon dating. The parenchyma (1916-4) is not likely to have much inbuilt age, however, as soft storage tissues such as these are not long-lived. Some *Psychotria* (1916-5) are smaller trees (but see below), and *Hibiscus* are fast-growing, so either might be the next best choice to date. *Koa* and *‘ōhi‘a lehua* trees can be very long-lived. Several papers regarding the selection of charcoal for radiocarbon dating can be provided upon request (Allen and Huebert 2014, Athens and Rieth 2013). Consider choosing one fragment of material for radiocarbon dating, when possibly, to eliminate the chance of dating more than one event (Ashmore 1999; also see Higham and Petchey 2000:Table 4).

A brief systematic review is given below; for more information on Hawaiian plants, suggested references are the Manual of the Flowering Plants of Hawai‘i (Wagner et al. 1999; also available online at http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/query2.cfm) and the Bishop Museum’s Hawaiian Ethnobotany Online Database (http://data.bishopmuseum.org/ethnobotanydb).

TAXA REVIEW

LEGUMINOSAE / FABACEAE (Pea family)

Acacia koa A. Gray (*Koa*)

One of the largest endemic trees in Hawai‘i, *koa* may attain 35 m in height at higher elevations (Wagner et al. 1990:641-642) and not branch until 12 m or more above the ground (Rock 1913:175). This straight trunk was especially useful for canoes as well as paddles, and surfboards (Malo 1951:126, 223). *Koa* trees which are also found at lower elevations in the dry regions, have a distribution range of 60 to 2,060 m on all of the main Hawaiian Islands except Ni‘ihau and Kaho‘olawe (Wagner et al. 1990:641).

Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth (*Kiawe*, mesquite)

This tree, native to Peru, Colombia and Ecuador, is believed to have been introduced into Hawai‘i by Father Bachelot who grew a tree from a single seed in 1828. Today the 8-20 m tall trees may dominate low elevation, dry, and disturbed sites and can be found in vegetation from behind the beaches up into degraded dry forests, ranging in elevation from sea level to 610 m on all of the main Hawaiian Islands (Wagner et al. 1990:693).

MALVACEAE (Mallow family)

Hibiscus sp. (*Hau, hau hele, koki‘o,* and others)

In the Hawaiian Islands, there are 7 native shrub and tree species of *Hibiscus*, several of which include endemic varieties, and at least 3 naturalized historic introductions (Wagner et al. 2005-onwards). *H. tiliaceus*, or *hau*, occurs commonly in moist areas from sea level to over 1,000 m in elevation on most of the main islands (Wagner et al. 1990:888). Most species feature showy flowers. In addition to ornamental plantings, the bark of *hau* was sometimes used to make *lei*, there are herbal remedies made from different parts of the various species, and the soft wood was used for many purposes including canoe outriggers, fishnet floats, and in the native fireplow by rubbing a harder wood against it (Abbott 1992).

MYRTACEAE (Myrtle family)

Metrosideros polymorpha Gaud. (*‘Ōhi‘a lehua*)

This endemic species ranges in habit from prostrate shrubs to tall trees and in distribution from sea level to 2200 m elevation in many ecological situations on all of the main Hawaiian Islands (Wagner et al. 1990:967). The hard wood was once used for making spears and mallets, idols, posts and rafters for houses, and enclosures around temples (Buck 1957:87; Malo 1951:20; Neal 1965:638).

RUBIACEAE (Coffee family)

Psychotria sp. (*Kōpiko*)

The 11 endemic species of *Psychotria* in the Hawaiian Islands are found in mesic to wet forests. Five species are known on O‘ahu; these species range from small trees to trees up to 20 m tall (Wagner et

al. 1990:1160-1170). *Kōpiko* was previously used as firewood, and also to make kapa logs (Malo 1951:21).

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Appendix E Radiocarbon Dating Analysis

Beta Analytic
TESTING LABORATORY

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

November 06, 2019

Ms. Gina Farley
Cultural Surveys Hawaii
P.O. Box 1114
Kailua, HI 96734
United States

RE: Radiocarbon Dating Results

Dear Ms. Farley,

Enclosed is the radiocarbon dating result for one sample recently sent to us. As usual, specifics of the analysis are listed on the report with the result and calibration data is provided where applicable. The Conventional Radiocarbon Age has been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

The reported result is accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 standards and all pretreatments and chemistry were performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 program participated in the analysis.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result. The reported d13C was measured separately in an IRMS (isotope ratio mass spectrometer). It is NOT the AMS d13C which would include fractionation effects from natural, chemistry and AMS induced sources.

When interpreting the result, please consider any communications you may have had with us regarding the sample. As always, your inquiries are most welcome. If you have any questions or would like further details of the analysis, please do not hesitate to contact us.

Thank you for prepaying the analysis. As always, if you have any questions or would like to discuss the results, don't hesitate to contact us.

Sincerely,



Ronald E. Hatfield Director

Page 1 of 3

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Gina Farley — Report Date: November 06, 2019

Cultural Surveys Hawaii — Material Received: October 25, 2019

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes Calendar Calibrated Results: 95.4 % Probability High Probability Density Range Method (HPD)	
Beta - 541406	**Sample 1**	**200 +/- 30 BP**	IRMS δ13C: -24.3 o/oo
(53.5%)	**1728 - 1810 cal AD**	**(222 - 140 cal BP)**	
(26.0%)	**1646 - 1690 cal AD**	**(304 - 260 cal BP)**	
(15.9%)	**1925 - Post AD 1950**	**(25 - Post BP 0)**	

Submitter Material: Plant Tissue
Pretreatment: (charred material) acid/alkali/acid
Analyzed Material: Charred material
Analysis Service: AMS-Standard delivery
Percent Modern Carbon: 97.54 +/- 0.36 pMC
Fraction Modern Carbon: 0.9754 +/- 0.0036
D14C: -24.59 +/- 3.64 o/oo
Δ14C: -32.70 +/- 3.64 o/oo (1950:2019)
Measured Radiocarbon Age: (without d13C correction): 190 +/- 30 BP
Calibration: BetaCal3.21: HPD method: INTCAL13

Results are ISO/IEC-17025:2005 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

Page 2 of 3

BetaCal 3.21

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL13)

(Variables: d13C = -24.3 o/oo)

Laboratory number **Beta-541406**

Conventional radiocarbon age **200 ± 30 BP**

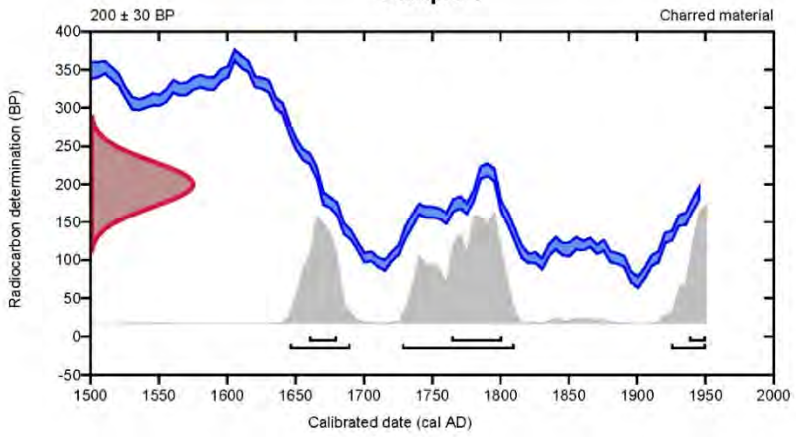
95.4% probability

(53.5%)	1728 - 1810 cal AD	(222 - 140 cal BP)
(26%)	1646 - 1690 cal AD	(304 - 260 cal BP)
(15.9%)	1925 - Post cal AD 1950	(25 - Post cal BP 0)

68.2% probability

(36.8%)	1764 - 1801 cal AD	(186 - 149 cal BP)
(19.2%)	1660 - 1680 cal AD	(290 - 270 cal BP)
(12.3%)	1938 - Post cal AD 1950	(12 - Post cal BP 0)

Sample 1



Database used

INTCAL13

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

Beta Analytic Radiocarbon Dating Laboratory
4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

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Appendix O

Downtown Neighborhood Board No. 13 Meeting Record

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, AUGUST 6, 2015
PAUAHI COMMUNITY CENTER

CALL TO ORDER: Chair Alvin Au called the meeting to order at 7:01 p.m., **with a quorum of eight (8) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present: Alvin Au, Anthony Chang, Jasmine Mancos, Dolores Mollring, Chu Lan Shubert-Kwock, Tom Smyth, Robert Tom, and Stanford Yuen.

Board Members Absent: None.

Guests: Captain James Hull (Honolulu Fire Department); Lieutenant Stephen Silva and Sergeant Jeffrey Nagai (Honolulu Police Department); Diana Ronquillo and Clare Ann Ronquillo (Neighborhood Citizen's Patrol); Pat Lee (Honolulu Rail Transit Project); Lee Stack (Chinatown Improvement District); Nicole Reid (Arts District Merchants Association); John Chang (Mayor Kirk Caldwell's Representative); Liz Char and Sandy Pfund (City and County of Honolulu); Councilmember Carol Fukunaga; Sonny Le (Representative Karl Rhoads Office); Senator Suzanne Chun Oakland; Sam Lanai (Scarlet Honolulu LLC); Wesley Fong and Howard Lum (Chinatown Community Center Association); Gwen Abella (Winston Hale); James McCarthy, Jonathan Saupe, Sandra Pohl, Stanley Yon, Kelly Griffith, Ronald Higa, John Donaldson-Selby, Jenny Grondin, David Segarra, Bradley Rhea, Rhonda Jones, Julia Cornell, Serena Hashimoto, and Ray Rudie; Ericson Cristobal (Videographer); Neil Baarde (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS: Board members introduced themselves at this time.

FILLING OF ONE (1) AT-LARGE VACANCY

- James McCarthy – McCarthy noted that he has lived in the Downtown area for eight (8) years but has been a part of the community for 15 years. McCarthy noted that he was the pioneer for the Chinatown lofts and is a faculty member of SEEK Middle School. McCarthy noticed all the changes going on within the neighborhood and would like to be a member of the Board.
- Jonathan Saupe – Saupe noted that he has been a resident living in the heart of Chinatown for five (5) years. He was the former Executive Producer at Hawaii News Now, but is now an owner of a retail boutique, Barrio Vintage. Barrio Vintage was started four (4) years ago as a small pop-up concept and has grown to one (1) of the State's most popular destinations for vintage clothing and treasure hunters. Saupe sees the main issues facing the Downtown/Chinatown area as homelessness, affordable housing, community space development, and noted it is in need of a push for more tourism dollars to find their way to the historic streets of Chinatown.
- Sandra Pohl – Pohl noted that she has lived and grew up in the Chinatown area and commented that it is the best place. Pohl noted that she also owns a store and has been around for at least 15 years. Pohl noted she is a committed volunteer and a community advocate and commented that she is working to make the Downtown/Chinatown area a better place. Pohl noted that she has helped organize many different clean ups and events including the Walk on the Wild Side event. Pohl commented that she sees the things occurring in the area every day and noted that she wants to make a difference.
- Stanley Yon – Yon noted that he lives at Honolulu Park Place and is currently working at St. Andrew's Priory and is responsible for the grounds and the maintenance. Yon noted that he lives and works right in the center of the Downtown/Chinatown community. Yon is also on the Board of Directors of a 175 low income senior housing and noted that he is active in multiple locations as well as the Downtown/Chinatown area. Before coming to Hawaii, Yon noted he was a part of Los Angeles Economic Development and has worked in the Foreign Trade Zone. Yon commented that he also served on the Planning Advisory Committee as well as attending most of the Downtown Board Meetings and listens, observes, and noted that he has learned many things about the community. Yon commented that he would like to engage in the community as well as adding his skills and personality to the Board because he shares the same vision for the Downtown/Chinatown area.

Hearing no other nominations, Chair Au called for the vote.

- **James McCarthy received no votes, 0-8-0.** (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Smyth, Tom, and Yuen.)
- **Jonathan Saupe did not receive enough votes to fill the vacancy, 4-4-0.** (**AYE**: Au, Chang, Mancos, and Smyth.) (**NAY**: Mollring, Shubert-Kwock, Tom, and Yuen.)
- **Sandra Pohl did not receive enough votes to fill the vacancy, 1-7-0.** (**AYE**: Smyth) (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Tom, and Yuen.)
- **Stanley Yon did not receive enough votes to fill the vacancy, 3-5-0.** (**AYE**: Mollring, Shubert-Kwock, and Yuen.) (**NAY**: Au, Chang, Mancos, Smyth, and Tom.)

Comments – Smyth noted that the Board has seen the way the votes are spread and noted that some members can change their minds.

Chair Au called for the vote.

- **James McCarthy received no votes, 0-8-0.** (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Smyth, Tom, and Yuen.)
- **Jonathan Saupe did not receive enough votes to fill the vacancy, 4-4-0.** (**AYE**: Au, Chang, Mancos, and Tom.) (**NAY**: Mollring, Shubert-Kwock, Smyth, and Yuen.)
- **Sandra Pohl did not receive enough votes to fill the vacancy, 1-7-0.** (**AYE**: Smyth) (**NAY**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Tom, and Yuen.)
- **Stanley Yon did not receive enough votes to fill the vacancy, 3-5-0.** (**AYE**: Mollring, Shubert-Kwock, and Yuen.) (**NAY**: Au, Chang, Mancos, Smyth, and Tom.)

Comments – Chair Au thanked the candidates and noted that he was very impressed and asked the candidates to return to the September 2015 Board meeting, if they are still interested in filling the vacancy.

Chair Au deferred the filling of the vacancy to the September 2015 meeting.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Captain James Hull reported the following:

- July 2015 Fire Statistics – There were 6 structure, 0 wildland, 0 vehicle and 4 rubbish fires; 130 medical emergencies, 1 search and rescue, and 34 miscellaneous calls for service. There were no major or unusual incidents.
- Fire Safety Tip – Hawaii is in hurricane season from June 2015 to November 2015. The HFD encourages every family to take the necessary steps to prepare for a hurricane; every family should have an evacuation plan, survival kit, and to know how to remain informed about hurricane disasters. More information about hurricane preparedness can be found at the Department of Emergency Management's (DEM) website at www.honolulu.gov/dem.

Questions, comments, and concerns that followed:

1. Fire Alarm – Mollring apologized to her neighbors and the community because of the fire alarm that was blaring around 1:00 a.m. to 2:00 a.m. Mollring commented that she looked outside her window and saw HFD not moving, so Mollring knew it was not anything serious. Mollring noted that the new system that was installed should only ring in the event of a real fire. Captain Hull responded that in his experience fire alarms are the most frequent calls that HFD responds to and noted that when HFD goes to inspect, the people stay in their rooms even though there is a possibility of a real fire. Captain Hull reminded the community that if an alarm goes off, the residents should go outside and stay outside to help HFD do their job. Tom noted that the same thing occurred around the same time at Capitol Place.
2. Fire Lane – John Donaldson-Selby asked if Fort Street Mall is a usable fire lane. Captain Hull responded that HFD can use Fort Street because of the stand pipes if needed because the high rises on Fort Street Mall.

Honolulu Police Department (HPD) – Lieutenant Stephen Silva and reported the following:

- July 2015 Crime Statistics – There were 8 motor vehicle thefts, 4 burglaries, 74 thefts, 18 unauthorized entries into a motor vehicle (UEMV), 36 assaults, 6 sex assaults, 2 graffiti and 3 drug offenses, for a total of 2,399 calls for service.

- Safety Tips: Hurricane Preparedness was emphasized and the importance of having a "To-go" kit and "Stay" kit. Lt. Lee explained what each kit should contain. Also, in an emergency, listen for updated information and seek the nearest shelter.

Questions, comments and concerns followed:

1. Crime Trends – Shubert-Kwock noted that she was surprised in the thefts and assault numbers and asked if Lieutenant Silva can give any information. Lieutenant Silva responded that the crime that has increased could be because it is summer time.
2. Cameras – Shubert-Kwock raised a concern and asked about the status of cameras. Lieutenant Silva responded that there are three (3) nonfunctional cameras and the rest are all functional. Shubert-Kwock noted that HPD needs to request the refund for the camera work and asked if it would be possible. Lieutenant Silva responded that he was not aware of the situation but will make some inquiries.
3. Arrests – Mancos asked if the reported drug incidents count as arrests made. Lieutenant Silva responded that he is guessing three (3) arrests were made but it could be possible that no arrests were made. Mancos asked if HPD should encourage to community, that if someone sees something, they should say something. Lieutenant Silva responded that HPD always encourages the community to call and report. Serena Hashimoto raised a concern about the number of drug arrests because her shop calls HPD about drugs at least 20 times a day and noted that everyone knows Chinatown's reputation which is upsetting to the Neighborhood Board. Lieutenant Silva responded that the statistics given are the patrol statistics and noted that the NARC/VICE unit has their own statistics as well. Donaldson-Selby noted that the Board should request the NARC/VICE unit to the meetings for statistics. Lieutenant Silva noted that he will forward the request.

Neighborhood Citizen's Patrol – Mollring reported that her group was a part of the National Citizen's Patrol Walk. Over 50 people came to walk down Pauahi Street then to Aala Park where a potluck was held. Calare Ann Ronquillo noted that the River/Pauahi group also participated in the walk and noted that their block captain thanked HPD for their work and for always patrolling near River Street and Pauahi Street. Ronquillo noted that their group members are dwindling, but noted that HPDs efforts are making the area cleaner and safer.

COMMUNITY CONCERNS:

Hawaii Pacific University (HPU) – No representative present; no report provided. Smyth commented that the large fence that used to enclose Aloha Tower has been taken down but many small fences have been put up. Smyth noted that the public can no longer walk through the campus area or the center lane.

Safe Haven – No representative was present. No report was provided.

Honolulu Rail Transit Project – Pat Lee reported the following:

- Transit Savings Report – Every month, the American Public Transportation Association (APTA) releases a Transit Savings Report which shows how much a person can save on a monthly and yearly basis by taking public transit. In Honolulu, individuals who ride public transportation instead of driving can save more than $12,000 per year. APTA determines the cost of the average monthly transit pass and compares it with the costs of driving, including gas, maintenance, tires, insurance, registration and parking fees.
- Rail Systems – Rail is about transportation and land use, but also about social equity. There are many people who are too young or too old to drive, unable to drive or cannot afford to own and operate a car. These residents depend heavily on public transportation to get to their jobs, school, run errands and carry on with their lives. Rail would improve public transportation by increasing efficiency and reducing travel times compared to a bus-only trip, due to its frequent service and reliability. Bus routes would be redesigned to feed into the rail system from other areas to service more riders. Rail will also enable Transit Oriented Development near stations and along its route. TOD brings new retail and commercial opportunities, but also new opportunities for affordable housing in proximity to good public transportation. This would help those in the income groups who need housing and depend on public transportation.
- Construction Highlights – These are the latest construction highlights: 267 foundation shafts have been placed, 187 columns erected, 3,090 segments casted, and 139 spans. The West Oahu Farrington Highway Guideway portion (from East Kapolei to Pearl Highlands) is now 66% completed. The Kamehameha Highway portion (from Pearl Highlands to Aloha Stadium) is 39% completed, and the Rail Operations Center in Waipahu is 74% completed. Over three (3) miles of guideway are completed and the rail guideway is now proceeding into the Waipahu area. For traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Chinatown Business & Community Association (CBCA) – Chu Lan Shubert-Kwock reported the following:

- Mid Pauahi Crosswalk – The mid Pauahi crosswalk is finally getting built. This crosswalk was initiated by CBCA back in 2009-2010 and are thankfaul it will be completed by mid-August 2015.
- Chinatown Meetings – CBCA attended two (2) important Chinatown meetings regarding the senior housing on River Street, working on the needs of the community. These include the Chinatown Community Center which will be 10,000 square feet and will be multipurpose community center. CBCA asked that the immigrants be honored with trees and flowers brought to the islands to remind them of their ancestral homes.
- Dr. Sun Yat Sen's 150th Anniversary – The Dr. Sun Yat Sen's 150 anniversary will be honored with a new garden at Foster Gardens. $150,000 has been approved by the City Council. CBCA thanks all those who worked hard for this to happen.
- Bills 44 and 46 – The Bills passed 3rd reading and will expand sit/lie hours in Union Square and the Chinatown Mall by Aala Park.
- Kalihi Business Association Meeting – Shubert-Kwock and Director Judi Rod attended the Kalihi Business Association Meeting to learn more about their concerns. CBCA learned that business owners have suffered due to illegal camping and filth. Some of the homeless are not willing to move into shelters for various reasons. CBCA asks that shelters which received money from tax dollars do more, leaving them on the sidewalks is not helping the community.
- Bill 49 – Bill 49 allows the sale and consumption of liquor on Fort Street Mall and other Chinatown Malls is a bad bill introduced by Councilmember Fukunaga with little input from tenants and residents around the mall.
- Economic Revitalization – CBCA is very unhappy that the City is pushing more liquor on the public streets and malls under the misguided belief that it is "economic revitalization" for Downtown and Chinatown. 589 Chinatown merchants and residents petitioned the Mayor, HLC, DTS, and Councilmember Carol Fukunaga that they do not think liquor and noise help the area. Promoters leave after close up time, but leaving drunks for the community to deal with.
- Homeless – CBCA is hopeful that Governor Ige convened a high powered committee on Homelessness and CBCA hopes it will help the City to produce more permanent housing for the homeless and also provide help to the mentally ill.
- Chinatown Heroes Banquet – CBCA will be hosting the 6th Chinatown Heroes Banquet on Saturday, October 17, 2015 at the Golden Palace. CBCA will be honoring Councilmember Fukunaga, for the Chinatown bathrooms; David Chang, Little Village Noodle House and Epic; KHON2 news for extensive coverage of Chinatown issues; Hawaii 5-0 for bringing business/highlighting Chinatown; Ernie Loo, the long time unsung hero of Chinatown. Tickets are $35/person and sponsor tables are $1,000 each for a group of 10.
- Chinese Moon Festival/Concert – On Saturday, September 12, 2015 at 2:00 p.m. at the Mission Memorial Building, 550 South King Street, there will be a Chinese Moon Festival/Concert. Admission is free.
- Next Meeting – The next CBCA Chinatown Dim Sum meeting is scheduled for Tuesday, August 11, 2015, Empress Restaurant from 8:30-10:00 a.m.

Chinatown Improvement District (CID): Lee Stack reported that the Sustaining Chinatown: The next one (1) - hour series to learn how to maintain and protect historic structures is scheduled for Tuesday, August 25, 2015 at the Lyons Associates, 45 N. King Street. Presentations are free, but reservations are recommended. For more information visit www.cidchinatownhawaii.org.

Arts District Merchants Association (ADMA): Nicole Reid highlighted the following:

- First Friday – ADMA is hosting a public health crawl, which will go through different businesses. All businesses have agreed and will give discounts to all those who wish to be a part of the event. The money made will go to a non-profit.

Public:

- Representative Brower – Gwen Abella raised a concern about Representative Tom Brower and noted that what he did to the shopping carts was wrong. Abella noted that she is not glad he got beat but it was criminal act what he did and commented that it did not help anyone.
- Queens Hospital – Ray Rudie raised a concern about the Canal Street off ramp and asked if the City can increase parking on the street. Rudie noted that it has yet to be done and asked for an update because Lisbon Street is too narrow for parking and a two (2) way street and suggested that it be turned into a one (1) way street with parking since the streets adjacent are both two (2) way streets.

ELECTED OFFICIALS:

Mayor Kirk Caldwell's Representative – John Chang reported the following:

- Mango Jam Honolulu – The "Mango Jam Honolulu" showcases the mango and how it brings the many cultures in Hawaii together. On stage there will be community groups and entertainers. There will also be an open market. The event is sponsored by the Hawaii Maoli and the Mayor's Office of Culture and the Arts (MOCA), at the Fasi Civic Center, from 4:30 p.m. to 9:30 p.m. on Friday, August 7, 2015, and 10:00 a.m. to 9:30 p.m. on Saturday, August 8, 2015.
- Title VI Program Report Public Hearing – As a recipient of Federal Transit Administration (FTA) funds, DTS-PTD is required to comply with FTA requirements that prohibit discrimination on the basis of race, color, national origin, gender, or disability in all programs, activities, and services. DTS-PTD must submit a Title VI Program report to FTA every three years. DTS-PTD is in the process of finalizing the report and welcomes any public participation/input. All public input regarding the report will be included in the final version to be submitted to the Transportation Commission and City Council for approval. Upon approval, the report will be submitted to FTA in December 2015. For more information call 768-8374, email thebusstop@honolulu.gov, or visit http://www.thebus.org/AboutTheBus/DraftTitleVIProgram.asp.
- Bill 48 – In regards to Bill 48, sitting does not apply to bus stops. If an individual is lying at the bus stop, Bill 48 applies. Officers checked the area at various times of the day and did not observe anyone lying at the bus stops. If anyone sees any individual lying down, please call 911.

Questions, comments and concerns followed: Action Summit in Chinatown – Shubert-Kwock noted that the Action Summit in Chinatown was a success and asked if a report can be compiled and given to the Board. Mollring noted that her son in law called the Federal Justice Department (FJD) who said that the FJD is saying that the Sit and Lie Bill is unconstitutional.

Councilmember Carol Fukunaga – Councilmember Fukunaga distributed her report and highlighted the following:

- Hiroshima Commemoration – Today, there was a commemoration for the 70th anniversary of the bombing of Hiroshima.
- Clean Ups – The next Clean Up will be Saturday, August 15, 2015. The area's that will be cleaned will be Sun Yat Sen Park and College Walk. Participants asked if they can paint the bridge red to better deter graffiti. Councilmember Fukunaga noted that hopefully it will work with the Administration.
- Bills 44 and 46 – Bills 44 and 46 were adopted by Council and has passed 3rd reading. Councilmember Fukunaga noted that the bills will probably get the support needed by Mayor Caldwell. Bill 44 will extend the hours for other businesses that stay open later. It was noted that the Mayor may not support this bill.

Questions, comments and concerns followed: Bill 49 – Shubert-Kwock noted that she attended the Bill 49 hearing and noted that the Director allowed to have a bathroom at the mall and noted that liquor licenses cannot be issued. Councilmember Fukunaga responded that the Department of Parks and Recreation (DPR) and Liquor Commission allows consumption of liquor in controlled areas and are trying to be more flexible for Fort Street Mall. Donaldson-Selby asked if the public can get the minutes from that hearing. Chair Au noted that a member of the Board also sits on the Board of Directors too, and commented that they can give him the information. Stack raised a concern and noted that it is great to have a dialogue but there needs to be at least two (2) people to have a dialogue. Howard Lum thanked Councilmember Fukunaga for Bill 46 and noted that she has done a great job for Chinatown.

Charter Commission – No representative was present; no report was provided.

Governor David Ige's Representative – No representative present; no report provided.

Senator Suzanne Chun Oakland – Senator Chun Oakland was present earlier in the meeting. A report was available.

Representative Scott Saiki – No representative present; A report provided.

Representative Karl Rhoads – Chair Au read the following report:

- Update – The City replaced the "parking" sign that points to the Chinatown Municipal Parking lot on Beretania Street.
- Drug Dealing Activity – Received a complaint regarding suspecting drug dealing activity across the street from 1315 River Street. The issue was forwarded to HPD.

- Hotel Street – Received a complaint regarding bicyclist riding down Hotel Street on the wrong side of the road and ignoring traffic lights. This happens most often at the intersection of Hotel Street and Smith Street. The issue has been forwarded to HPD.

NEW BUSINESS:

Discussion on Transfer of Business from The Empire Inc. to Scarlet Honolulu, LCC – Shubert-Kwock noted that she did not write a letter to the Liquor Commission but Wayne Luke has been notified. Shubert-Kwock commented that the Board does not know what is going on but it is a concern of the community and the new owner should at least come to the Board for dialogue. The Liquor Commission does ask for the Neighborhood Boards opinion and commented that the Board lost their opportunity. Sam Lanai commented that he is the owner of Scarlet Honolulu, LCC and noted that he has also opened a LGBT night club, which has been very successful in the three (3) weeks it has been open. The Scarlet Honolulu is small but the other half will be a Tiki lounge and restaurant, like a new upscale happy hour. Chair Au noted that it was nice to meet Lanai and hear what he had to say and offered a spot on the agenda to Lanai once his business is established to give an update. Mollring noted that all the reports received have been awesome and welcomed Lanai to the neighborhood.

Discussion on Murphy's Bar and Grill Street Closure – Chair Au announced that the 19th annual Pigskin Pigout fundraiser for the UH Football program will be on Thursday, August 27, 2015. Shubert-Kwock noted that the event will help cancer patients and commented that the community needs to be notified for courtesy. Chair Au noted that the Liquor Commission was informed and told Murphy's Bar and Grill that they need to come to the Neighborhood Board to present and notify the community. Chair Au commented that Murphy's Bar and Grill are usually good events that are controlled.

Community Update and Discussion for the Affordable Senior Rental Housing on River Street – Sandy Pfund reported that there were some concerns about the design and the possible impact it will have on the neighbors. Pfund noted she has been working with the architects to make sure that the plans are refined and commented that it takes time to evaluate all of the designs and will take longer than originally anticipated. Pfund noted that the architects will reduce the number of exceptions and will come back to the Board in September 2015 with another update for the Board and the community. Pfund commented that the Kuhio Park Terrace Community Center tour is occurring and noted that Senator Chun Oakland is the holder of the master list of those who are interested, the community can call or email Senator Chun Oakland for an appointment tour.

Questions, comments, and concerns that followed: Community Center – Shubert-Kwock noted that the community center is one (1) of the best things to happen to Chinatown and noted she hopes the community center can be functional in the long run and asked for feedback on the project. Pfund responded that they will for an advisory committee because they are trying to make a flexible committee that is interested in the design as well.

Discussion – Wesley Fong noted that he has met with the City agencies and Michaels Co. and noted that the Chinatown Community Center Association (CCCA) would like to echo the comments and recommendations of the Historic Hawaii Foundation on preserving the historic and cultural character of Chinatown especially the location of the proposed Chinatown Community Center and affordable senior housing project on River Street. To preserve the character of the neighborhood surrounding the site, the density of the proposed housing project needs to be at a height that will not destroy the historic and cultural character of the mauka area of Chinatown bordered by Vineyard Boulevard. As mentioned, there are temples, a shrine, low rise Chinatown Cultural Plaza, low rise Chinese Schools, low rise apartment complexes all located along or in proximity of the River. Across Vineyard Boulevard is the Kwan Yin Temple and Foster Garden. This site above Beretania Street is surrounded by a unique blend of cultural and historic sites making up the unique character of the area and this character must be preserved. Lum thanked the City, Pfund, Councilmember Fukunaga, and the Neighborhood Board for being sensitive to the community's concerns and the temple.

Questions, comments, and concerns that followed:

1. Addiction – Smyth raised a concern about the occupants who do not have an alcohol or drug dependency and asked how those who are dependent will be taken care of. Fond responded that he will leave it up to the City because he cannot dictate people. Shubert-Kwock raised a concern about the recommendations of representatives because CBCA is not on the list. Shubert-Kwock noted that she is disappointed for not being recognized. Fong responded that he has a letter from CBCA and noted that some members are on the Board of Directors. Fong commented that it is not for CCCA to determine and noted that they only makes suggestions.
2. Compromise – Reid raised a concern and asked what would happen if the City does not comply with the rules. Fong responded that it is a matter of compromise and it is not an all or nothing kind of deal. If there is

no compromise, CCCA will not encourage or sponsor the project. Pfund noted that there was a meeting held where those comments were made and commented that the City does notice the opinions but cannot put the comments in the documents until completed, but the City is always open to suggestions to improve the fair housing situation for all.

APPROVAL OF JULY 2, 2015 MEETING MINUTES – This item was deferred until the September 2015 meeting.

BOARD BUSINESS AND REPORTS:

Chair's Report=

- Chair Au reported that he invited the Department of Emergency Management (DEM) to come to the September 2015 meeting to inform the community about the Downtown/Chinatown danger zones as well as the safe zones.
- Shubert-Kwock asked if the Board can have an update from Hawaii Theater and from DPR to talk about the concrete box at Sun Yat Sen Park and to also talk about the park rules and the malls. DPR needs to educate the Board. Sam Moku also needs to come and give an update on Aloha Tower. Mollring noted that she took the tour of Aloha Tower and noted that there is a large room where the Neighborhood Board can have meetings and asked the other Board members to think about it. Shubert-Kwock noted that the room is a 350 square foot room with a nice view and an AC unit.
- Tom raised a concern about the Mayor's Homeless Task Force and noted that the City is trying to move the homeless out of Kakaako. The concern is that the homeless might settle in the Downtown/Chinatown area. Chair Au responded that there is a shelter behind the transit building on Dillingham Boulevard. The family is willing to sell their house for the homeless.
- Shubert-Kwock noted that in regards of the Chinatown Action Summit, the Board should invite Harrison Rue and raised another concern about the lack of signage for the new hygiene center because it would be helpful to let the public know that the bathroom hours are from 7:00 a.m. – 7:00 p.m. and asked if the Chair can make the request.

Other Liquor License Applications or Street Closure Events – No report.

Future Agenda Item Requests – No report.

Neighborhood Commission Updates – No report.

Treasurer's Report – Treasurer Mollring reported a $300.27 remaining balance. The report was filed.

City and County Affairs – No report.

Shubert-Kwock departed the meeting at 8:48 p.m.; Seven (7) members present.

Oahu Metropolitan Planning Organization (OahuMPO) – Smyth reported the committee is working on changing the by-laws to reflect the changes in the federal laws.

ANNOUNCEMENTS:

- Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, September 3, 2015, Pauahi Community Center at 7:00 p.m.
- Neighborhood Citizen's Patrol (NCP) – The NCP meets each Tuesday on the Diamondhead side of Kukui Plaza at 8:00 p.m. Please consider joining the patrol and supporting its efforts as they express their service and pride in our Downtown/Chinatown community.
- Broadcasts – Videotape of Board meetings are scheduled to be shown on the third Thursday, and on the second and fourth Saturday on `Olelo Channel 49.

ADJOURNMENT: The meeting adjourned at 8:50 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant
Reviewed by: Nola J. Frank, Neighborhood Assistant
Final Review: Chair Alvin Au, Secretary Robert Tom

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
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DRAFT REGULAR MEETING MINUTES
THURSDAY, NOVEMBER 5, 2015
PAUAHI COMMUNITY CENTER

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:03 p.m., **with a quorum of seven (7) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang, Jasmine Mancos, Dolores Mollring, Jonathan Saupe, Chu Lan Shubert-Kwock (arrived at 7:35 p.m.), Tom Smyth, Robert Tom, and Stanford Yuen (arrived at 7:43 p.m.).

Board Members Absent – None.

Guests – Fire Fighter 1 Gerald Higgins and Captain Ken Kahahawai (Honolulu Fire Department); Major Calvin Tong, Lieutenant Stephen Silva, Sergeant Stuart Yano, and Sergeant Michael O'Neill (Honolulu Police Department); Laurel Johnston (Governor David Ige's Office); Noelle Wright (Mayor Kirk Caldwell's Representative); Representative Karl Rhoads; Andrew Tang (Department of Planning and Permitting); Pat Lee (Honolulu Rail Transit Project); Allen Stack Jr. (Chinatown Improvement District); Nicole Reid (Arts District Merchants Association); Clare Ann Ronquillo (River/Pauahi Citizens Patrol); Gwen Abella (Winston Hale); Todd Iocovelli and James Donnelly (Make-A-Wish); Greg Payton (Safe Haven); Nathanial Howard and Anya McClent (Hawaii Pacific University); Cameron McElroy (Real Office Centers); Monika Mordasin and Karen Seddon (Michael's Development Company); Rochelle Nagata-Wu (WRNS Studios); Michelle Bartell (American Savings Bank); Paul Mallory (Michaels Corporations); Lori Lum, Howard Lum, Kehaulani Lum, Roland Louie, and Wesley Fong (Chinatown Community Center Association); Vina Quick, and Ronald Higa; Ericson Cristobal (Videographer); Neil Baarde (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Board members introduced themselves at this time.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Fire Fighter 1 Gerald Higgins reported the following:

- October 2015 Statistics – There were 5 structure, 17 vehicle, 1 nuisance, 1 cooking, and 21 activated alarms. There were 183 medical emergencies, 5 motor vehicle collision with pedestrians, 7 motor vehicle collisions, 1 mountain rescue, 1 ocean rescue, 1 hazardous material incident, with 7 unusual incidents.
- Fire Safety Tip – This holiday season, consider a fire-resistant, artificial Christmas tree. If a natural tree is purchased, select one (1) that is as fresh as possible. Cut off at least 1/2 '' at the bottom end of the trunk prior to placing the tree in a stand to allow the tree to absorb water. Keep the tree hydrated and away from heat sources. Use noncombustible materials for decorations. Choose only Underwriter's Laboratory approved electrical decorations and follow the manufacturer's instructions for installation. Do not overload the extension cords.

Honolulu Police Department (HPD) – Lieutenant Stephen Silva reported the following:

- October 2015 Crime Statistics – There were 9 motor vehicle thefts, 10 burglaries, 89 thefts, 52 unauthorized entries into a motor vehicle (UEMV), 29 assaults, 1 sex assault, 1 graffiti and 6 drug offenses, for a total of 2,605 calls for service.
- UEMV Prevention Tips
    - Lock the Doors – Simply locking the car doors will deter those who might just be waiting around for an easy target. Suspects have been known to check car door handles to see if the car is unlocked.
    - Keep Car Neat – Keep shopping bags and other items out of sight. A car that appears empty is not appealing to thieves.
    - Stash Before Parking – Stash and conceal all items before paring the car. Suspects have been known to conduct surveillance while looking for an opportunity to steal again. During the holiday season, do not leave bags in the car for thieves to steal.
    - Park Visibly – Always park under a lighted area or where it is visible to the public. Never behind a

wall or bushes where visibility is blocked and offers good concealment to the suspects who want to break in.
- o Layer Defenses – Increase the safety of the car with a vehicle alarm or steering wheel anti-theft wheel lock. These measures deter theft.
- o Lastly – Ensure the vehicle registration and insurance cards are hidden inside the vehicle. Thieves are known to steal the vehicle's paperwork, read the owners address on the registration, and burglarize the home.

Questions, comments and concerns followed: Thanks – Howard Lum thanked HPD and the City for sweeping and patrolling along Kukui Street and Vineyard Boulevard. Lum noted that he has noticed much change since the sweep and commented that the neighborhood feels safer.

Narco/Vice Commander – Major Calvin Tong introduced himself and was available to take questions.

1. Trends – Smyth raised a concern about the crimes that are not on the report and noted that the Board has been asking if the trend is going up or down. Major Tong responded that he has not noticed any real trends and asked the public to keep their eyes open and make the report so Narco/Vice can patrol or take action. Major Tong noted that the hotline number to report anonymously is 723-3933.
2. Drug Activity – Tom asked if most of the drug activity occurs in the daytime or the nighttime. Major Tong responded that the activity is never certain because all of the reported activities are always different. Tom noted that he heard of HPD foot patrolling the area but has never seen them and asked for more foot patrol. Lieutenant Silva responded that there are foot patrolling officers including in the evening. They might not be visible but they are around.
3. Suspicious Coffee Shop – Miki Lee raised a concern about a coffee shop on Nuuanu Avenue and Smith Street and noted that it does not feel safe for women to walk by. Major Tong responded that the coffee shop could be on HPDs radar and asked for extra details on the side. Patrick Wilson noted that the coffee shop being mentioned, definitely has suspicious activity going on for years. Wilson also raised a concern about being offered drugs across the street and "The Arcade" on Hotel Street and asked why the locations are not being investigated. Major Tong responded that he understands the community's frustration but HPDs resources are the issue. HPD is doing their best but can always do better and asked if Wilson reported to HPD after being offered drugs. Wilson noted that he lives in the heart of Waikiki and has noticed all the activity slowly disappear and noted that it should not take that much resource for the Downtown/Chinatown area. Major Tong responded that HPD will not stop doing their best.

Neighborhood Citizen's Patrol – Mollring reported that her group been walking every Tuesday night and announced that on Saturday, November 14, 2015 a sign waiving event will be at Kekaulike Mall from 8:00 a.m. A potluck will follow after the event. Clare Ann Ronquillo reported that the River/Pauahi Street block captain would like to thank HPD for their assistance with the homeless and the rowdy teenagers that have been out past their curfew.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No representative present; no report provided.

Safe Haven – Greg Payton reported the following:

- Moving – Safe Haven will be moving from Beretania Street to Pauahi Hale in February 2016.
- Statistics – One (1) person was discharged to their family on the mainland and one (1) person moved in. The activity center is awesome and is doing well.
- Landlord Summit – The Landlord Summit will be on Tuesday, November 17, 2015. Governor Ige and Mayor Caldwell will be in attendance to help find all the landlords in Hawaii in order to help the homeless. Payton is looking for a willing landlord to rent to a program who helps the homeless. Payton noted that they will be trying to get a loading zone area in front of Pauahi Hale.

Honolulu Rail Transit Project – Hearing no objections, Chair Au tabled the report until Pat Lee arrives.

Chinatown Business & Community Association (CBCA) – Hearing no objections, Chair Au tabled the report until Shubert-Kwock arrives.

Chinatown Improvement District (CID) – Allan Stack reported that CID is a part of the planning process for the beautification project with the City for Smith Street Park. Stack noted that they are completing the final draft of the plan that will include planters and hedges.

Arts District Merchants Association (ADMA) – Nicole Reid highlighted the following:

- Clean Up – The clean up scheduled for November 2015 has been put on hold. ADMA will inform the public when a date has been set.
- Downtown Shop Around – The Downtown shop around will be on Friday, November 27, 2015 and is a Black Friday event with certain shops in the Downtown/Chinatown area. The event is also partnering with Uber, for less traffic congestion.
- Street Parking Stalls – There has been an uptick in the rental of public street parking stalls. Many streets had private stalls before and Reid encouraged the Board to invite DTS to explain why certain stalls are permitted.

Public Concerns

- Rubbish on the Streets – Resident Miki Lee distributed some photos of rubbish on the streets of Downtown and Chinatown and noted that as a result of the rubbish and the homeless the area smells of urine and feces, and is unattractive to residents and visitors.
- Empty Spaces in Buildings – Gwen Abella raised a concern about the buildings in the Chinatown area being empty and asked why the space cannot be used to house the homeless.
- HPU Student Body President – The HPU Student Body President Nathaniel Thomas Howard thanked the Board for having him and noted that he will try to be in attendance from now on. Chair Au commented that Sam Moku is the HPU representative but has missed the last few meetings and asked if Howard can talk to the President or Moku to get at least some news to give to the community.
- Kapolei Christmas Parade – Ronald Higa announced that the Kapolei Christmas Parade will be on Saturday, December 12, 2015 at 6:00 p.m. There will be fireworks and the Kapolei High School Band will be playing.

ELECTED OFFICIALS

Shubert-Kwock arrived at 7:35 p.m.; Eight (8) members present.

Mayor Kirk Caldwell's Representative – Noelle Wright reported the following:

- Clarification on DTS Permitting – DTS works closely with the Honolulu Film Office on filming permit requests and strives to balance the needs of production with the needs of the community. The requests for permits typically come from the Honolulu Film Office. Permits are granted for available meters with an emphasis on parking production vehicles in front of closed businesses or adjacent to park areas whenever possible. Depending on the shot, parking may be restricted to provide a clear area for the shot or where the camera needs to be placed for the shot.
- Rubbish on Kukui Street and Vineyard Boulevard – DPR noted that the area described is not under the jurisdiction of DPR. ENV noted that they are looking into the concern and will provide a response at the December 2015 meeting.
- Grass Overgrowth – DFM noted that the area was previously maintained by DPR, but recently DFM took over the grass cutting maintenance for this area. The grass is scheduled to be cut on Friday, November 6, 2015.
- Community Assistance with City Clean Up Projects – DPR noted that the community should contact Clinton Jamile at 768-3034 to plan community clean up projects and learn about the DPR's "Adopt-A-Park" Program. DFM noted that there are a number of ways to assist the City on community cleanup projects. Community members can participate in DFM's storm water quality adopt a block and adopt a stream projects that address various locations throughout Oahu throughout the year. Information can be obtained through the Environmental Concern Line at 768-3300 or through the City's website.
- Jaywalking Citations – From January to August 2015, HPD issued 3,575 citations for jaywalking.
- Chinatown Action Summit – Andrew Tang, a TOD Planner, announced that the City is planning a follow up meeting to the Chinatown Action Summit on Tuesday, December 1, 2015 at 6:00 p.m. at the Aloha Tower HPU Room 3. Tang noted that they have taken the feedback from the last meeting and noted that they have worked the additions into the plan.

Yuen arrived at 7:43 p.m.; Nine (9) members present.

Questions, comments and concerns followed:

1. Aloha Tower Tour – Smyth noted that most of Aloha Tower is still closed to the public. Smyth noted that he is trying to get his condo association to take the tour of the new layout.
2. Graffiti – Tom noted that he has been noticing many walls with graffiti drawn on it and asked what the requirements were for the community to paint over the graffiti. Wright will follow up.
3. Robberies – Shubert-Kwock noted that there has been a recent wave of teenagers terrorizing and robbing people and small convenient stores. Shubert-Kwock also raised a concern about the amount of fights and drug activity on North King Street and Maunakea Street.
4. Sidewalks – Mollring noted that the City sidewalks are in bad condition because some of the sidewalks are cracked or uneven. Chair Au noted that DFM is in charge of the sidewalks and asked for the hotline number. Wright will follow up with the number.
5. Vineyard Boulevard – Resident, Annie Peterson, raised a concern about an alley way and asked if the City can sweep the alley because it is hard and uneasy for the residents of the nearby building. Chair Au noted that there is a hotline that contacts HPD or DFM to make a report.
6. Honolulu 311 App – Reid commended the City on their Honolulu 311 App because it has really helped and noted that the City even fixed the broken sprinklers. Wright noted that the pothole hotline number is 768-7777.
7. Funds – Mollring raised a concern about the Mayor releasing the funds for non profits. Specifically Weed and Seed Funding. Wright will follow up.
8. Foot Patrol – Tom raised a concern about the number of foot patrol officers in the Downtown/Chinatown area and noted that he does not see any and asked for more officers on the streets.

Councilmember Carol Fukunaga – No representative was present; A report was provided.

Governor David Ige's Representative – Laurel Johnston reported the following:

- Absence – Johnston announced that the reason for the Governor's representative's absence is because Governor Ige was concerned about other islands not getting the same amount of information to the other islands. Johnston noted that Governor Ige will work through the Community Colleges to give any information needed.
- Budget – Budget hearings will start soon and noted that Governor Ige has been working on many different projects.
- Turtle Bay – Land Conservation history has been made as Turtle Bay Resort and a collaboration of entities led by the State of Hawaii completed an agreement to preserve in perpetuity nearly 630 acres of open space along Oahu's North Shore. Governor Ige signed into law Senate Bill 284 on Friday, June 12, 2015, following the initiative of the Legislature. The details of the agreement were approved by the State Board of Land and Natural Resources (DLNR) on Friday, September 25, 2015.

Questions, comments, and concerns that followed:

1. Thanks – Chair Au thanked Johnston for attending and noted that the community is really involved and will be asking for help.
2. Homeless – Shubert-Kwock welcomed Johnston to the meeting and asked for State reports on the homeless and asked how the State can move the homeless and how to get more shelters. Johnston will follow up. Yuen commented that he appreciates Governor Ige for making homeless an emergency issue.

Senator Suzanne Chun Oakland – No representative was present. A report was not available.

Representative Scott Saiki – No representative was present; A report was provided.

Representative Karl Rhoads – Representative Rhoads reported the following:

- Chaplain Lane – A Board member asked if Chaplain Lane is a private lane. According to DFM, division of road maintenance, Chaplain Lane is City owned.
- Central Middle School – Governor Ige released $310,000 in Capital Improvement Project funds for the design and construction to repave the parking lots (Kukui, Administrative, Queen Emma) at Central Middle School. The estimated completion date for the project is November 2016.
- McKinley High School – Governor Ige released $10,000,000 in Capital Improvement Project funds for the construction and works of art to renovate Building W at McKinley High School. The estimated completion date for the project is June 2018.
- 2016 Legislative Session – The 2016 Legislative Session is coming up in January 2016. If anyone has any ideas for bills, please contact Representative Rhoads.

Questions, comments, and concerns that followed:

1. Steward Ship Bill – Shubert-Kwock raised a concern and asked if the Steward Ship Bill will be re-written or amended. Representative Rhoads responded that Act 221 has worked in a few cases but many petitioners did not follow through and noted that they are waiting to see the 2015 results and commented that he will stay on top of the issue.
2. Bills – Howard asked when and where Representative Rhoads will meet with Governor Ige and how the community can draft a bill. Representative Rhoads responded that there will be a Community Meeting on Thursday, November 19, 2015 at the Honolulu Community College, the meeting will begin at 6:30 p.m. To draft a bill, the first thing would be to be a part of the legislation and noted that if anyone is interested in drafting a bill, to contact his office at 586-6180.

Hearing no objections, Chair Au took the agenda out of order to Honolulu Rail Transit Project – Pat Lee.

Honolulu Rail Transit Project – Pat Lee reported the following:

- Business Outreach Programs – The Holidays are coming, and it's an important time for shoppers as well as businesses. HART is undertaking several initiatives to support and assist local businesses along the rail alignment during construction. HART has in place a Business Outreach Program designed to keep businesses informed and updated on construction activities, and to provide business-oriented outreach to assist those who are affected by the work. HART's Business Outreach Program includes insuring proper access, signage and collateral for businesses. The alliance program, which includes over 400 businesses in the construction corridor, provides tailored construction briefings, free business development workshops and regular contact with HART to jointly develop additional programs to assist businesses during construction. HART plans to expand the outreach program to the Airport and City Center sections of the project as construction activity progresses into urban Honolulu.
- Shop and Dine On The Line – The HART Business Outreach Program includes:
    - HART's Business Alliance Program with meetings and weekly construction alerts
    - Business sign program with directional access and "Open for Business" signs
    - Detailed information for customers about area construction activity and access
    - Additional business resources in partnership with the Mayor's Office of Economic Development, U.S. Small Business Administration, the Hawaii Small Business Development Center, and the Mink Center for Business and Leadership
    - Electronic online offer program for additional customer outreach, social media and marketing workshops
- Shop and Dine Online Application – One (1) of these programs is Shop and Dine on the Line which partners with nearly 100 businesses in the Aiea, Pearl City and Waipahu area. The program is designed to assist businesses along the rail alignment during construction. Mention the Shop and Dine on the Line program, or print out the online brochure, to receive discounts on dining, shopping and services. With the Holidays approaching, we urge the public to patronize these stores and restaurants and use the discounts and other promotions these businesses are offering which help our local businesses during construction. Please visit: www.shopanddineontheline.com for more details to help our local businesses during construction. You can also visit the website using your phone or mobile device, and show the Shop and Dine logo on your phone.
- General Information – For general project information, traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – Shubert-Kwock reported the following:

- Chinatown Heroes Banquet – CBCA Celebrated its 6th Annual Chinatown Heroes Banquet attended by 200 people. The following were honored:
    1. Council Member Carol Fukunaga
    2. Sifu Ernie Loo
    3. DTS Director Mike Formby
    4. Little Village Noodle House owner, David Chang
    5. Hawaii 5-0 Eye Productions
    6. KHON2 News
- Homeless – Homelessness in Chinatown is again a pressing problem as more are migrating back. CBCA will continue to work with IHS and Safe Haven and begin a collaborative work with Safe Haven to find rental housing for the Housing First program. CBCA is pleased that Mayor Caldwell and the City Council as well as Governor Ige are working hard pushing for housing for our homeless and ramping up placements and services.

- Crime Statistics – Crime Stats - we are plagued by drug dealings and fights in various parts of Chinatown. Bank of Hawaii has reported some grave problems by North King Street and Maunakea Street.
- Youth Gangs – Youth Gangs again are plaguing our merchants, they range in ages from 10 to 15 in groups of eight (8) to 10. They carry backpacks, steal and run off while others block the view of the shop owners.
- Duc's Bistro – Bottom part of Maunakea street liquor store across from Duc's Bistro has a bigger gathering of people hanging out the liquor store where they are dealing drugs and drinking alcohol.
- Graffiti – We are pleased to report that the Ket On building no the one across Duc's Bistro is now graffiti free.
- Next CBCA Meeting – CBCA is working with other community groups on the Senior affordable housing on River. The next CBCA Dim Sum meeting is Tuesday, November 10, 2015 at 8:30 a.m. to 10:00 a.m. at Empress Restaurant in the Chinese Cultural Plaza, second floor. All welcome to join us to make Chinatown a better place for all.

NEW BUSINESS

3rd Annual Make-A-Wish Jingle Bell Rock Run – James Donnelly and Todd Locovelli announced that the 3rd annual Jingle Bell Rock Run will go from Iolani Palace to Ward Avenue, through Beretania Street and then down King Street. The 5K will be on Sunday, December 20, 2015. The keiki run will begin at 5:30 p.m. and the Adult 5K will begin at 6:00 p.m. There will be limited/rolling road closures. Locovelli noted that King Street and Beretania Street will only have a few lanes closed but will be reopened once the last runner passes.

American Savings Bank (ASB) – Michelle Bartell presented the plans for a new corporate campus on Aala Street and Beretania Street. Bartell noted that ASB prides their work on their work culture and teamwork. ASB has received many awards being voted that it is the best place to work at five (5) different locations. The new corporate campus would be the start of something new. The corporate campus will have parking, offices, and a branch on the bottom level. There is currently no rendering of the interior, but Bartell noted that it is a great way to collaborate not only within the five (5) different teams within ASB but with also the community. Bartell noted that she will send more information regarding the groundbreaking and the opening to the Board. Bartell also noted that ASB has been working with Farrington High School students to help with grants and other forms of aid.

Questions, comments, and concerns that followed:

1. Building Cost – Chair Au noted that the Neighborhood Board boundaries stop at the stream and thanked Bartell for her report and asked what the cost of the building will be. Bartell responded that it was $12 million for the land and ASB is still working on the total project costs. Bartell noted that the current ASB headquarters is still at Fort Street Mall.
2. Community – Smyth asked if ASB will close its current headquarters on Fort Street. Bartell responded that the building will remain but the teammates will all be transferred to the new building. Shubert-Kwock asked if there will be community rooms to help the community. Bartell responded that ASB does offer its seeds of service programs.
3. Security – Saupe noted that he is excited about the project but raised a concern about the security because across the street is a rough area. Bartell responded that ASB has their own security and will be sure to secure all areas inside and outside of the building.
4. Employees – Tom raised a concern about the number of employees and asked if all the employees would leave around the same time. Bartell responded that there will be around 600 employees and noted that they will have separate schedules where employees could be leaving all hours of the day. Bartell noted that there will be paid parking for the public and there will be designated spots for the employees.
5. Retail – Yuen asked if ASB has envisioned any retail stores or restaurants being in the building. Bartell responded No, only ASB will be in the building but the employees will be buying food from all over the community. A resident raised a concern and asked if ASB will be closing any branches. Bartell responded that they sold the Kalihi Service Center and will potentially be moving the site to the Kamehameha Shopping Center.

Community Update on the Proposed City Affordable Senior Rental Housing – Sandy Pfund, Rochelle Nagata-Wu, Monika Mordasin, and Karen Seddon updated the community on the proposed City affordable senior rental housing issue and noted that they have concluded their negotiations with Michaels Development Co. and are waiting to hear back from Full Council to see if their proposal will go into the Committee hearing. If all goes well and Council passes the proposal, the contract will be awarded to Michaels Development Co. The lease will be for 65 years and it was noted that the City as well as the contractors, have gone over the communities issues that were raised at the community meeting and have made adjustments and is working on their due diligence. Nagata-Wu noted that the main issues were height, mass, energy, and cultural references. The height was reduced from 260 feet to 230 feet.

The mass was reduced by 1000 square feet, for more space between the building and temple. The height of the separating wall was shortened to 40 feet. The City and the architects have done many things to address the community's issues for the temple and the rest of the community. The City is trying to give the community the best building they can to improve the well-being of the community. Mordasin noted that they have reduced all of the units from 650 square feet to 570 square feet. The community center was not sacrificed and noted that the community will be able to use the community center for programs such as the Community Advisory Committee and other community programs. For more information call 691-9446 or email Riverstreetcommunitycenter@gmail.com. Wesley Fong noted that this is a seven (7) year endeavor and commented that they have prepared a position letter and asked the Board to support the project. Fong noted that the position paper has already supported and adopted.

Questions, comments, and concerns that followed:

1. Recommendations – Mancos asked what was in the packet that was distributed by Lum. Lum responded that included in the packet are letters that have already been supported by the Board. Mancos raised a concern about the list and noted that there is no way to accurately monitor someone with mental health issues. Fong responded that the list is only for recommendations. Shubert-Kwock noted that the list could be breaking Federal Laws or a law that deals with Civil Rights. Yuen commented that the devil is in the detail and noted that the guidelines set are good and hopes that the advisory committee works well.
2. Parking Situation – Shubert-Kwock raised a concern about the room's colors and asked if the color can change to something other than white. Shubert-Kwock asked how many dedicated parking stalls and how many public stalls there will be. Mordasin responded that the issue was brought up so the change was made to the draft changing the parking lot to a 10,000 square feet lot. Chair Au noted that he was flattered by the presentation because he was expecting the project to turn out like Kuhio Park Terrace (KPT). Chair Au noted that more details are needed for the proposal and commented that it is a great first step.

Shubert-Kwock moved and Mollring seconded that the Downtown Neighborhood Board No. 13 support items 1-7 from the Chinatown Community Center Association Position Paper that was dated July 14, 2015.

Discussion – Saupe noted that the seven (7) items listed are too broad to support. Tom noted that he admires CCCA and asked if anything had been adverse. Mordasin responded that each unit will have a kitchen, bathroom, and all must go through the advisory group. Fong noted that in general everyone is on the same general page. Pfund commented that some of the comments were legal issues. Chair Au called for the vote. Yuen noted that he must recuse himself because it is a conflict of interest.

Shubert-Kwock moved and Mollring seconded that the Downtown Neighborhood Board No. 13 support items 1-7 from the Chinatown Community Center Association Position Paper that was dated July 14, 2015. The motion was ADOPTED, 5-3-0. (**AYE**: Au, Mollring, Shubert-Kwock, Smyth, and Tom.)(**NAY**: Chang, Mancos, and Saupe.)

Yuen moved and Shubert-Kwock seconded that the Downtown Neighborhood Board No. 13 endorse the conceptual design that was put forth by Michaels Development Company and The City and County of Honolulu. The motion was UNANIMOUSLY ADOPTED, 9-0-0. (**AYE**: Au, Chang, Mancos, Mollring, Saupe, Shubert-Kwock, Smyth, Tom, and Yuen.)

City Sewer Rehabilitation Project – Paul Mallory distributed the draft map and plan and reported that sewer construction is progressing and the pipe installation was held up by permits because of different noise variances. The construction manager should have notified the nearby public and neighbors. The construction will begin on Monday, November 16, 2015 work will be from Monday to Thursday, 6:00 p.m. to 6:00 a.m. Mallory noted that he will be working in the area for the next three (3) months and asked to be a part of the December agenda.

Questions, comments, and concerns that followed: Manhole Covers – Mollring raised a concern about the team working near Kukui Plaza and noted that after the construction the workers did not properly replace the manhole cover correctly. Mallory noted that his card was attached to his map, and to call if there are any questions or concerns pertaining to the project.

Honolulu Christmas Lights Parade – Chair Au noted that the parade will be on Saturday, December 5, 2015 and will start at 6:00 p.m. on King Street and will move from River Street to Kawaiahao Street where the parade will end at Honolulu Hale.

APPROVAL OF OCTOBER 1, 2015 MEETING MINUTES – Shubert-Kwock moved and Mancos seconded that the Downtown Neighborhood Board No. 13 approves the October 1, 2015 meeting minutes. The motion was UNANIMOUSLY ADOPTED, 9-0-0. (**AYE**: Au, Chang, Mancos, Mollring, Shubert-Kwock, Saupe, Smyth, Tom, and Yuen.)

BOARD BUSINESS AND REPORTS

Chair's Report – No report.

Other Liquor License Applications or Street Closure Events – No report.

Future Agenda Item Requests – Chair Au noted that DTS and HBL would like to come and discuss the new bike path. Chair Au asked if the Board would like an after event report from the Hallowbaloo event. Shubert-Kwock responded that she would like to hear the after event report because the event was an experiment with new techniques.

Neighborhood Commission Updates – No report.

Treasurer's Report – Treasurer Mollring reported a remaining balance of $245.53. The report was filed.

City and County Affairs – No report.

Oahu Metropolitan Planning Organization (OahuMPO) – No report.

ANNOUNCEMENTS:

Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, November 5, 2015, Pauahi Community Center at 7:00 p.m.

Neighborhood Citizen's Patrol (NCP) – The NCP meets each Tuesday on the Diamondhead side of Kukui Plaza at 8:00 p.m. Please consider joining the patrol and supporting its efforts as they express their service and pride in our Downtown/Chinatown community.

Broadcasts – Videotape of Board meetings are scheduled to be shown on the third Thursday, and on the second and fourth Saturday on `Olelo Channel 49.

ADJOURNMENT: The meeting adjourned at 9:40 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant
Reviewed by: K. Russell Ho, Neighborhood Assistant
Final Review: Chair Alvin Au, Secretary Robert Tom

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, FEBRUARY 4, 2016
PAUAHI COMMUNITY CENTER

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:02 p.m., **with a quorum of seven (7) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang (departed at 9:38 p.m.), Jasmine Mancos (arrived at 7:14 p.m., departed at 8:53 p.m.), Dolores Mollring, Jonathan Saupe (arrived at 7:14 p.m.), Chu Lan Shubert-Kwock, Tom Smyth, Robert Tom, and Stanford Yuen.

Board Members Absent – None.

Guests – Firefighter Recruit Travis Takahashi, Firefighter Aubrey Burris, Firefighter Chris Takayama, and Firefighter III Mark Bates (Honolulu Fire Department); Captain Ben Mahi, Major Roy Sugimoto, Lieutenant Stephen Silva, Sergeant Mark Suaglar, Corporal Steven Matsuda, and Officer Alan Ibrao (Honolulu Police Department); Greg Payton (Safe Haven); Pat Lee (Honolulu Rail Transit Project); Sam Moku, Kristylee Rabaino, Taylor Silva, Daniel Valencia, and Nathanael Howard (Hawaii Pacific University); Allen Stack Jr. (Chinatown Improvement District); Nicole Reid (Arts District Merchants Association); Howard Lum and Kehaulani Lum (Chinatown Community Center Association); Elizabeth O'Brien (Hawaii Theater); Director George Atta (Mayor Kirk Caldwell's representative); Councilmember Carol Fukunaga; Laurel Johnston (Governor David Ige's representative); Senator Suzanne Chun Oakland; April Bautista (Representative Karl Rhoads representative); Liz Char, Sandy Pfund, Irene Banao, Milton Kikuchi, and Ty Fukumitsu (City and County of Honolulu); Donna Blanchard (Kumu Kahua Theatre); Lawrence Friedman, Rebecca Friedman, Ronald Higa, Mike Peacock, Kalawai'a Goo, Ena Aulan, Willis Moore, Gwen Abella, Willard Brown, Matt Bleder, Tyler Dos-Santos, Brooke Wilson, Sean Newcamp, and Jocelyn Belden. Eric Cristobal (Videographer); Executive Secretary Shawn Hamamoto, Uyen Vong, and Neil Baarde (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Chair Au and the Board members introduced themselves and wished the community a "Happy Chinese New Year!" at this time.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Firefighter I Aubrey Burris reported the following:

- January 2016 Statistics – There were 1 structure, 1 wildland, 1 nuisance, 3 cooking fires, with 5 activated alarms. There were 163 medical emergencies, 4 motor vehicle collision with pedestrians, 3 motor vehicle collisions, and 1 hazardous materials incident.
- Hiking Safety Tip – HFD often responds to hikers who are lost or injured. The Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife, list the following safety tips:
    - Inform others about the plan to hike and to notify others with the name and location of the trail and the expected time to return from the hike. This information will give rescuers accurate information on where to start the search.
    - Plan the hike to include sufficient daylight.
    - Take a fully charged cell phone when going on a hike as HFD relies on phone contact when trying to locate a lost hiker or obtain any information regarding an injured hiker. If capable, HFD will use the phone's global positioning system (GPS) to obtain a general location.
    - When hiking, stay on the trail. Most accidents happen when hikers leave the established trail and disregard warning signs. Staying on the trail greatly reduces the chances of having a serious fall or getting lost. For more information, visit www.dlnr.hawaii.gov/recreation.

Honolulu Police Department (HPD) – Lieutenant (Lt.) Stephen Silva reported the following:

- January 2016 Crime Statistics – There were 4 motor vehicle thefts, 8 burglaries, 89 thefts, 22 unauthorized entries into a motor vehicle (UEMV), 17 assaults, 4 sex assaults, 2 graffiti and 4 drug offenses, for a total of 2,577 calls for service.

- Pedestrian Safety Tips – Be safe and be seen. Wear bright/light colored clothing and reflective materials. Be smart and alert. Avoid dangerous behaviors. Always walk on the sidewalk. If there is no sidewalk, walk facing traffic. Do not assume vehicles will stop. Make eye contact with drivers. Do not rely solely on pedestrian signals. Look left, right, and left again before crossing a street. Obey traffic signals. Do not wear headphones or talk on a cell phone while crossing.

Mancos and Saupe arrived at 7:14 p.m.; Nine (9) members present.

Questions, comments and concerns followed:

1. Statistics – Tom noted that there was a dramatic decrease in the statistics and asked what the cause was. Lt. Silva responded that it is the typical pattern because the holiday season brings crime. Tom asked if there were any changes in foot patrol officers. Lt. Silva introduced Major Roy Sugimoto and it was noted that there has been an increase in foot patrols and commented that after the new recruits graduate they will be 4th watch. Major Sugimoto noted that there will be full coverage depending on the community with the most needs.
2. Chinatown Substation – Shubert-Kwock noted she has three (3) concerns and asked: 1) update on the cameras in the Downtown/Chinatown area, 2) the language access at the HPD substation, suggested having a Chinese interpreter or Chinese interpretation signs, and 3) asked if videos of drug activity can work in arresting a suspect. Major Sugimoto responded that videos are taken case by case, but if the videos are usable, it could be used. Sometimes it is hard to use videos but if needed, HPD can clear the picture with the help of the Crime Analysis Unit. Major Sugimoto introduced Captain Ben Mahi and noted that only 911 can assign an interpreter and commented that there are 26 cameras total, four (4) are out. Captain Mahi commented that there are at least three (3) officers at the substation on each shift and noted that one (1) of the Chinese speaking officers had addressed a sidewalk issue and noted that he will return to the substation with the concerns. Shubert-Kwock thanked HPD and noted she will spread the word.
3. Refrigerator – Mollring noted that cashiers have come up to her and noted that people at Sun Yat Sen Park have put a refrigerator there and have been seeing people pull electrical wires to operate the refrigerator. Captain Mahi asked if it was in the pavilion area. Mollring responded that it is next to an encampment. Captain Mahi will follow up.
4. Homeless Camps – Tom raised a concern about homeless people camping near his building and asked what he can do. Captain Mahi responded that being homeless is not a crime but if there is suspicious activity occurring call HPD. Also call HPD if the camp seems to be getting bigger and HPD will enforce the law with DPR and they will go through the process after the assessment is done. Tom also noted that on Kukui Street there is a methadone clinic across from St. Andrew's Priory and asked if HPD is aware that the clinic is near schools. Captain Mahi noted that HPD is aware of the clinic but commented that the concerns need to go through the City or the State. Saupe raised a concern about restaurants complaining about homeless people in front of the restaurant and near the police substation and asked if anything is being done. Saupe also asked about the homeless camping at the parks and noted that DPR said the park extends to the sidewalks. Captain Mahi responded that all efforts are being done to reduce fear and the perception of crime in the area and noted that HPD needs the community's help by reporting any suspicious activity. Captain Mahi noted that he has sat down with Corp. Counsel, DFM, DPR, and commented that they have done studies and noted that if they see homeless during the sweeps, they will try to get them into an outreach program.
5. Smith/Beretania Park – Chair Au noted that he remembers the opening of Smith/Beretania Park and commented that the Neighborhood Board asked DPR to close the park from 10:00 p.m. to 5:00 a.m., DFM accommodated the Board but ownership switched to DFM. Chair Au asked Captain Mahi to ask DFM and DPR to please enforce the rules again. Captain Mahi responded that he has been working with DPR and noted that they have been using all types of methods but at Smith/Beretania Park the park is closed from 7:00 p.m. to 7:00 a.m., the signage is still getting fixed and Captain Mahi noted that HPD is doing as much as they can to reduce the fear in the area. Yuen noted that HPD is good at moving the homeless but when they move, they move to sidewalks and Yuen commented that he does not know how to address the issue because they are still breaking the law. Yuen commented that he has a photo of two (2) homeless camps in the area hiding behind a car. Captain Mahi responded that HPD officers have to make tough decisions and noted that the main question is the dirt part of the park because many homeless have been known to move to the dirt parts of the park.

Hearing no objections, Chair Au took the agenda out of order to Discussion on Crime and Safety Concerns.

Discussion on Small Business and Neighborhood Crime and Safety Concerns – Chair Au noted that he has asked HPD to stay to answer the communities concerns and commented that as a group the entire community can solve all the problems.

- Funding – Mike Peacock noted that he is planning to open an office on King Street and Maunakea Street and commented that he had been homeless for five (5) years and during his recovery he was working with the Hawaii Information Consortium (HIC). Peacock commented that opportunity comes through funding and noted that the question is how come the homeless is the big issue that no one took the responsibility to get a correct count of the homeless to get funding for the issue. Peacock commented that the City needs to put the homeless where they feel safe. Mancos thanked Peacock for his comments and noted the Neighborhood Board is an advisory council and is trying to help. Chair Au commented that homelessness is a big systematic issue and everybody needs to work together.
- Environment – Don Murphy noted that he has been in the Downtown/Chinatown area for 29 years and commented that the environment is getting just as bad as before. No one wants to visit the area and agreed with Chair Au and commented that the Community needs to work together for a solution, because the real challenge is needing to move forward.
- Bike Lanes – Ron Higa raised a concern about a wheelchair using the bike lane on King Street when there was nobody on the sidewalk and asked if that is legal or not. Captain Mahi responded that Higa should have reported the incident and noted that HPD will address the issue because vehicles do not belong in the bike lane. Captain Mahi noted that HPD will come when called.
- Kumu Kahua Theatre – Donna Blanchard, Managing Director of Kumu Kahua Theatre reported that they are on the corner of Bethel Street and Merchant Street and noted that they exist to encourage local play writers to tell the stories of people here in Hawaii. Blanchard noted that they are a part of a new group with other merchants and commented that they are excited to be a part of the community and their ohana.
- Power Washing – Gwen Abella raised a concern about the City needing to power wash the bus stop across Winston Hale because it is filthy and would like it power washed.
- Sit/Lie Law Enforcement – Matt Bleder raised a concern about the homeless at Smith/Beretania Park and asked how HPD enforces the Sit/Lie laws. Captain Mahi responded that there are generally always stragglers when the park closes and commented that there are many suspicious activities and noted that the best way to help HPD is to make a report. Captain Mahi noted that HPD has been working with many City agencies and noted that if there are homeless on sidewalks it is illegal. Gifford Chang commented that he has worked closely with HPD at the Night in Chinatown Event and noted that he has no complaints regarding HPD.
- Filing A Police Report – Chair Au noted that the community has their own perceptions on how to properly file a police report and commented that people are afraid because of the number of steps that need to be taken and asked what the steps are to file a police report. Captain Mahi will follow up. Chair Au noted that everyone should be compassionate to each other.
- Systematic Approach – Kalawai'a Goo noted that she has seen many issues and noted that she was inspired by Mother Theresa's Peace Rally Speech and commented that she is disturbed by the Sit/Lie Laws because it targets a certain group of people. The purpose for the laws was to approach the issue from a supported view for better sustainable results.
- Safe Haven – Chair Au noted that Safe Haven has a hygiene center and commented that it has been accosted by those trying to help. Safe Haven needs the community's help and asked the Citizen's Patrols or HPD to check in from time to time.
- Smith/Beretania Park Clean Up – Lee Stack announced that the Chinatown Improvement District (CID) will be hosting a park clean up at Smith/Beretania Park on Saturday, February 20, 2016 and noted that CID has been working on a project for the park. Bob asked what time the clean up is and if anything is needed. Stack responded 8:30 a.m. and CID provides snacks and noted that those willing to help can bring their own gloves, paint rollers, and brushes.
- Thanks – Major Sugimoto thanked the Neighborhood Board for inviting them to the meeting to hear the good and the bad concerns. Major Sugimoto noted that he is excited to be moving forward and commented that he has noticed the merchants group is growing which is fantastic because the community and HPD are one (1) big organization. Major Sugimoto noted that HPD will stand with the group to help move forward and find a solution. Peacock thanked HPD and noted that he understands the Neighborhood Board is an advisory board, but if the people push the homeless, the homeless will push back and commented that the solution is a systematic approach. Mancos noted that she appreciates everyone's comments and explained that the Board Members are all volunteers that represent the community.
- Homeless – Nicole Reid noted that the homeless issue has been discussed a lot of times because the homeless population is growing and noted that a group of researchers and merchants have been meeting with City and State Officials and all are enthusiastic about moving forward. The group has been looking for a new meeting site and noted that a consistent way of communication is needed. Reid noted that there is always room for improvement and appreciates HPDs help.

Hearing no objections, Chair Au brought the order of the agenda back to Neighborhood Citizen's Patrol.

Neighborhood Citizen's Patrol (NCP) – Mollring reported that her group has been active but the neighborhood has been quiet. If anyone is interested in joining the NCP, the NCP meets on the Diamond Head side of Kukui Plaza at 8:00 p.m. every Tuesday night.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No representative was present.; No report was provided.

Safe Haven – Greg Payton reported the following:

- Residents – Safe Haven discharged 11 residents, admitted one (1), and returned one (1) homeless individual to Portland. It was noted that 60 people were helped get off the streets last year and noted that this year Safe Haven is trying to help 75 people.
- Grants and Aids – Safe Haven currently has two (2) grants and aids. One (1) with the Institute for Human Services (IHS) and Councilmember Carol Fukunaga. With the help of the grants and aids, Safe Haven was able to hire two (2) new staff members and helped place five (5) residents.
- Hygiene Center – The hygiene center with public toilets are open and it was noted that the center serves over 60 people a day and there has been no vandalism or graffiti damages. Payton noted that 20 out of the 60 people who use the hygiene center are people who are working but live in their cars.
- Housing and Urban Development (HUD) Funding – HUD funding is needed for renovations, Payton is hoping to speed up the process and hopes the project can be completed by October 2016. Payton noted that Safe Haven is responsible for counting the homeless in the Chinatown area and commented that Safe Haven has many volunteers that help serve over 200 people a year.
- Calling to Action – Payton announced that if anyone is willing to house the homeless in the Kaimuki, Kalihi, or Aiea areas, please call 529-4554 for information. Payton noted that Mental Health Kokua will take care of any damages occurred by the homeless residents.

Questions, comments, and concerns that followed: Renovations – Mollring thanked Payton and his volunteers for helping with the parade. Shubert-Kwock noted that the community needs more people like Payton and suggested that during the renovations to place the toilets in the front, the sink in the middle, and the showers in the back of the hygiene center. Payton responded that they will be going through major renovations which will require Safe Haven to raise money.

Honolulu Authority on Rapid Trasit (HART) – Pat Lee reported the following:

- Honolulu Rail System – The first set of train vehicles are expected to arrive in Honolulu soon. Ansaldo Honolulu (now Hitachi Rail USA) was awarded the $1.4 billion Core Systems Contract for the Honolulu Rail Transit Project to design, build, operate and maintain the train vehicles in addition to the operations and control center. Honolulu's rail system will be the first fully automated driverless urban rail transit system in the United States. The train cars are manufactured at the Hitachi Rail factory in Reggio Calabria, Italy and shipped to Pittsburg, California, for final assembly, then on to HART's Rail Operations Center in Waipahu.
- Rail Cars – HART's trains will consist of four (4) cars. Each four (4) car train can carry about 800 people. The car shell structure is 100% aluminum. There are two (2) types of car shells, one (1) type for the ends of the train and the other for the middle cars. The middle car shells have an opening at both ends to permit passengers to move between the four (4) car trains. There are three (3) doorways on each side of both types of rail cars. Each rail car is 59–1/2 feet long, 14 feet high and 10 feet wide. The car shell structure consists of a combination of over 40 different aluminum extrusion profiles. The aluminum extrusions are welded together. The weight of the aluminum car shell without doors, interior linings, seats or other equipment is approximately 14,000 pounds. HART's four (4) car trains will include Closed-circuit security cameras, Air conditioning, Free WiFi, Seating for 188 riders, and Space for surfboards, coolers, luggage, strollers, bicycles and wheelchairs.
- Construction Highlights – The latest construction highlights are more than 400 foundation shafts have been placed, more than 300 columns erected, more than 4,000 segments casted, and about six (6) miles of guideway completed to date.
- General Information – For general project information, traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Hearing no objections, Chair Au brought the agenda out or order to Hawaii Pacific University.

Hawaii Pacific University (HPU) – Sam Moku reported the following:

- New President – The new President of HPU is the former Dean at Villanova University, John Rotunda. Moku noted that everyone at HPU is excited to have him and commented that he is currently trying to settle into his new position and looking for a residence. Moku noted that Rotunda will visit the Neighborhood Board when he can.
- Western Association of Schools and Colleges (WASC) Accreditation – HPU has been going through the process of achieving accreditation through WASC. Moku noted that HPU should receive their score soon.
- New Year's Eve Event Report – There were roughly 7,000 youngsters at the event and noted that the event was a trial run to see if similar events can be scheduled. Moku noted that all aspects of the event passed the test and commented that the Harbor Division had positive feedback. Moku noted that everyone enjoyed the fireworks and Moku introduced some of the students who were in attendance because they are interested in civic engagement.

Questions, comments, and concerns that followed:

1. Meetings at Aloha Tower – Mollring asked the community if anyone objects to having the meetings at Aloha Tower. Moku noted that parking should be the only concern and commented that he will double check the boat days with the Harbor Division. Smyth noted that he lives across the street and is very happy. Smyth commented that Aloha Tower offers great facilities.
2. Ground Floor Updates – Saupe asked for an update on the retail shops on the ground floor of Aloha Tower. Moku responded that currently there is a Barnes & Noble Bookstore, Nashville's Bar, and Moku noted that HPU is slowly bringing in other retail shops. Moku noted that 90% of the dorms have been filled and there are still 12 retail spaces open. Shubert-Kwock commented that she is thankful for Moku offering the meeting room to the Neighborhood Board and noted that she is pleased with the building and asked Moku to double check the schedule.

Hearing no objections, Chair Au took the agenda out of order to Discussion of holding the Neighborhood Board Meetings at Aloha Tower.

Shubert-Kwock moved and Tom seconded that the Downtown Neighborhood Board hold their monthly meetings at Aloha Tower.

Discussion – Yuen noted that parking is an issue and the Board should wait to vote until Moku answers all the Boards questions. Chang agreed with Yuen and suggested tabling the issue until the Board has more information. Shubert-Kwock withdrew her motion.

Chair Au resumed the order of the agenda.

Chinatown Business and Community Association (CBCA) – Shubert-Kwock reported the following:

- Monthly Meetings – CBCA held it's monthly Chinatown Dim Sum Breakfast Meeting at Empress Restaurant. The topic of discussion was focused on crimes affecting businesses and residents. There are two (2) new events 1) St. Patrick's Day Festival with street closures, and 2) a new bar license for 2 Hotel Street.
- Noise Issues – A Bill that was introduced by Representative Rhoads has been supported by CBCA, Chinatown Gateway Tenants Association, Lynne Matusow, Lee Stack, and others.
- Honolulu Liquor Commission – CBCA would like the Honolulu Liquor Commission to remove the music license of repeated offenders and levy stiffer fines, limit continuation of hearings by the repeated offenders, and to add soundproofing to establishments wanting music and restrict low amp music with protection for the public.
- Chinatown Events – Last month, CBCA participated in the huge Chinatown Parade and supported the Night in Chinatown block party. The block party was the largest and best run block party in Chinatown. The event brought people of all ages together to celebrate Chinese New Year and the booths included City and non-profit groups to promote their missions. Shubert-Kwock noted that extending the block party to River Street was a smart and appropriate idea. CBCA will continue to address the crimes and drug issues in the Chinatown area. Recent police meetings with stockholders may provide added police support.
- Hale Waiolu – The community is disappointed that the City is not leading the Hale Waiolu project, allowing delays caused by politics and politicians, and to allow them to bully the community and granting special favors for only a few.

- Chinatown Open House – This Friday, February 5, 2016 will be Chinatown's Open House where lions will bless all the shops and society halls between 6:00 p.m. to 9:00 p.m. King Street, River Street to Nuuanu Avenue will be shut down. Shubert-Kwock suggested the community get there early to park in the Chinatown garages for only $3 from 5:30 p.m. until midnight.
- Next Meeting – The next CBCA Dim Sum Meeting is at Empress Restaurant on Tuesday, February 9, 2016 from 8:30 a.m. to 10:00 a.m.

Questions, comments, and concerns that followed: Noise Complaints – Saupe asked what noise complaints Shubert-Kwock was regarding. Shubert-Kwock responded that on Hotel Street there are repeat offenders that the Honolulu Liquor Commission is having issues with. The fines are not enough and the Liquor Commission should pull their permits or try to sound proof the area. Saupe noted that he does not see much support on the issue and commented that the Night in Chinatown Event was a really noisy event. Shubert-Kwock responded that she appreciates his opinions but noted the issue is that repeat offenders do not listen to the law.

Chinatown Improvement District (CID) – Lee Stack reported the following:

- Smith/Beretania Park Clean-Up – CID will be hosting a park clean up at Smith/Beretania Park on Saturday, February 20, 2016 at 8:30 a.m.
- Chinatown Directory – The complete Chinatown Directory is available at cidchinatownhawaii.org.
- Roaming Patrol Program – CID will continue to have signups for the roaming patrol program.

Arts District Merchants Association (ADMA) – Nicole Reid reported the following:

- Arts Culture Merchants Etcetera (ACME) – As ADMA is going under a few changes, they have decided to rename themselves to ACME. Reid noted that all are welcome to attend and commented that their focus is more business friendly.
- Chinatownnow.com – Chinatownnow.com has a list of merchants, restaurants, and event calendars.
- Coordinated Merchant Patrols – A patrol has started where the group walks through the business areas and it was noted that they are similar to the Waikiki Ambassadors.
- Noise Levels – The community needs an understanding of what measurement tools are being used because in the report it said "felt" the noise. Reid commented that the bar owners need metrics.

Chinatown Community Center Association (CCCA) – Howard Lum deferred his report at this time.

Michel's Pipe Services City Sewer Rehabilitation Project – Paul Mallory reported that 90% of Phase 1 has been completed. There are seven (7) lines left on River Street near North Beretania Street and Hotel Street. The part of the project that is Nimitz Highway will be finished by the end of March 2016. The Chinatown Phase 2 project should be completed by the end of April 2016. Phase 2 is 50% completed. Mallory noted that all the yellow areas on the map are incomplete.

Questions, comments, and concerns that followed:

1. Day Work – Chair Au noted that he assumes Michel's Pipe Services are only doing way work. Mallory responded that they did have a night variance at one (1) point but the residents from the Honolulu Tower had complaints and when they tried to renew the permit they could not work at night. Mallory noted that they are still in the process of renewing their permit. Chair Au asked what the areas are that still have work to be done. Mallory responded North Beretania Street, River Street, North Pauahi Street, Nimitz Highway, Maunakea Street, Merchant Street, Fort Street Mall, and North Hotel Street near Smith Street are all that is left to be done for Chinatown Phase 1. Chair Au asked about Phase 2. Mallory responded that they need the variance for Phase 2 and noted that he will need Board comments because with the project in place without Board comments is unfair. Mallory noted that contractually it is illegal and commented that he did not mean to disrespect anyone and noted that they were trying their best to blanket the area by foot. Mallory commented that he was guided to work at night to mitigate the issue.
2. Parking Concerns – Shubert-Kwock noted that she watched some of the workers and commented that they took up three (3) lanes. Shubert-Kwock noted that the vehicles parked on River Street and commented that it is causing concerns and asked Mallory to confine their space. Mallory responded that is why they need the variance to work at night and noted that they will try harder.

Mancos departed the meeting at 8:53 p.m.; Eight (8) members present.

Public Concerns

- New Mandarin Academy – Shubert-Kwock announced that there is a new Mandarin Academy that will teach Mandarin to all ages.
- Veterans Treatment Corporation – Mike Peacock announced that there will be a march to connect the Veterans with first circuit court to try and reduce the negative impact on the homeless. Peacock noted that he is trying to find a solution to be a positive part of the community.

ELECTED OFFICIALS

Mayor Kirk Caldwell's Representative – Director George Atta of the Department of Planning and Permitting (DPP) reported the following:

- Bus Pad Repairs – The Department of Design and Construction (DDC) has indicated that King Street between Bethel Street and Alapai Street is programmed for contract resurfacing under Rehabilitation of Streets, Unit 67 that will address the bus pad at King Street and Nuuanu Avenue. The bid advertisement is scheduled for October 2016. DFM will check to see if interim repairs are needed and will consult with DDC as appropriate.
- Indentation on the Corner of Hotel Street and Maunakea Street – DDC has indicated that Maunakea Street from Nimitz Highway to Vineyard Boulevard has been identified for contract resurfacing under Rehabilitation of Localized Streets, Phase 12D. Hotel Street from River Street to Richards Street has been identified for concrete resurfacing under Rehabilitation of Streets, Unit 65. Both projects will be subject to utility clearances and availability of funds so no construction date has been set at this time. DFM will check to see if interim repairs are needed.
- Hole on Corner of Beretania Street and Nuuanu Avenue – DDC has indicated that Beretania Street will be resurfaced under Rehabilitation of Beretania Street, Unit 64-R project. The project is targeted to restart construction in February 2016. Potholes will be patched by DFM until construction project resumes.

Questions, comments and concerns followed:

1. Construction – Chair Au asked if the construction on Maunakea Street will be occurring throughout the day or night. Director Atta will follow up.
2. Power Washing Schedule – Shubert-Kwock noted that the sidewalks have a strong smell of urine and asked the City to power wash the areas once a month and noted it is important to increase the power washing in the area. Director Atta responded that he has received the message and noted that Director Sasamura noted it has been a funding issue, but Director Atta will follow up.

Councilmember Carol Fukunaga – Councilmember Carol Fukunaga reported the following:

- Tackling Crime in Chinatown – Retailers and businesses in the Nuuanu/Bethel Street area have called for additional police presence in Chinatown to combat assaults and drug related incidents near Hawaii Theatre and along Nuuanu Avenue and Bethel Street, as well as break ins and vandalism near many small businesses.
- Public Health and Safety Updates – DFM reported on the cracks in the Nuuanu Stream wall. An Emergency Procurement Request was approved by the DDC on October 6, 2015, and transmitted to the Department of Budget and Fiscal Services (BFS) on October 12, 2015. A notice to proceed was issued on December 10, 2015 and the design phase for the repairs will be underway pending approval from the Army Corps of Engineers and the Department of Health (DOH).

Governor David Ige's Representative – Laurel Johnston reported that the Governor's Newsletter is in the back and noted that in the newsletter are excerpts from his State of the State Address. Johnston commented that the Department of Education (DOE) and Governor Ige have been working on cooling at least 1,000 classrooms.

Questions, comments, and concerns that followed: Funding – Shubert-Kwock noted that she likes the Governor's initiatives and commented that she is only disappointed because he did not ask for funds for early education. Shubert Kwock asked if Governor Ige can bring the Super Ferry back. Johnston responded that there are two (2) pieces, 1) a preschool open doors program through private contracts and commented that she hopes the Legislation can take a better look at the situation, and 2) more funding is needed for the early education programs. Johnston commented that there has not been any proposal for the Super Ferry and noted that the issue will take a while but will follow up with more information.

Senator Suzanne Chun Oakland – No representative was present.; a report was provided.

Representative Scott Saiki – No representative was present.; a report was provided.

Representative Karl Rhoads – April Bautista reported the following:

- Motorcycle Noise – Received a complaint regarding the noise from motorcycles along Hotel Street and Nuuanu Avenue. The law requires all motorcycles to be equipped with a muffler to prevent excessive noise. It is illegal to modify an exhaust system that will amplify or increase the noise. For these reasons, it is encouraged the community calls HPD if one sees he motorcycles license plate at the next time a disruption occurs.
- Hole Fronting Downbeat Diner – Received a complaint that there is a deep hole in front of Downbeat Diner where a tree should be planted. Representative Rhoads has contacted the City about the issue. Division of Urban Forestry (DUF) stated vandalism of the trees do occur. The empty tree well was recently replanted and is still intact.
- Smith/Beretania Park – Received a complaint regarding the homeless people occupying Smith/Beretania Park, specifically the area of grass between the park fence and sidewalk on Pauahi Street. Representative Rhoads has contacted HPD about the issue.
- Power Washing Schedule – Received an inquiry about the power washing schedule for Chinatown and power washing of bus stops. Representative Rhoads has contacted DFM regarding the schedule and DFM stated that it is on a rotational schedule with only one (1) crew between Saturdays and Wednesdays. Also, power washing of bus stops is not part of their job duty but will do so if particularly dirty. Representative Rhoads wrote a letter to the Mayor to increase the frequency of sidewalk power washing and to consider power washing bus stops again.
- Early Morning Wal-Mart Noise – Received a complaint regarding early morning noise from Wal-Mart delivery and rubbish trucks at the Downtown location. Representative Rhoads wrote a letter to the store manager of the Downtown location regarding the issue.
- Bills of Interest
    - House Bill 2249 – Relating to noise. The Bill establishes enhanced penalties for multiple noise violations or more during a single calendar year. The Committee on Consumer Protection and Commerce deferred the measure until Monday, February 8, 2016 at 2:00 p.m. in Conference Room 325.
    - House Bill 2248 – Relating to condominium governing instruments. The current law states that two thirds (2/3) of the voting interest is needed to pass an amendment. This Bill changes the voting requirements to allow the amendment of bylaws of a condominium association to 6% of owners who return a ballot, indicating a vote of either “yes” or “no”. When counting the ballots and 67% of the people voting “yes” at the end, then the proposed amendment is adopted at the end of the year. Note that this bill does not change the one (1) year period. The committee on Consumer Protection and Commerce deferred the measure until Monday, February 8, 2016 at 2:00 p.m. in Conference Room 325.
    - House Bill 1542 – Relating to Harbors. The Bill authorizes the director of transportation to adopt rules that regulate and limit noise at harbors, ports, roadsteads, docks, wharves, piers, quays, bulkheads, and landings of the State. Currently, no one has authority to regulate harbor noise.

NEW BUSINESS

Parking Rules and Street Usage Permit Presentation – Ty Fukumitsu presented the following:

- Contact Information – It was noted that Fukumitsu’s office is on the 2nd floor of the Frank Fasi Municipal Building and they are open Monday through Friday from 8:00 a.m. to 4:00 p.m. their telephone number is 768-8387 and noted that the Frequently Asked Questions (FAQ) regarding the permitting process can be found online.
- Permit Application Process – A permit is needed when performing work or when closing streets or sidewalks. Fukumitsu showed the permit application and the requirements for the application process.
- Typical Permits – The typical permits that are given are usually street usage, temporary loading zones, staging, lane or sidewalk closures, and road closures. The City looks for safety concerns, location, and the working hours and dates of the application of the permit.
- Review Process – The review process is a tiered process that looks into the parking situations, lanes/sidewalk/or road closures before the permit can be accepted.
- Fees – Fees are given when the application takes up parking meters. The metered space that is taken will cost $12 times the number of meters taken. Fukumitsu noted that only cash and checks are accepted and noted that checks are preferred. Fukumitsu noted that anyone wishing for a permit should apply early, because the average permitting process takes 10 – 20 minutes and the applicant should bring a drawing of the area and a copy of their traffic control plan.

Questions, comments, and concerns that followed:

1. Nuuanu Avenue – Saupe raised a concern about Nuuanu Avenue on the weekends because there are cars parked on both sides of the street and noted that it is detrimental to the businesses because the stalls are always taken and asked if the City could span out the number of permits given and commented that the movie trucks are not utilizing the better parking areas. Fukumitsu responded they are trying to limit the stalls that are being taken, but there are street closures that ban parking. Fukumitsu noted that there needs to be at least one (1) lane open for traffic flow and commented that some situations are tough. Saupe noted that eight (8) permits were given during the Christmas/Holiday Season and commented that people were always asking and looking for parking stalls. Saupe noted that he understands if someone is filming in the area and the street needs to be clear, but the stalls usually open up after 4:00 p.m.
2. Internal Audit – A resident noted that she had called HPD on Hawaii Theatre for taking two (2) spaces when their permit only allowed for them to take the stalls at the end of the day, but Hawaii Theatre did give half back. The resident noted that her point is that DPP is over permitting, and asked for an internal audit.
3. Fort Street – Mollring noted that someone is not using their permits on Fort Street and commented that the stalls are important but are vacant because they are not using the permits correctly. Fukumitsu responded that sometimes on Fort Street the permits are not legal and suggested calling the office the next time someone notices the signs because parking in the Chinatown require notices of at least 24 hours.

Chang departed the meeting at 9:38 p.m.; Seven (7) members present.

4. Loading Zones – Reid asked and Fukumitsu responded that they try not to give loading zone permits but by statute the City can only charge for the meters that are being used. Reid asked what information is required for signs. Fukumitsu responded that the sign needs to be readable, the dates, times, and the plan of the event. The permits are good for 30 days and needs to be renewed after if still continuing. Fukumitsu noted that there are no set rules for permitted loading zones and metered stalls but everything goes under review.

Community Update on the Proposed City Affordable Senior Rental Housing – Yuen noted that the discussion is the same as six (6) months ago and noted that he is concerned about the projects progress. Sandy Pfund noted that the process needed is for Council to pass a Resolution of the agreement to Michael's Project agreement. The rights were given but the EIS or EA is the issue. Funding is another issue because the developers need to apply for loans or funding. Pfund commented that City Council is still discussing the options and suggested holding meetings with the neighbors, but "neighbors" are being debated to whether it is only abutting neighbors. The agreement needs to move forward because the funding is due Tuesday, June 14, 2016. Many documents are still needed, the developer will not spend money until City Council is finished debating. Yuen asked for deadlines and asked for reports when they reach milestones because the Board has been uninformed and been receiving second hand information and asked to be sent the important deadlines and milestones to the Board. Pfund responded that the deadline is in June 2016, and many steps are involved and many more steps have been achieved and noted that there is no time to waste. The next step is with City Council but there are lingering complaints and concerns. Yuen noted that one (1) person overseeing the project is a concern because there has yet to be input from the community and asked if the Board can be a part of the meeting. Pfund responded yes. Councilmember Fukunaga noted that same issues were presented at the first hearing and noted that she had no control over the Resolution introduction but the concern is talking to the administration. What will be done is something that everyone can be a part of and suggested transparency findings at all meeting dates of the progress made and if there are complaints they can be addressed to the administration. Yuen asked to please keep Mayor Caldwell informed and asked if Executive Secretary of NCO Shawn Hamamoto to be in favor of the project and the neighbors meeting.

Due to time constraints the rest of the agenda was deferred to March 2016 meeting.

ANNOUNCEMENTS

Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, March 3, 2016, at the Pauahi Community Center at 7:00 p.m.

ADJOURNMENT – The meeting adjourned at 10:00 p.m.

Submitted by: Neil Baarde, Neighborhood Assistant II
Reviewed by: Sharon Baillie, Neighborhood Assistant
Final Review by: Chair Alvin Au

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www1.honolulu.gov

DRAFT REGULAR MEETING MINUTES
THURSDAY, March 3, 2016
PAUAHI COMMUNITY CENTER

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:03 p.m., **with a quorum of eight (8) members present.** Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang, Jasmine Mancos, Dolores Mollring, Jonathan Saupe, Thomas Smyth, Robert Tom, and Stanford Yuen.

Board Members Absent – Chu Lan Shubert-Kwock.

Guests – Laurel Johnston (Governor Ige's representative); George Atta (Mayor Caldwell's representative); Councilmember Carol Fukinaga; Lieutenant Baron Lee and Sergeant Lyle Fleck (Honolulu Police Department); Firefighter Captain Corey Silva and Firefighter I Jonathan Waltz (Honolulu Fire Department); Pat Lee (Honolulu Authority for Rapid Transit); Sam Moku (Hawaii Pacific University); April Bautista (Representative Karl Rhoads representative); Paul Mallory (Michels Corporation); Allen Stack Jr. (Chinatown Improvement District); Bill Hanrahan (Mental Health Kokua), Rick Taniguchi (Honolulu Marathon); Don Murphy and Joe Felix (St Patrick's Day Block Party); Wanda Akers, Chuck Bussler, Robynne Maii, Sandy Ma, Gwen Abella, Ronald Higa, Julian Ng, Fred White, Gavin Masaki, Iris Oda; and Sharon Baillie (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Chair Au and the Board members introduced themselves at this time.

PUBLIC SAFETY REPORTS

Honolulu Fire Departments (HFD) – Firefighter I Jonathan Waltz reported the following:

- February 2016 Statistics – There was 1 structure, 0 wildland/brush, 2 nuisance, and 1 cooking fire, with 7 activated alarms. There were 161 medical emergencies, 2 motor vehicle collisions with pedestrians, 1 motor vehicle crash/collision, 0 mountain rescues, 2 ocean rescues, and 3 hazardous materials incidents.
- Fire Safety Tip – Escape Planning:
    - Plan ahead and be prepared- Make a home escape plan.
    - Know at least two (2) ways out of every room.
    - Have an outside meeting place.
    - Practice your home fire drill twice a year during the day and night with everyone in your home and use two (2) ways out.
    - Teach children how to escape on their own in case you cannot assist them.
    - Close doors behind you as you leave.
    - If the alarm sounds- Get out and stay out. Never go back inside for people or pets.
    - If you have to escape through smoke, get low and crawl under the smoke.
    - Call the fire department from outside of your home.

Honolulu Police Department (HPD) – Lieutenant Baron Lee reported the following:

- January 2016 Crime Statistics – There were 12 motor vehicle thefts, 6 burglaries, 79 thefts, 16 unauthorized entries into a motor vehicle (UEMV), 26 assaults, 2 sex assaults, 2 graffiti and 6 drug offenses. A total of 2,577 calls were placed for service.
- Safety Tips – Automated Teller Machines
    - Whenever possible utilize Automated Teller Machines inside of businesses.
    - Avoid using street ATMs when it is dark.
    - Be aware of suspicious persons or vehicles in the area, trust your gut feelings.
    - Have your card out of your wallet or purse before approaching an ATM.
    - Do not write your personal identification number (PIN) on your card and do not keep it in wallet.
    - When entering your PIN, keep the numbers away from view of others
    - Do not withdraw huge amounts of cash, secure money as soon as it comes out of machine, and take your receipt

- If someone demands your money, do not fight, just give up the money to the suspect and get away.
- Report all incidents to the police as soon as possible.

- Community Policing – If anyone is interested in starting a neighborhood business security watch or a community citizen's patrol please contact Sergeant Deric Valoroso at 529-3695.

Questions, comments and concerns that followed:

1. Status – Au asked what the status was from the meeting last week on policing around the area and Lee answered that there is a lot more added foot patrol in the area, and effort to keep the homeless in compliance with the sit-lie protocol.
2. Assaults – Tom mentions that the statistics from last month are going down, except for assaults and wants to know what classifies an assault. Lee states that assault is when someone knowingly and intentionally injures another person, such as hitting that person.
3. Foot Patrols – Saupe understands that these extra foot patrols are temporary and would like to know if there is an end date. Lee states that it is hard to say, that these extra foot patrols will continue in the Downtown business district/Chinatown area and the only reason why they may get pulled away is if there is something else going on in the district where they are needed, such as in the Keeaumoku area.
4. Smith Street Park – A resident wants to know if the homeless are following the park closure rules, since he notices their belongs are still in the park. Lee says usually the homeless will take their belonging with them when they leave, however sometimes they will stash them in the bushes.
5. Stealing – Resident Akers says that she needs help going to the store and other places, and that the same man always steals from her. She does not believe she has any rights and she is afraid to say anything since he might attacks her. Lee advises that if this happens to please call 911 and to provide as many details as possible, such as what the person looks like, what they are wearing, if they know their name. They both go to the back in order to get more information on helping Akers situation.

Neighborhood Citizen's Patrol (NCP) – Mollring states that the group has been walking regularly, and it has been quiet lately. The NCP group is doing sign waving this Saturday, March 5, 2016 at Kekaulike Mall on King Street and everyone invited to join. Sign waving will start at 8:30 a.m. and there will be a pot luck afterwards provided by Weed and Seed.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No report was provided.

Safe Haven – Program Director Bill Hanrahan reported the following:

- What it is – Safe Haven is a 25 bed residence for the severely mentally ill homeless, and they also serve 40 people through a day program, for as many as 65 clients.
- Last month – Safe Haven was able to place one (1) person from their residence into permanent housing, along with two (2) people from their day program. One (1) resident had their parole revoked and was sent back to prison. They also facilitated one (1) persons return back to their family on the mainland.
- Hygiene center – There are public restrooms and showers at Pauahi Hale that serve around 60 people a day. The men's showers were down for a time last month, therefore they were only able to serve around 40 people a day during this time.

Honolulu Authority on Rapid Transit (HART) – Pat Lee reported the following:

- Completion –The Honolulu Rail Transit Project is moving forward with about seven miles of guideway construction completed.
- East Kapolei and Waipahu – Foundation and column work has been completed from Kualakai Parkway to Farrington Highway near Waipahu High School. Crews are continuing with guideway structure, track installation and raised median work.
- Kiewit – HART's contractor, Kiewit, has started installing new curbs and gutters along Farrington Highway for its roadway restoration work and this should be completed by end of summer.
- Operation center – The Rail Operations Center is almost completed and should be finished in April. The first four rail cars are arriving this month. Work on the stations in Waipahu and East Kapolei is starting.
- Pearl City/Aiea – Utility relocations, drilled shafts and foundation and column work are underway along Kamehameha Highway. The second "balanced cantilever" which will cross over H-1 is underway near the Waiau Power Plant and Sears Distribution Center. The H2R2 ramp preconstruction work is underway. The KHG station group construction contract (Pearl Highlands, Pearl Ridge and Aloha Stadium) is pending. Guideway work on the KHG segment should be completed by end of next year.

- Airport – Utility relocations are continuing on the Airport section. The guideway and stations contract is out for bid.
- Kalihi –Crews are preparing for the temporary relocation of utilities on Dillingham to widen the roadway on the makai side of the boulevard in preparation for guideway work down the center of the boulevard.
- Contact – For general project information, traffic updates, meeting notices and more information, please visit the website www.honolulutransit.org, call the project hotline at 566-2299 or email a question at info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – Mollring reported the following:

- Chinese New Year – Monday, February 8, 2016 was the year of the Monkey. On Friday, January 29, 2016 there was a Chinatown block party, with a Chinatown Parade where over 85 groups participated.
- Continued Celebrations – For the following two (2) weekends there was lots of celebrating taking place at the Chinese Cultural Plaza.
- Meetings – On Tuesday, February 9, 2016 the monthly CBCA meeting was held. Next month's meeting will be at Empress Restaurant and is scheduled for Wednesday, March 09, 2016 from 8:30 a.m. to 10:00 a.m. and is open to all who would like to attend.

Chinatown Improvement District (CID) – Allen Stack Jr. reported the following:

- Park clean-up – There was a park clean-up at Smith Street Park which was very successful. The park is maintained more now, making the clean-up easier. There was one (1) needle found on top of a building. The people that came out for the clean-up helped paint, clean up graffiti, rack, and pick up trash. Please come to a park clean-up if you ever have time.

Arts Culture Merchants Etcetera (ACME) – Jonathan Saupe reported the following:

- Reorganization – ACME is still in the midst of reorganizing the group formally known as ADMA.
- Meet and greet – There will be a mixer held on Friday, April 15, 2016 at 5:30 p.m. at the Rock Center on Hotel Street and Nuuanu Street. If you would like to attend or need more information please email jsaupe82@gmail.com
- Advertisement – There should be new flyers, maps, and brochures coming out into the community very soon highlighting the new and old merchants in the community.

Chinatown Community Center Association (CCCA) – No representative was present; no report was provided.

City Sewer Rehabilitation Project, Michels Pipe Services – Paul Mallory reported the following:

- Phase 1 – Chinatown area one (1) project is 100% installed. Three (3) lines need to be television inspected. This will take place during the day on Hotel Street between Fort Street and Smith Street and take one (1) to two (2) hours.
- Phase 2 – Chinatown area two (2) phase is mainly on North Beretania Street to the H1 freeway between Queen Street and River Street. This phase is scheduled to be complete by Sunday, March 27, 2016.
- Setbacks – There have been a few minor setbacks with night work and utilities. Some of the ownership of the utilities were in question so, they had to wait to figure out who was going to fix what. Bars were calling to ask if they could move around their work time because it was at night during their peak business.

Questions, comments, and concerns that followed: Thanks – Au thanks Mallory for being such great partners in working on this project. Mallory thanks him and says that the company tries not to let complaints escalate, and that they like to mitigate any situations before it gets worse.

Public Concerns

- Nashville Waikiki – Resident Ma states that she and her family have recently moved to the downtown area into Harbour Court across from Aloha Tower. Every Thursday, Nashville Waikiki, which is in Aloha Towers has a motorcycle promotion, where different motorcycle clubs come and they will ride their motorcycles revving the engines loudly down the road sometimes until 1:00 a.m. in the morning. This noise keeps people up and would like something to be done about it. She has contacted the police, liquor commission, and the offices at aloha towers. It was suggested she come to the neighborhood board to present her situation. Ma supports local businesses but wishes that this event would not be so late and loud. Ma will get in touch with Moku from HPU to exchange information on this situation.
- Fete – Married couple, Chuck Bussler and Robin Maii introduced themselves to the board and let everyone know that they will be opening a restaurant on Nuuanu Street and Hotel Street called Fete slated to open

either Friday March 18, 2016 or Saturday, March 19, 2016. They will be applying for a liquor license, however it is strictly for the food menu, there will be no loud music or entertainment to go along with that.

ELECTED OFFICIALS

Mayor Kirk Caldwell's Representative – Director George Atta of the Department of Planning and Permitting (DPP) reported the following:

- Halewai'Olu – The administration held meetings on Monday, February 29, 2016, Tuesday, March 1, 2016, and Wednesday, March 2, 2016 with representatives from different community organizations. Representative Karl Rhoads and Representative Suzanne Chun Oakland sent representatives to the meetings, as well as Councilmember Carol Fukunaga attended. There was great discussion about different idea that could be done/changed with project.
- Meetings – There will be two (2) public meetings at the Mayor's Conference room if anyone would like to hear more about the project and put their ideas in. The first one will be Tuesday, March 8, 2016 at 4:30 p.m. and the second one will be Monday, March 10, 2016 at 4:30 p.m.
- Title VI – The 2016 Title VI program report public hearing will be held on Friday, April 8, 2016 at 9:30 a.m. at the Mission Memorial meeting room. The Department of Transportation Services Public Transit Division (DTS-PTD) receives federal grant money every year for public transit services, and therefore is required to give a report every three (3) years on how they are improving their transit services to all citizens on Oahu.

Questions, comments and concerns followed:

1. Senior housing – Yuen would like to know if anyone from the City will be at the meeting to present and give updates on the Senior Rental Housing project. He believes that there should be a timeline on what is happening to show progress, because if there is nothing then no progress has been made. Au suggests that a representative from the board be present as the Senior Housing project meetings. Atta will take concerns back to the Mayor and Managing Director.
2. Traffic signals – Mollring said at Hotel and Maunakea and at Hotel and Smith that the buttons on the traffic signals have been removed, the round circular thing that holds the button is no longer there so people cannot press the buttons to cross the street.
3. Sufficient – Yuen expressed his satisfaction with the Feng Shui report prepared by Michaels Development Company, which had flyers and updates for the board members. He states that back in November 2015 the board had voted to support this project.

Councilmember Carol Fukunaga – Councilmember Carol Fukunaga reported the following:

- Downtown TOD plan – Resolution 15-252 which includes the Final Downtown Transit-Oriented Development (TOD) plan will be heard by the Council's Zoning and Planning Committee at the end of March 2016.
- Aggressiveness – There is a need to have a much more aggressive plan in updating the water, sewer, and road infrastructure. We should take advantage of the transit development to build more permanent supportive housing as well as affordable housing on city and state lands which are in the TOD areas.
- Iwilei – The area between ORNL and the Senior Development project is a potential area where there can be urban rest stops and permanent supportive housing. The goal would be to have these types of facilities in areas where people would be able to thrive and take advantage of the transit systems.

Questions, comments and concerns followed:

1. Hilo Hattie – Tom asked if there was consideration in using Hilo Hattie as a potential place for these services, in which Fukunaga replied that land was owned by the Weinberg Trust and that they were not interested at that time in using that area as a city or state program site. They need to use their revenue producing areas in order to help sustain all the good work and programs they have elsewhere.
2. Sidewalks – A resident mentioned that he was walking in Iwailei by Kmart next to the Salvation Army and said that there were tents set up all along the sidewalk, Fukunaga states that the Department of Facilities and Maintenance (DFM) had previously come through and cleaned up the area. She will report the latest finding.
3. Methadone clinic – Tom asked if there was any variance in the methadone clinic next to his building at Capital Place, being so close to schools. Fukunaga is unaware but will work close with Representative Rhoades and Representative Aseki to find a safe place for such services to be provided.

Governor David Ige's Representative – Laurel Johnston reported the following:

- Taxes – The state is behind about one (1) week right now in processing tax forms, trying to mitigate any tax fraud. Please do taxes sooner than later so process time is not delayed.

- Homelessness – The Governor is aware of the homeless problem and will probably issue another Emergency Proclamation, this is the only way to streamline processes and get through procurement with moving money around.

Senator Suzanne Chun Oakland – No representative was present; a report was provided.

Representative Karl Rhoads – April Bautista reported the following:

- Leaking pipe – Rhodes noticed there was a leaking pipe at Smith-Beretania Park and forwarded the issue to the City. The latest update is that a work order has been places to repair the leaking pipe.
- Signage – Rhodes requested that there be signs placed throughout Chinatown directing people to the public restrooms at Pauahi Hale.
- Parking meter – There is a broken parking ticket machine at Propark Inc. parking lot at the corner of Beretania Street and Nuuanu Avenue. The machine has run out of paper, and customers were unable to get ahold of office to report this issue. Rhoads office has forwarded the complaints they have received about this to the company.
- Art of the Capital – Art of the Capital will be on Friday, April 1, 2016 from 5:00 p.m. to 7:00 p.m. and Representative Karl Rhoads office will be providing light refreshments.
- Bills of interest – HB 1516 would clarify that the internet against children fee which is used to investigate child pornography is to be assessed against every defendant who is convicted of a misdemeanor or felony regardless of the nature of the offense. HB 2121 would appropriate moneys from the general fund for civil legal services for low- and moderate-income persons to be purchased by the judiciary.

NEW BUSINESS

Community Update on the Proposed City Affordable Senior Rental Housing – No report was provided.

Questions, comments and concerns followed: Sufficient – Yuen finds the building rendering attractive that was provided to Au in an email and he moves for the board to support the plan.

Yuen moved and Saupe seconded that the Downtown Neighborhood Board No. 13 support the Michaels Development Fung Shui rendering concept. The motion was adopted by UNANIMOUS CONSENT, 8-0-0. (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

Board of Water Supply Honolulu Water System Improvements in the Downtown Neighborhood Board Area – Iris Oda reported the following:

- Main replacements – Main upsize replacements of 24 inches would be from River Street all the way down to Kalakaua Avenue along Ala Moana Boulevard.
- Other mains – There are a few 16 inch and 20 inch main upgrades planned for along Cooke Street, Pensacola Street, and Piikoi Street.
- Downtown – The downtown neighborhood boundaries are between River Street and Cooke Street. They are looking to upgrade to a 24 inch main which would connect from King Street and run through Nuuanu Stream. If there are difficulties, the alternative alignments could be down River Street that connects to another main that crosses Nuuanu Stream. As well as if this does not work another alternative would be along Nuuanu Avenue. Aloha Tower Drive would be the next alternative, then along Nimitz Highway would be an alternative as well for the main replacement routes.
- Potential start – Potentially the project would start in the year 2020 to replace the aging water mains. The draftee is outside of the six (6) year CIP, the design and construction would come later.

Questions, comments and concerns followed:

1. Night work – Au stated that night construction could potentially disrupt the over 10,000 resident's livelihood, as well as the businesses during the day and would like to see a number provided so that these people can call about their concerns. Oda stated that with every project they do, they inform the residents and provided a number to call. Resident now can call the Board of Water Supply (BWS) and someone would pick up day or night.
2. Shutdown – Saupe wants to know how much of a traffic shutdown effort would take place, Oda says there are no plans right now, but they will have traffic plans in the future and usually when there are projects like this there is one lane traffic, allowing ingress and egress to places.
3. Rail – Tom mentions that the rail is coming in 2020 as well and this would be a perfect storm with the two different projects going on Oda says that they try to facilitate and coordinate with different projects that are going on.

4. Necessary – Yuen notes that replacing aging pipelines is a necessary evil and that he appreciates being informed, and would like the BWS to come back and give updates. Oda states that she would be happy to come back to give updates as plans progress on the project and gets further along.

St. Patrick's Day Block Party – Don Murphy (Owner of Murphy's) and Joe Felix (General Manager, O'Toole's Irish Pub) reported the following:

- Celebration – There will be a St. Patrick's Day Block Party, Thursday, March 17, 2016, starting at 11:00 a.m. outside/near Murphy's Bar and Grill.
- Street closures – King Street to Nimitz Highway will be closed, as well as Marin Lane, and Merchant Street between Nuuanu Avenue and Bethel Street. Closures will start around 5:30 p.m. lasting until 10:00 p.m.
- Music and food – Live music will stop playing at 10:00 p.m. The parking lot at Murphy's will have a lot of different food to eat, there will also be a Keiki tent from noon to 6:00 p.m. with crafts for the children.

Questions, comments and concerns followed: Conscientious – Yuen thanks Murphy's and O'Toole's for making a great effort to mitigate any foreseeable issues when they put on these events. Yuen has been to some of these block parties and there is always a great time to be had.

Yuen moved and Mancos seconded that the Downtown Neighborhood Board No. 13 support the St. Patrick Day Block Party. The motion was adopted by UNANIMOUS CONSENT, 8-0-0. (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

Annual 2016 Honolulu Marathon Half Marathon (Hapalua) – Rick Tanaguchi reported the following:

- Half marathon – On Sunday, April 10, 2016
- Participants – There are 6,300 people signed up for the event thus far, and of that 5,000 are local participants.
- Street closures – Nimitz Highway will be closed from 4:30 a.m. to 7:30 a.m., a special traffic lane will be made from Smith Street to Aloha Tower to accommodate Aloha Tower requirements as well as HPU housing requirements allowing ingress during those times. Marin Towers has access throughout the event on King Street, and during the event they are only able to exit through Maunakea Street. Some residents at Harbour Court and Harbour Square will be locked in from 5:30 a.m. to 7:15 a.m.

Questions, comments and concerns followed:

1. Notifications – Au wants to know if the resident manager of Harbour Court knows about these closures and if he is communicating this to the residents, in which Tanaguchi states that the resident manager knows and has sent notices to the residents in the past about these closures.
2. Fireworks – Saupe asks if this year there will be a firework start, and Tanaguchi says there will be no firework start, that is only for the Honolulu Marathon which takes place the second Sunday in December.

Discussion to Schedule the Downtown Neighborhood Board meeting at the Hawaii Pacific Aloha Tower – Sam Moku reported the following:

- Right space – People from the board should come down to Aloha Towers to check out the spaces to see if it is the right place to be in. There will be a one (1) year test run with no fees, and would be on the first Thursday of each month.
- Space – The space where the board meetings would take place would be in multi-purpose room #2, which is right next to two (2) 24/7 security office located in the tower itself. The restroom is right next door as well for easy access.
- Parking – Parking would not be free. There would be a $5 dollar fee after 4:0 p.m., however they can set aside some spots for Olelo and some stalls for handicap as well.
- Boat days – There is a boat day on Thursday, October 6, 2016, where all of the parking is closed off and homeland security takes over, therefore parking may be an issue for that meeting day.

Questions, comments and concerns followed: Subcommittee – Au wants to form a subcommittee to check out the space at Aloha Tower. Mancos, Saupe, and Smyth volunteer to go check out the space. Au would like to be at the new meeting space by June, so long as the Neighborhood Commission Office approves the facilities contract once the neighborhood board approves the move.

Mancos moved and Mollring seconded that the Downtown Neighborhood Board No. 13 support the forming of a subcommittee to check out the Aloha Towers meeting space. The motion was adopted by UNANIMOUS

CONSENT, 8-0-0. (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

Discussion to amend the name of the Downtown Neighborhood Board as the Downtown Chinatown Neighborhood Board

- Signatures – Au notes receiving rules and regulations from the Neighborhood Commission Office in order to change the board's name. One (1) stipulation needed, is a petition with 100 signature on it. Mancos states we should table the discussion until the next month's meeting when board member Shubert-Kwock is back, since she is the one who really spearheaded the effort.

APPROVAL OF January 7, 2016 and February 4, 2016 REGULAR MEETING MINUTES – **The Board approved the January 7, 2016 and February 4, 2016 meeting minutes by UNANIMOUS CONSENT as amended, 8-0-0.** (**AYE**: Au, Mancos, Mollring, Saupe, Smyth, Tom, Chang, and Yuen; **NAY**: none; **Abstain**: none.)

February, Page 2: "Mollring noted that cashiers have come up to her and noted that people at Sun Yat Sen Park have put a refrigerator there and have been seeing people pull electrical wires to operate the refrigerator." **Should read**, "Mollring noted that cashier has come up to her and noted that people at the park by the YMCA and across from Royal School have put a refrigerator there and saw people pull electrical wires to operate the refrigerator."

February, Page 4: "Safe Haven currently has two (2) grants and aids. One (1) with the Institute for Human Services (IHS) and Councilmember Carol Fukunaga. With the help of the grants and aids…" **Should read**, "Safe Haven currently has two (2) grants-in-aids. One (1) is with the Institute for Human Services (IHS) through funding from Councilmember Carol Fukunaga. With the help of the grants-in-aid…"

February, Page 9: "Yuen asked to please keep Mayor Caldwell informed and asked if Executive Secretary of NCO Shawn Hamamoto to be in favor of the project and the neighbors meeting." **Should read**, "Yuen asked to please keep Mayor Caldwell informed and asked if Executive Secretary of NCO Shawn Hamamoto could take this message back to mayor and managing director."

February, Page 9: Should read, "… Councilmember Fukunaga asked to respond to NB Member Yuen's comments as they pertained to City Council action. She noted that she had no control over the introduction of the resolution (authorizing the Mayor or his designee to enter into a development agreement between the City and Halewai'olu Senior Development LLC), as specified in Department Communication 758 (City Council Docushare listing); however, she was aware that the City Council Chair wanted community concerns addressed by the developer.

BOARD BUISNESS AND REPORTS

Chair's Report – Au stated he received an email from the Downbeat Diner and Lounge owner about making a presentation at April's meeting on an even titled, "Sailor Jerry Festival" on Saturday, June 11, 2016. HART will have a presentation at April's meeting about the segment work that will be going on in the neighborhood.

Neighborhood Commission Updates –Tom shares that there are discussions pertaining to City's neighborhood boards. There may be some major structure changes to neighborhood boards, who votes, who is on the board, and how big the boards are. These are ongoing between City Council and Administration, nothing has been confirmed, but there may be some major changes in the neighborhood board structure within the next six (6) months.

Treasurer's Report – Treasurer Mollring reported a remaining balance of $154.95. The report was filed.

ANNOUNCEMENTS

Next Meeting – The next Downtown Neighborhood Board No. 13 meeting is scheduled for Thursday, April 7, 2016, at the Pauahi Community Center at 7:00 p.m.

ADJOURNMENT – The meeting adjourned at 8:55 p.m.

Submitted by: Sharon Baillie, Neighborhood Assistant I
Reviewed by: Neil Baarde, Neighborhood Assistant II
Final Review by: Chair Alvin Au

DOWNTOWN-CHINATOWN NEIGHBORHOOD BOARD NO. 13

NEIGHBORHOOD COMMISSION • 925 DILLINGHAM BOULEVARD, SUITE 160 • HONOLULU, HAWAII, 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET http:///www.honolulu.gov/nco

REGULAR MEETING MINUTES
THURSDAY, JUNE 1, 2017
ONE ALOHA TOWER, MULTI PURPOSE ROOM 2

CALL TO ORDER – Chair Alvin Au called the meeting to order at 7:03 p.m**., with nine (9) members present, establishing quorum**. Note: This nine (9) member Board requires five (5) members to establish a quorum and to take official Board action.

Board Members Present – Alvin Au, Anthony Chang, Dolores Mollring, Bob Tom, Stanford Yuen, Kevin Lye, Lori McCarney, Chu Lan Shubert-Kwock, and John Donaldson-Selby.

Guests – Captain Kenneth Kahahawai (Honolulu Fire Department); Sergeant Harold Chi (Honolulu Police Department); Laurel Johnston (Governor Ige's Representative); Councilmember Carol Fukunaga; Megan Muramatsu (Mayor Caldwell's Representative); Pat Lee (Honolulu Authority for Rapid Transportation); Glen Young (Senator Karl Rhoads' Representative); Representative Daniel Holt; Honglong Li (Department of Transportation Services); Director Sandy Pfund (Department of Land Management); Executive Director Marti Townsend (Sierra Club); Lee Stack (Chinatown Improvement District); Karen Seddon and Stuart Kritzen (Michaels Development Corporation); Amy Lum and Michelle Bartell (American Savings Bank); Bill Hanrahan (Mental Health Kokua); John Shead, Randy Chu, Peter Lloyd, Kathleen Lee, Raul Torres De Si, Rick Keene, Ronald Higa, Anthony Marlin, David Amodo (videographer); and Sultan White (Neighborhood Commission Office).

INTRODUCTION OF BOARD MEMBERS – Chair Au and the Board members introduced themselves. Chair Au reminded the individuals present to speak into the microphone when wishing to speak.

PUBLIC SAFETY REPORTS
Honolulu Fire Department (HFD) – Captain Kenneth Kahahawai reported the following:

- May 2017 Fire Statistics – There were 6 nuisance fires, 1 cooking fire, and 1 activated alarm (no fire). There were 172 medical emergencies, 2 motor vehicle collisions with pedestrians, 1 hazardous materials incident, and 3 motor vehicle crashes/collisions.
- Fire Safety Tip – Smoke Alarms: Working smoke alarms save lives by decreasing the risk of dying in a home fire in half. Smoke alarms should be installed and maintained in every home. Test smoke alarms at least once a month using the test button. If the smoke alarm has a nine-volt battery, change it annually. The entire smoke alarm should be replaced every ten years. The HFD will conduct its Smoke Alarms for Everyone or SAFE program on Tuesday, June 6, 2017. If you are interested in in receiving a free SAFE smoke alarm installation, please call 723-7168 for more information.

Honolulu Police Department (HPD) – Sergeant Harold Chi reported the following:

- May 2017 Crime Statistics – There were 3 motor vehicle thefts, 15 burglaries, 68 thefts, 17 unauthorized entries into a motor vehicle (UEMV's), 15 assaults, 5 sexual assaults, 5 graffiti incidents and 6 drug offenses. A total of 2,367 calls were placed for service.
- Safety Tip – Hurricane Season: Hurricane Season has started and will last through November. Families should prepare a Go Kit (if forced to leave the home to a shelter) and a Stay Kit (essentials for staying at home). Have plenty of water, medicine and flashlights. Have a rain catcher if possible. Listen to the radio for State safety broadcasts and have extra batteries.

Questions, comments and concerns that followed:

1. Comment on Statistics: Shubert-Kwock thanked HPD for their high number of drug arrests in April 2017, but mentioned that there seemed to be a lot of thefts and burglaries still. Sergeant Chi said that there are many hidden places in Chinatown that makes it easy for burglars to hide. The best thing to do is have good neighbors and secure your home as best as possible.
2. Arrests or Calls: Lye asked if the sheet represented arrests or calls. Sargeant Chi said that the arrests statistics are usually higher.
3. Purse Snatch: Mollring thanked HPD for the Kamali'i park cleaning. She said that she witnessed a purse snatching. Sergeant Chi said to be careful at night, and walk in lit areas. Make sure not to leave your purse

unattended, in a shopping cart for example. Be aware. If a purse snatching does occur, be sure to get a good description and report it to the police.

4. Homelessness: Tom asked if the expansion of the sit-lie ban would drive more homeless people back into Chinatown. Sergeant Chi said that his officers address homelessness daily. He said that homeless people drift to where HPD takes no action.

Neighborhood Citizen's Patrol (NCP) – Dolores Mollring reported that they have not seen any prostitution or drug dealing during their walks.

Public Concerns

- 2017 Best of Honolulu Festival: Raul Torres reported that on Saturday, August 5, 2017 from 10:00 a.m. to 5:00 p.m. at the Honolulu Hale Civic Grounds, American Savings Bank will present the 2017 Best of Honolulu Festival. It is a free, family-friendly event featuring 'ono food, keiki zone, entertainment and a marketplace. There will also be a fun run for the adults and kids. They estimate 500 to 1,000 people will attend. Find free parking at the Frank Faci Municipal Building parking garage.
- Chinatown Improvements: Honglong Li reported that the Department of Transportation Services (DTS) plans to make the district more pedestrian/bike friendly. They will install 14 wayfinding signs. The signs will direct pedestrians to popular attractions in Chinatown. They will begin the additions on Wednesday, June 7, 2017 and end mid-July 2017. Construction hours are 8:30 a.m. to 3:30 p.m. Monday to Friday. They will never close more than one (1) traffic lane. If you have further questions call 768-5472.
- River of Life: Yuen commented that the River of Life is outgrowing their current space and need a new location. He suggested the City help River of Life move with grants or a land exchange. He commented that moving River of Life would also move homeless people out of Chinatown.
- American Savings Bank: Yuen suggested that the City invest in the restaurants and small businesses in Chinatown to prepare for the opening of American Savings Bank, which will be the neighborhood's biggest business entity. American Savings Bank will bring in 600 new employees and potential customers to Chinatown.
- Chinatown Functions: Peter Pao, the owner of a new sandwich shop in Chinatown, raised concerns about not being notified when functions open. He said that promoters should notify shop owners before hosting block parties in Chinatown.

NEW BUSINESS

Information Update on Halewai'olu Senior Residence Development – Karen Seddon reported that they are completing due diligence. They need to complete HRS Chapter 6E and the National Historic Preservation Act in order to move forward. She mentioned that the cost of construction has gone up, so they are working on securing funding. There will be 150 units. 120 will be single bed units. 30 will be double bed units. There are planning to have 19 floors with 10 units per floor. Right now they are working on the concept, efficiency and costs. The first funding round will be in the first quarter of 2018 with construction beginning late 2019.

Questions, comments, and concerns followed:

1. National Prehistoric Preservation Act: Shubert-Kwock asked what the National Historic Preservation Act entails. Seddon responded that it is a federal architectural survey process. They must fill out paperwork and hold public meetings.
2. Community Center: Shubert-Kwock mentioned that the public does not want to lose the community center. Seddon answered that they are still going strong, and that they may add more affordable units to secure more funding.
3. Fence: Lye asked and Seddon pointed out where the fence was on the diagram.
4. Sense of Place: Lye asked if the architecture of the building would blend into Chinatown's aesthetic. Seddon answered that it would, and that the concept drawing is not completely finished.
5. Approval: Yuen reminded the Board and the public that two (2) years ago the Board endorsed the conceptual plan.

Director Sandy Pfund reported that the Department of Land Management is supporting and strongly encouraging Michaels Development Corporation to complete Halewai'olu. There are delays, but they are working through them. They will share details with the community as updates occur. An Environmental Assessment (EA) will be conducted, which will be open to community input. The EA will be shared with the Board.
Questions, comments, and concerns followed: Zoning: Shubert-Kwock asked if the height limit could change for the building. Director Pfund said that they were trying to get as many units as possible. They have not yet reached the

height limit, but until due diligence is completed they are not sure how much taller they can make the building.

Noise Variance Application for American Savings Bank Construction – Director of Communications & Community Advancement Michelle Bartell reported that they have a noise variance on 300 North Beretania Street on Friday, June 9, 2017 from 6:00 p.m. to 9:00 a.m. They are pouring 600 cubic yards of concrete. They must do it at night since there are a lot of trucks. Even though they have a long block of time for the noise variance, they only expect the pour to last six (6) to eight (8) hours. They sent letters to immediate residents.

Questions, comments, and concerns followed:

1. Fair Notice: Chair Au said that it is important to give fair notice to all of the residents in the affected area. Director Bartell gave notice to residents in the immediate impact area, but acknowledged they could have expanded the radius of who they contacted.
2. Time: Shubert-Kwock asked if the pour would last 15 hours. Director Bartell answered that even though they have 15 hours allotted, they will only use six (6) to eight (8) hours.
3. Finish Earlier: Shubert-Kwock asked if they can finish the pour by 10:00 p.m. by starting earlier. Director Bartell said that if they moved it up earlier it would affect rush-hour traffic. They will be done between 1:00 a.m. and 3:00 a.m. It will not affect businesses, but unfortunately will affect residents.
4. One Night: Yuen asked and Director Bartell answered that the pour would only last one (1) night. Yuen stressed it is important to be transparent and open with the community.
5. Mauna Kea Street: Chair Au asked and Director Bartell answered that the trucks will not park on Mauna Kea Street.

Resolution to Protect Oahu Groundwater Resources from Red Hill Bulk Fuel Storage Tanks – Executive Director of Sierra Club Marti Townsend reported on water security at Red Hill. The Board of Water Supply (BWS) has informed Sierra Club that in the event of a catastrophic fuel release at Red Hill, the neighborhoods that get water from the Halawa Shaft and Moanalua Wells would be affected (metropolitan Honolulu area spanning Moanalua to Hawaii Kai, which has approximately 40,000 residents and visitors). Passing the following resolution would demonstrate solidarity and support for protecting our precious groundwater and drinking water resources from potential fuel contamination at Red Hill:

Resolution to Protect Oahu's Groundwater Resources from the Red Hill Bulk Fuel Storage Tanks

WHEREAS, clean, unpolluted drinking water is a basic human right and held in trust and to be protected for the benefit of the people pursuant to Article XI, Sections 1 and 7 of the Hawai'i State Constitution; and

WHEREAS, the Red Hill Facility contains twenty tanks, each able to hold 12.5 million gallons of fuel that are located 100 feet above a sole source aquifer designated by the U.S. Environmental Protection Agency in 1987 as a major source of drinking water for O'ahu residents and visitors; and

WHEREAS, on January 13, 2014, the U.S. Navy reported a 27,000 gallon leak of jet fuel from its Red Hill Bulk Fuel Storage Facility; and

WHEREAS, since its construction in the 1940s, the U.S. Navy's Red Hill Bulk Fuel Storage Facility has leaked more than thirty times, releasing at least 155,000 gallons of fuel into the environment; and

WHEREAS, water samples from the groundwater near the tanks show traces of petroleum contaminants that are hazardous to human health; and

WHEREAS, the U.S. Navy, the Defense Logistics Agency, the U.S. Environmental Protection Agency, and Hawai'i State Department of Health agreed to an Administrative Order on Consent that is expected to take at least twenty-two years to complete; and

WHEREAS, the Administrative Order on Consent does not guarantee that the tanks will not leak in the future or that future leaks can be cleaned up; and

WHEREAS, the Downtown-Chinatown Neighborhood Board No. 13 would be directly affected if the sole source aquifer beneath the Red Hill Facility were contaminated with fuel; now, therefore
BE IT RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 is very concerned about where these tanks are located in relation to a sole source aquifer on O'ahu; and

BE IT FURTHER RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 supports precautionary measures to be taken to ensure there is no additional leaks or contamination of our groundwater resources now and into the future; and

BE IT FURTHER RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 deems the twenty-two year timeline of the Administrative Order on Consent to be too long to ensure the safety of our groundwater and drinking water resources; and

BE IT FURTHER RESOLVED, that the Downtown-Chinatown Neighborhood Board No. 13 urges the Navy, the Defense Logistics Agency, the Department of Health, and the Environmental Protection Agency to take urgent action to protect O'ahu's groundwater resources and find a solution to upgrade, retrofit, or decommission the Red Hill Bulk Fuel Storage Facility; and be it

ORDERED, that copies of this resolution be transmitted to the Governor, the Director of the Department of Health, the members of the Honolulu City Council, the members of the Hawai'i State Legislature, and the Hawai'i Congressional delegation.

Questions, comments, and concerns followed:

1. Other Boards: Chair Au asked which Boards have passed the resolution so far. Executive Director Townsend said that the Manoa Board has passed the resolution. The Downtown-Chinatown Board is the second to hear the resolution.
2. Lawsuit: Chair Au asked if Sierra Club is filing a lawsuit. Executive Director Townsend said that they have only initiated the lawsuit process. They have asked the Department of Health (DOH) to rewrite regulations for water tanks.
3. Public Pressure: Shubert-Kwock asked if the resolution would only add pressure. Executive Director Townsend answered that it would add public pressure, which worked beneficially for other cities who dealt with similar problems.
4. Timeline: Shubert-Kwock asked the timeline on their plan. Executive Director Townsend answered that they would get all the Neighborhood Board resolutions by the end of summer 2017 and continue community outreach to 100,000 people.
5. Construction: Tom mentioned that there are trace elements in the water already, so if construction started immediately how long would it take for the tanks to be fixed. Executive Director Townsend said that was a question for the Navy. He said that the Navy could do more to be faster and more protective, but that would cost more money. By the end of 2017 they will know when it will be completely finished.
6. Priority List: McCarney asked if anyone was resisting or if they are trying to push the issue up the priority list. Executive Director Townsend replied that they are trying to move it up the priority list.
7. Decommissioned: Lye asked if it was likely that the tanks would be decommissioned. Executive Director Townsend said that would only happen if the tanks are not repaired.
8. Congressional Delegation: Yuen asked if they have contacted the Congressional delegation. Executive Director Townsend said he has, and that they have all been supportive.
9. Congressional Delegation: Chair Au and Yuen suggested that when Sierra Club meets with the Navy to have members of the Congressional delegation present.

Shubert-Kwock moved and McCarney seconded that the Downtown-Chinatown Neighborhood Board No. 13 support the Resolution to Protect Oahu's Groundwater Resources from the Red Hill Bulk Fuel Storage Tanks as drafted. Discussion followed:

1. Common Sense: Shubert-Kwock said that it was common sense to protect the water supply.
2. Cost: Lye asked the cost of the repairs. Executive Director Townsend said they do not yet know the costs, but they are ramping up to that step. Studies show that it will be expensive, but protecting water is worth it.
3. Money Source: Lye asked the source of the money for the repairs. Executive Director Townsend said it would be the Navy.

The motion was APPROVED by UNANIMOUS CONSENT, 9-0-0; (**AYE**: Au, Chang, Mollring, Lye, Tom, Donaldson-Selby, McCarney, Shubert-Kwock and Yuen; **NAY**: None; **ABSTAIN**: None).

Bikeshare Hawaii – CEO Lori McCarney passed out information on Biki. She reassured the community that there would be no advertising at the stations. The stations in each neighborhood would have a different sense of identity. Chinatown has been assigned the color red. The program opens on Thursday, June 28, 2017. Installation

begins on Thursday, June 8, 2017. Each station will finish being constructed within two (2) hours.

Change of Park Closure Hours for Kamalii Mini Park – Chair Au announced that even though the Board approved the change on park closure hours for Kamalii Mini Park from 10:00 p.m. to 5:00 a.m. to 7:00 p.m. to 7:00 a.m. during the May 2017 meeting, since it was not on the agenda there needs to be an opportunity for opposition to speak.

Questions, comments, and concerns followed:

1. Constituents: Councilmember Carol Fukunaga said that the request came from constituents who were concerned about illegal activity in the park.
2. Fence: Shubert-Kwock mentioned that changing the hours will not keep people out of the park. There should be a fence. Councilmember Fukunaga said that changing the hours would bring the issue to attention. She circulated a handout with alternative uses for the park, such as moped and bike parking.
3. Parks Board: Megan Muramatsu said that the request is already on its way to the Department of Parks and Recreation Board.

Shubert-Kwock and Lye seconded that the Downtown-Chinatown Neighborhood Board No. 13 support the change of park closure hours for Kamalii Mini Park from 10:00 p.m. to 5:00 a.m. to 7:00 p.m. to 7:00 a.m. The motion was APPROVED by UNANIMOUS CONSENT, 9-0-0 (**AYE**: Au, Chang, Mollring, Lye, Tom, Donaldson-Selby, McCarney, Shubert-Kwock and Yuen; **NAY**: None; **ABSTAIN**: None).

Cinco De Mayo Festival After Action Review – The Board engaged in the following discussion:

- Issues: Shubert-Kwock said that the block party was not well organized. She said that there should be tougher regulation on the Block Parties in Chinatown. She was disappointed with the Cinco De Mayo party and stated more trash cans and portable toilets were needed. She said that ambulances were called four (4) times for drunk people. The party was too loud. There needs to be a change in policy by the Department of Transportation Services (DTS). One visit to a Neighborhood Board meeting is not sufficient notice.
- DTS response: Chair Au said he spoke to Ty Fukumitsu of DTS on Friday, May 5, 2017. Chair Au said that Fukumitsu said DTS did not receive any verbal complaints from HPD or users. Chair Au said that Fukumitsu said the party was okay, and that the street closures were smaller than what was requested. Chair Au said that Fukumitsu said street closures can be given without Board approval.
- Complaint: Shubert-Kwock said that she sent a video and an email complaint to HPD and DTS.
- Complaint: Donaldson-Selby also sent a complaint about security being too aggressive.
- Beer Garden: A resident suggested that beer gardens would be a better option to contain the drinking to one area. The resident also suggested that the party could be in an indoor space on private property.
- Board Power: A resident said that the Board does have the power to make change, even though it is an advisory board. Shubert-Kwock responded that it was difficult because DTS has the power to do whatever they want, so the policy itself must change.
- Standards: McCarney suggested a guideline and standards for promoters who want to hold block parties in Chinatown be created.
- Post-Event Report: Councilmember Fukunaga said that the area legislature has requested post-event reports from the promoter. They should be obtained quickly. The community can file complaints to the liquor commission.
- Letter: Shubert-Kwock suggested the Board write a letter and Chair Au asked for her to write it.

Gordon Biersch Brewery Restaurant Liquor License – Chair Au announced that there is a temporary extension of liquor license premise permit for Gordon Biersch Brewery Restaurant on Friday, June 2, 2017 from 6:00 p.m. to 10:00 p.m. for a special event.

101st Annual King Kamehameha Celebration – Chair Au announced that there was a traffic advisory for the parade on Saturday, June 10, 2017 from 9:00 a.m. to 11:00 a.m.

COMMUNITY CONCERNS

Hawaii Pacific University (HPU) – No representative was present. No report was given.

Safe Haven – No representative was present. No report was given.

Honolulu Rail Transit (HART) – HART Representative Pat Lee announced that HART would like to notify area

residents and businesses that it will be conducting Subsurface Utility Engineering (SUE) work along Nimitz Highway near Iwilei Road, and continuing east to Halekauwila Street. Work will continue on Halekauwila Street to Ward Avenue. The work will then move to a portion of Queen Street between Cummins Street and Waimanu Street. Work will take place weekdays beginning on Monday, June 12, 2017 and is planned to run through Monday, July 17, 2017. Work is scheduled to take place 8:30 a.m. to 3:30 p.m., although some weekend and night work may be required. There may be some light noise from construction, and HART apologizes for any inconvenience. If you have any questions or comments, please call 808-566-2299 or visit www.honolulutransit.org.

Questions, comments, and concerns followed:

1. X-Ray: Tom asked what they are investigating. Lee responded that they are using a ground penetrating radar to take x-ray pictures under the soil to locate utilities.
2. Red Cross: Chang asked what would happen to the Red Cross building. Lee responded that they would be doing construction within 11 feet of the building. Red Cross wants HART to purchase the entire building so that they could move elsewhere. They are still in discussions.

Chinatown Business & Community Association – Shubert-Kwock reported that in May 2017 the community experienced some issues with violent assaults by criminal elements preying on lone individuals at bus stops or parks. Stores were robbed when owners left to go bathrooms, cash from registers was taken, and goods were stolen. One liquor retailer was struck over the head with a steel pipe when only $20.00 was in the cash register. The retailer was an older lady in her 70s. The robbers were three (3) males. Another elderly lady was waiting for the bus outside Walmart in Downtown. She was kicked in the head by a large male, then taken in critical condition to Queens Medical Hospital. Across from Pacific Club three (3) young men attacked a male with a machete. He suffered slash wounds to his face and neck. It is advised to be careful when waiting for a bus or a ride. We must be aware and alert. Do not travel in the dark alone and do not be careless about leaving the shop unwatched. Continue to call 911 when illegal activity is witnessed. Our HPD Commander has deployed more resources recently. There were more HPD patrols and more drug arrests in April 2017. There were 18 drug arrests which is the highest in six (6) years on a per month data count. Chinatown and Waikiki need HPD resources and presence more than elsewhere. The community needs Community Police back as HPD will be doubly effective with cooperation and trust from the community.

Chinatown Improvement District (CID) – Lee Stack reported the following:

- Seminars: CID will have their second series of Historic Preservation Seminars, cosponsored by Historic Hawaii Foundation. They will be held at the Hawaii National Bank Building on the 5th Floor from 12:00 p.m. to 1:00 p.m. on the second Wednesday of each month. They are free and open to the public.
- Taste of Chinatown: The festival will be held on Saturday, August 26, 2017. It will be at the Smith Beretania Park. They may close part of Smith Street to add more booths, vendors and crafts. If they decide to do a street closure, they will come to the Board for a presentation.

Questions, comments, and concerns followed: Tables and Tents: Shubert-Kwock suggested that tables and tents be provided since it was hot last year. Stack responded that grant funding was cut, so it would be difficult to provide tables and tents for everyone.

Arts, Culture, Merchants, Etc. (ACME) – No representative was present. No report was given.

ELECTED OFFICIALS

Mayor Kirk Caldwell's Representative – Megan Muramatsu from the City Managing Director's Office provided updates on questions from the last meeting.

- Noise Complaint: Corporal Steven Matsuda of the District 1 (Central Honolulu) Community Policing Team met with Joshua Mandelstam, manager of the Ong King Arts Center, located at 184 North King Street. Mr. Mandelstam is aware of the noise complaint and wants to be a responsible and good neighbor. It appears that the loud noise is from an open rear door from the establishment to a patio area where the partying continues. The patio has an internal stairwell that leads to an area that is adjacent to the Chinatown Manor building. Mr. Mandelstam said he will limit or not allow his patrons to socialize in the patio area during the late evening hours, or possibly keep the door closed. He also will try to end the live music earlier in the evening. In addition, according to Lee Stack of the Chinatown Improvement District, Ong King's lease will not be renewed when it expires in June 2017.
- Cyclist Signs: The Department of Transportation Services (DTS) has confirmed that according to the State of Hawaii Traffic Laws Section 291C-148, "Unless otherwise prohibited, a bicycle may be driven at a speed

of ten miles per hour or less on a sidewalk or sidewalk area; provided that the driver of the bicycle shall yield the right of way to any pedestrian and that bicycle riding shall be prohibited on sidewalks in business districts." A "business district" is defined as "The territory contiguous to and including a highway when within any six hundred feet along such highway there are buildings in use for businesses or industrial purposes, including but not limited to hotels, banks, or office buildings, and public buildings which occupy at least three hundred feet of frontage on one side or three hundred feet collectively on both sides of the highway." Therefore, bicyclists adhering to this section should not be riding a bicycle on the sidewalk in the Downtown/Chinatown area. This is an enforcement concern and the Honolulu Police Department (HPD) is aware of this ordinance relating to bicycling on sidewalks and can site violators without the presence of signs. As such, by copy of this response, we will be informing the HPD of this concern for their action. The DTS also recommends that the HPD be notified whenever violations are observed. As such, "No Bicycling on Sidewalk" signs do not appear to be necessary at this time.

- 1270 Queen Emma Street: The Department of Community Services is confirming that 1270 Queen Emma Street is not a City project and the City is not involved with the project.
- Potholes: Fort Street between Kukui Street and Beretania Street is identified as in need of resurfacing and is part of the Department of Design and Construction's (DDC) Rehabilitation of Localized Streets, Phase 12D construction project. Potholes were patched on Saturday, May 13, 2017. The Phase 12D project is still in the design phase and projected date for repaving has not been scheduled yet.
- Cost Impact: The establishment of an Office of Climate Change, Sustainability and Resiliency (CCSR) was mandated by City and County of Honolulu voters in November 2016 when 54.5% of Oahu residents voted in the affirmative to create the Office. There is no current cost to the City and County in the current FY-2018 budget for the CCSR. This is due to the fact that the current Executive Director of the CCSR also serves as the City's Chief Resilience Officer, a position that is supported entirely by a 2017-2018 grant from 100 Resilient Cities (100 RC), a project of the Rockefeller Foundation. The grant also provides approximately $1 million in other in-kind and technical support at no cost to taxpayers of the City and County of Honolulu, as well as free services from "platform partners" such as Microsoft and others that could bring millions of dollars in additional assistance to the city over the next three (3) years. While the 100 RC grant provides support for the Office's resilience work, the city is committed to honoring the mandate of Oahu voters to ensure long-term sustainability for our communities and prepare for the impacts of climate change—which will have profound (negative) infrastructure and fiscal implications to the city. The Mayor has requested $269,000 in the FY-2018 budget for the CCSR to pursue programs that reduce the city's energy costs, increase water efficiency, prepare the city for climate change-related sea level rise, and other sustainability initiatives. These programs are expected to conserve taxpayer dollars over both the short and long-term. Beyond the two (2)-year grant agreement with 100 RC, grant funds will no longer be available to support the Chief Resilience Officer position, but free services from platform partners will remain available and provide significant financial support to city projects and programs.
- Sun Yat Sen Park Light: Street light was repaired on Wednesday, April 26, 2017 as requested.
- Power Cleaning: DFM power washed River Street on an emergency feces/urine call on Thursday, May 4, 2017 and returned to power wash the Nuuanu Street to River Street area about Wednesday, May 10, 2017. DFM is tentatively scheduled to power wash the Nuuanu Street to River Street area on or about June 6 pending available resources. Unfortunately it is difficult to provide schedules due to emergency situations that arise such as power washing of bus stops or areas where defecation/urination have occurred.

Questions, comments, and concerns followed:

1. Pothole: Mollring said that a pothole was not filled on Fort Street between South Kukui Street and Beretania Street. She said it is by the second parking meter where the Hawaii Pacific University vans park, so it might have been hidden at the time.
2. Street Cleaning: Schubert-Kwock would like a regular street cleaning schedule for the neglected streets in Chinatown. She said that there used to be two (2) street cleaning machines, but there is one (1) now. She wants two (2) again.
3. Ong King: A resident thanked the City for helping with the noise issue at Ong King.

Councilmember Carol Fukunaga –Councilmember Fukunaga reported the following:

- Kamalii Park: Community stakeholders are pursuing new uses for Kamalii Mini Park to curb illegal activities. Some uses include a Bikeshare Hawaii station and moped parking.
- Sun Yat Sen Park: The appropriation for park improvements has been increased to $561,000, based on updated Department of Design and Construction (DDC) estimates for installation of a smaller electrical facility and removal of the existing bench seating area.
- Parking Fees: Bill 12 will double the parking fees in Downtown, Chinatown and Waikiki.

- Reception: There will be a reception to honor the Board members at the Plaza Waikiki on Tuesday, June 13, 2017 at 3:00 p.m.

Questions, comments, and concerns followed:
1. Parking Fees: Shubert-Kwock asked not to increase the parking fees. Councilmember Fukunaga responded that these areas were selected because they have not been increased for a while. Yuen asked the rationale for picking Chinatown for increasing the parking fees. Councilmember Fukunaga answered that Downtown, Chinatown and Waikiki were all identified as having the specific hours for having the fees imposed.
2. Bill 44: Shubert-Kwock said the Bill 44 should be modified to include a special amendment to exclude Chinatown. Councilmember Fukunaga said that Bill 44 was deferred due to many disagreements, so there is time to work on it.
3. Kamalii Park: Lye mentioned that increasing moped parking at Kamalii Park could disturb the residents due to increase in noise. Councilmember Fukunaga said that moped activity usually stops in the afternoon, and that she hopes Bikeshare Hawaii becomes a much more robust part of the community.

Governor David Ige's Representative – Laurel Johnston, Deputy Director of the Department of Budget and Finance highlighted some points on the monthly newsletter:
- Priorities: Deputy Director Johnston said that Governor Ige is pleased to have passed some of his top priorities in the 2017 legislative session, which are written in the newsletter.
- Japan-Hawaii Economic Summit: This is the first time Kailua-Kona has hosted a summit. Hawaii's relationship with Japan continues to thrive because it is rooted in historical, cultural and business connections. The State wants to find new ways to build on that solid foundation with increased tourism, trade, student exchanges and clean energy projects for mutual benefit.
- Special Session: The Director of Finance is working with the Legislative leadership to get a special session to vote on the Rail.

Questions, comments and concerns that followed:
1. Immigration Ban: Shubert-Kwock is proud of Hawaii for suing on the immigration ban.
2. Education: Shubert-Kwock raised concerns about the new selection of the Education Chief coming from out-of-state. She said they would not be familiar with how education in Hawaii works.
3. Airport: Lye asked when Uber and Lyft would be allowed at the airport. Deputy Director Johnston said that she will check and believes it is an issue for the Public Utilities Commission (PUC). Shubert-Kwock said to upgrade the airport.

Representative Daniel Holt – Representative Holt distributed a newsletter and reported that in the past session he worked diligently to secure the funds necessary for a wide array of projects that will benefit the most individuals, including monies dedicated to the arts, homelessness, Kupuna, schools, transportation needs and highway safety. He introduced legislation to increase police presence in Chinatown, but it did not go through. He gave his praise to Bikeshare Hawaii. He agrees that Chinatown could use an upgrade before American Savings Bank arrives.

Questions, comments and concerns that followed:
1. Graffiti: Shubert-Kwock raised concerns about graffiti in the area. Representative Holt said that they are working hard to provide funding for cover ups. Mollring suggested that if the graffiti is not removed within 48 hours than the building owner be fined, which is done in other cities. Representative Holt said there are positives and negatives to that proposal. There should be discussion to figure out how to address the graffiti problem.
2. Bidding: A resident asked if there was an update on the bidding to manage most of the Downtown properties. The Mayor's Office will bring an answer for that.

Senator Karl Rhoads' Representative – Glen Young said that Senator Rhoads' office is open for any ideas for new legislature.

APPROVAL OF MAY 4, 2017 REGULAR MEETING MINUTES – **McCarney motioned and Mollring seconded to approve the May 4, 2017 regular meeting minutes as written.**

BOARD BUISNESS AND REPORTS

Chair's Report – Chair Au thanked Stanford Yuen and Anthony Chang for being dutiful Downtown-Chinatown

Neighborhood Board Members. The community and the neighborhood are appreciative. He also recognized Tom Smyth for his service. He announced that the Installation Ceremony would be on Saturday, June 24, 2017 from 8:30 a.m. to 1:00 p.m. He reminded that new Members need to respond by Tuesday, June 13, 2017. He reminded that if any Member does not attend the event then they must take the online Sunshine Law Certification.

Neighborhood Commission Updates – No report was given.

Office of Information Practices Report – No report was given.

Treasurer's Report – Treasurer Mollring reported a remaining balance of $74.26 for April 2017. The report was filed.

City and County Affairs – No report was given.

Oahu Metropolitan Planning Organization (OMPO) – Mollring volunteered to be on the Water Committee. Chair Au will contact Mollring via email to appoint Mollring as the representative for the Water Committee.

ANNOUNCEMENTS

Next Meeting – The next Downtown-Chinatown Neighborhood Board No 13 meeting is scheduled for Thursday, July 6, 2017 at the Hawaii Pacific University, One Aloha Tower Drive, Multi-Purpose Room 2 at 7:00 p.m.

ADJOURNMENT – The meeting adjourned at 9:39 p.m.

Submitted by: Sultan White, Neighborhood Assistant I
Reviewed by: Dylan Whitsell, Neighborhood Assistant I

REGULAR MEETING MINUTES
THURSDAY 4 APRIL 2019
ONE ALOHA TOWER, MULTI PURPOSE ROOM 2

CALL TO ORDER – Chair Shubert-Kwock called the meeting to order at 6:00 p.m. **Quorum was established with eight members present**. Note: This nine-member Board requires five members to establish a quorum and to take official Board action.

Board Members Present – Ernest Caravalho, James Logue, Kevin Lye, Kevin McDonald, Dolores Mollring, Willis Moore, Chu Lan Shubert-Kwock, Laura Struges (appointed).

Board Members Absent – Bob Tom

Guests – Lieutenant Taniguchi (Honolulu Police Department); Captain Russell Youth (Honolulu Fire Department); Raelynn Nakabayashi (Mayor Kirk Caldwell's representative); Marc Alexander (Office of Housing); Councilmember Fukunaga; Glen Young (Senator Karl Rhoads' office); Damien Elefante (Governor David Ige's representative); Pat Lee (Honolulu Authority for Rapid Transportation); Greg Payton (Safe Haven); Lee Stack (Chinatown Improvement District); Fran Butera (Chinatown Watch); Nancy Ortiz (Cinco De Mayo); Susan Wolf, Diane Kraus, Verne Nichols, James Tennant, Kainoa Adolpho, Ronald Higa, Questor Lau, Keith Kurahashi, Rik Papa, Eric Wong, and Bob Armstrong (community members); Harry Cho and Casey Ishitani (Neighborhood Commission Office).

PUBLIC SAFETY REPORTS

Honolulu Fire Department (HFD) – HFD departed due to an emergency. A report was provided to the Board that stated the following:

- March 2019 Statistics: There were 5 nuisance fires, 5 activated alarms with no fire, 141 medical emergencies, 3 motor vehicle collisions with a pedestrian, 5 motor vehicle crash/collisions, and 1 ocean rescue.
- Safety Tip: Fire sprinklers respond quickly and effectively to a fire, often extinguishing the fire prior to the fire department's arrival. Fire sprinklers can save lives and property from fire. The National Fire Association reported fire sprinklers reduced fire deaths by 83% and property loss in homes by 69%.

Honolulu Police Department (HPD) – Lieutenant Taniguchi reported the following:

- March 2019 Statistics: There were 7 motor vehicle thefts, 6 burglaries, 50 thefts, 30 unauthorized entries into motor vehicles (UEMV), 29 assaults, 3 sex assaults, 1 graffiti incident, 3 drug offenses, and 2,545 total calls for service.
- Safety Tip: Due to the recent increase in UEMVs, HPD would like to remind the public to lock your doors, do not leave valuables in your vehicle, keep your vehicle clean, stash before you park, park in a visible area, use car alarms, and report suspicious activity.

Questions, comments, and concerns followed:

1. Arrests: Moore asked what type of action has been taken on those arrested as listed in the monthly statistics. Lieutenant Taniguchi stated that there is an ongoing cycle where people who get arrested end up back on the street.
2. Patrol: Lye requested an increase in patrol at Kamalii Mini Park. Shubert-Kwock thanked Major Nishibun for his efforts to increasing patrol and working with the community policing teams.
3. Reserve Officers: Logue asked if HPD can increase the number of reserve officers to help with patrolling of Chinatown.
4. Legislation: McDonald asked if more legislation would help HPD reduce homelessness.
5. Enforcement: A community member raised concerns that the sit/lie law is not being enforced.

Neighborhood Citizen Patrol (NCP) – Mollring reported that the NCP has been patrolling every Tuesday night. Eric Wong of the Kekaulike Mall Citizens Patrol stated that their group has been walking every Thursday.

ELECTED OFFICIALS

Mayor Kirk Caldwell's representative – Raelynn Nakabayashi reported the following:

- Follow-Up on Concerns:
  - Dr. Sun Yet-sen Park Memorial Park: Department of Design and Construction (DDC) stated that there is no public comment period scheduled for the renovation project.
  - Sidewalk Ramps: Department of Facility (DFM) stated that they are allowed to patch damaged Americans with Disabilities Act (ADA) ramps, but modifications to improve the ADA ramps utilized by wheelchairs to meet current standards would need to be assessed and implemented by DDC, due to the complex nature of ADA ramp construction. Questions regarding maintenance patching of ADA ramps can be directed to the Division of Road Maintenance at 768-3600.

Questions, comments, and concerns followed:

1. Crosswalk: Shubert-Kwock raised concerns that the crosswalks on North Beretania Street and Maunakea Street are rough and faded. Suggested using scramble crosswalks due to multiple intersections.
2. Public Phone: Caravalho raised concerns regarding a public phone that has been vandalized and trashed.
3. Repaving: Moore asked what are City's plans are to repave the rest of King Street, rather than only in front of City Hall.
4. Events: McDonald asked if the Liquor Commission has the authority to cancel an event due to liquor violations even though permits have been approved by other City departments.
5. Dr. Sun Yat-sen Park Memorial Park: A community member raised concerns with funds being used for renovations to a park, when there is currently a homeless crisis. The community was not receptive to this project by DDC.
6. Homeless: Community members and business owners raised concerns that homeless are urinating and defecating on the sidewalks. They requested that the City clean/wash the sidewalks.
7. Sidewalks: A community member stated that the sidewalk on Bishop Street/Adam Lane in front of Pauline Bookstore is very slippery when wet.

Senator Karl Rhoads – Senator Rhoads reported the following:

- Capital Improvement Funds: $100,000 in Capital Improvement funds were released for improvements to the Chinese Chamber of Commerce Foundation's Downtown Honolulu building to provide access to seniors and individuals with disabilities. This request for funds was one of Senator Rhoads' top priorities and is extremely pleased to see that funds are now being released.
- Capital Improvement Funds: $1,567,570 in Capital Improvement funds were released to fund seawater air-conditioning energy transfer facilities for designated state buildings Downtown. Construction on the long-awaited Honolulu Seawater Air Conditioning Project in Kakaako is projected to break ground in 2020. Construction itself is set to take another 20 to 22 months. When completed, this district cooling system will reduce Hawaii's dependency on oil by about 178,000 barrels annually, will minimize greenhouse gas emissions, will decrease potable water usage by more than 260 million gallons per year, and will cut down on sewage discharge by up to 84 million gallons per year.
- Strode Montesssori Preschool: Senator Rhoads received a response from HPD on his communication to them concerning the criminal activity taking place on the sidewalks fronting the Strode Montessori Preschool at 925 Bethel Street. Chief Susan Ballard stated that while police officers did not witness any criminal activity when they patrolled the area, HPD officers will make it a point to conduct more frequent checks in that vicinity.

Questions, comments, and concerns followed – Legislative Update: Logue requested a legislative update next month regarding Senator Rhoads' current Bills.

House Representative Daniel Holt – Representative Holt reported the following:

- Bills: House Bill (HB) 159 relating to crime, increases penalties for anyone who knowingly keeps or maintains any structure or place for the purpose of suing controlled substances or which is used for keeping or selling them in violation of controlled substance laws, also increases criminal penalties for those who knowingly profit from, advance, or participate in gambling.
- A'ala Dog Park: A'ala Dog Park recently opened. This was made possible through a public-private partnership between the State, City, community groups, and a non-profit.

- Capital Improvement Funds: $100,000 in Capital Improvement funds were released for improvements to the Chinese Chamber of Commerce Foundation's Downtown Honolulu building to provide access to seniors and individuals with disabilities.
- Recent Events: Representative Holt recently attended the Walk on the Wild Side event in Chinatown hosted by the Kidney Foundation.

Questions, comments, and concerns followed:
1. Chinatown Parade: Shubert-Kwock requested to continue funding for the Chinatown Parade.
2. Gaming Rooms: Logue asked about the enforcement of illegal game rooms.
3. Tobacco Tax: Lye asked for an update regarding the increase on tobacco taxes.

Councilmember Carol Fukunaga – Councilmember Fukunaga reported the following:
- City Budget: Mahalo to the Neighborhood Board No. 13 members and Downtown-Chinatown business leaders for supporting the first round of CD1 amendments to Bill 10, the City's fiscal year 2020 Executive Operating Budget. Bill 10, CD1 was adopted by the Council's Budget Committee during an all-day committee meeting on Wednesday, April 3, 2019 and will be scheduled for a Council review on Wednesday, April 17, 2109. The CD1 amendments included a $200,000 appropriation for private security services to Department of Land Management, which manages the City's affordable housing and city properties in the Downtown-Chinatown area.
- Fire Safety Legislation: Bill 96, relating to fire safety, was the subject of two (2) PITS committee meetings in March. HFD continues to oppose any time extensions proposed in the Bill 96, CD1 drafts, and additional amendments are pending.

Questions, comments, and concerns followed:
1. Security: Caravalho raised concerns that the security will not have authority to enforce laws or make arrests. Lye asked how many security positions there will be and to whom the contract will be awarded to. Councilmember Fukunaga stated that there are no details on that yet and this is a starting point. A community member suggested having security for privately owned buildings as well.
2. Homeless: Logue asked if declaring a homeless emergency has done by other cities before.
3. Events: McDonald asked if the Liquor Commission has the authority to cancel an event due to liquor violations even though permits have been approved by other City departments.

Governor David Ige's Representative – Damien Elefante reported the following:
- Homeless: A response was received from the State Homeless Coordinator stating that $30 million was appropriated by the legislature homeless service centers and shelters across Hawaii.

Community Concerns – Homeless: A community member raised concerns with homeless sleeping and urinating in front of her business. She stated that his has been driving customers away and negatively impacting her business.

NEW BUSINESS

Filling of Vacancy – There is one (1) at-large vacancy. Shubert-Kwock asked all volunteers to introduce themselves.

Caravalho nominated Laura Sturges. Hearing no other nominations, Sturges was voted on the Downtown/Chinatown Neighborhood Board No. 13 by majority vote. (**Aye**: Caravalho, Lye, Logue, Mollring, Shubert-Kwock).

Sturges was appointed to the Board. Eight (8) members present.

Office of Housing – Director Marc Alexander gave a brief presentation and provided handouts regarding the 2019 homeless point-in-time count results and the City and County of Honolulu's Housing First. Director Alexander was available to answer questions and was cut short due to time constraints.

Questions, comments, and concerns followed:
1. Housing First: Logue asked about Housing First units and the voucher system. Alexander stated that data on the number of Housing First clients are not given out due to privacy and that there are no dedicated units for housing first. Vouchers are provided after an evaluation through the Coordinated Entry System.

2. Housing: Caravalho raised concerns that providing housing for drug abusers takes away from those who are economically houseless. He suggested sending drug abusers and the mentally ill to assessment programs prior to providing housing.

Halewai'olu River Street Senior Affordable Rental Project – Questor Lau gave a brief presentation on the project. There will be 156 affordable senior rentals units with the majority targeted at 60% area median income (AMI) or below. There will be 130 one (1) bedroom units and 26 two (2) bedroom units on 17 floors.

Questions, comments, and concerns followed – Senior Citizens: McDonald stated that seniors should be aware that Chinatown can get loud because it is a college/business/residential community.

Domestic Violence Action Center – Nanci Kriedman reported that the Domestic Violence Action Center is the only agency of its kind in Hawaii, offering unduplicated specialized services to survivors of relationship and family violence. Information was provided on the agency's services.

Department of Environmental Services (ENV) – Michael O'Keefe gave a presentation on the City's new bulky item pilot program to reduce the amount of illegal dumping. The City currently provides bulky item pick-up once a month all over Oahu. The new system will require those who want a pick up to schedule an appointment

Questions, comments, and concerns followed:

1. Outreach: McDonald asked what they of outreach will be done to notify the public. O'Keefe stated that ENV will be presenting to the Neighborhood Boards, individual mailers will be sent to 80,000 residents in the Honolulu Collection District, a press release will be sent, and a new conference as well.
2. Illegal Dumping: A community member raised concerns with illegal dumping of trash at bulky item pick-up sites. O'Keefe suggested calling HPD if you notice anyone illegally dumping their trash. A community member raised concerns that people rummage through trash that is illegally dumped on the side of the road.

Cinco de Mayo – Nancy Ortiz reported that the event will take place on Sunday, May 5, 2019 from 2: 00 p.m. to 10:00 p.m. A floor plan/map of the event was provided to the Board and public. The event will be held on Nuuanu Street between Pauahi Street and King Street. Buses will be diverted from Hotel Street. Special duty HPD officers will be hired to secure the entire footprint. The security and staff are all experienced with these types of events and will have a zero tolerance policy in effect. A security/medical headquarters tent will be established for any emergency needs. Guests over 21 and over will have a distinct color wristband and alcohol will only be served to guests with the wristband on. All volunteer staff serving alcohol will have taken the bartender/manager class with the Liquor Commission and have at least two (2) years' experience with these type of events. There is an emergency evacuation plan in place and will be handed out to the security supervisors.

Questions, comments, and concerns followed – Alcohol: A community member asked if alcohol would be served from 2:00 p.m. to 10:00 p.m. concurrently with the keiki activities and if the drink with be just beer and wine or mixed drinks as well. Ortiz responded yes and there will be mixed drinks.

McDonald moved and Caravalho seconded to support the Cinco de Mayo event. The motion was adopted by majority vote, 7-0-1. (**Aye**: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Sturges; **Nay**: None; **Abstain**: Shubert-Kwock).

Kekaulike Mall – Shubert-Kwock gave an update on Kekaulike Mall.

Handicapped Sidewalks in Chinatown – This item was not discussed.

City Council Bill 10 CD1:
The Downtown-Chinatown Neighborhood Board No. 13 supports City Council Bill 10 CD1 introduced by Councilmember Carol Fukunaga to ask the City to release $200,000 for private security for sidewalk safety in Downtown and Chinatown due to escalating violence on the sidewalks and street.

Logue moved and Caravalho seconded the Board support the resolution with the amendments made by Lye. The motion was adopted by unanimous consent, 8-0-0. (**Aye**: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Shubert-Kwock, Sturges; **Nay**: None; **Abstain**: None).

Chinatown Liquor Stores:
The Downtown-Chinatown Neighborhood Board No. 13 requests that the City remove liquor stores overserving patrons in Chinatown, which causes violence and unrest on our streets and endangering citizens' lives.

The Neighborhood Assistant departed at 9:00 p.m.

Hearing no objections, the motion to amend was adopted by unanimous consent, 8-0-0. (Aye: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Shubert-Kwock, Sturges**; Nay**: None**; Abstain**: None**).**
The duly amended main motion was adopted by majority vote 6-1-1. (Aye: Caravalho, Lye, Logue, Mollring, Shubert-Kwock, Sturges**; Nay**: McDonald**; Abstain**: Moore**).**

COMMUNITY REPORTS

Safe Haven – Greg Payton reported that there was one Safe Haven discharges/intakes, one return to the mainland, two Mental Health Kokua Oahu Case Management Housing placement, and 4 permanent housing placements. The grand total for 2019 is 42 placements through March 2019.

Honolulu Authority for Rapid Transportation (HART) – Pat Lee reported that the rail system will be a fully automated, driverless system, utilizing a fleet of 20 four (4) car trains. Each train car is 64 feet long, 14 feet high and 10 feet wide. There are three (3) doorways on each side of a rail car, for a total of 12 doors for each four car train. A 6th four-car train has just been delivered to the Rail Operations Center, which means a quarter of the 80-rail car fleet is already here on island. The system will have 17 trains in operation during peak times and eight (8) trains during non-peak hours. Trains will operate between 4:00 a.m. and 12:00 a.m., and arrive at stations every five minutes during peak, and about 11 minutes during off peak times. The trains will be air conditioned and equipped with WIFI, audio and visual announcement boards, closed circuit TV security cameras and call boxes, and space for strollers, bicycles, luggage and even surfboards. The four car trains have a maximum capacity of 800 passengers, which is equivalent to about 10 city buses. The trains will be fully Americans with Disabilities Act (ADA) compliant, with 188 seats, priority seating for seniors and disabled as well as designated areas for wheelchairs. The Automatic Train Control System testing between the Rail Operations Center and the stations in Waipahu is ongoing in preparation for the interim opening of rail service from Halawa station at Aloha Stadium to the Kualaka'i station at east Kapolei by the end of next year, which will be a limited passenger service. The public will be hearing more details in the coming months. Revenue passenger service for the full 20-mile, 21 station rail system is planned for the end of 2025. Once completed, rail will become an integral part of Honolulu's public transit system connecting seamlessly with the bus and Handivan, using a smart card system called the Holo Card, where riders can transfer easily between the different transportation modes. The public may view the train cars at the upcoming Train Community Day on Saturday 22 June 2019, 10:00 a.m. to 2:00 p.m. at the Rail Operations Center next to Leeward Community College. The event is open to the public. Starting next week, Wednesday 10 April 2019, NAN, who's HART's contractor doing the utility work, will be relocating a waterline which requires closing both left and right turn exits out of Aloha Tower at the Bishop Street/Nimitz intersection across from Bishop Street. The duration of the work is approximately two to three weeks and work will be during the day time from 8:30 a.m. to 3:00 p.m., Monday through Friday. This will not affect makai bound traffic into Aloha Tower from Bishop Street. To exit the Aloha Tower complex, you can use the driveway on the Kalihi side and turn right or left on Nimitz at the traffic signal. For more information on the rail project, please visit the HART website at www.honolulutransit.org, call the project hotline at 566-2299, or email a question to info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – Shubert-Kwock reported that the CBCA has worked almost a whole month on Kekaulike Mall, Oahu Market and Chun Market to ensure sidewalk safety, is working with HPD and others in the community to move homeless camps throughout Chinatown, is educating merchants on sanitation and trash, met with stake holders on the homeless and drug crisis in Chinatown and trying our new ways to reduce crime. The next meeting is Golden Palace at 10:00 a.m. on Tuesday 9 April 2019. Deputy Director of Environmental Services will be talking about city's plans. A green demarcation was drawn so merchants do no cross the line with merchandise into public space. Also a request for the city to re-do dangerous sidewalks and re-paint crosswalks.

Chinatown Improvement District (CID) – Lee Stack reported that the community security patrol project has been rolled over into a new term due to popular request. The general consensus is that the project is having a positive impact in the area and people are pleased with the outcome. The report for the graffiti coating study has been completed and, after a few final edits, will be published on the CID website (www.cidchinatown.org) and by email. After some trial and error, two (2) coatings were identified that work well with citrus based graffiti removal products

allowing for safer and easier removal of graffiti in public areas with less caustic products. The results and products recommended in the study have already proved useful as a solution to a graffiti issue on the wall surrounding Kawaihao Church. CID is also currently working on a beautification project along River Street. The CID decided to adopt the River Street sidewalk under Department of Facilities Maintenance's Malama o ka Aina program. Working with a panel of cultural and community advisors as well as others we plan to place some planters in the area planted with native plants and also to devise a call for artists to submit artwork arranged around various historical and cultural themes pertaining to Nuuanu stream and the Chinatown area. CID plans to have the planters and the sidewalks painted. CID is very excited about this project which has the capacity to transform a much underutilized area of Chinatown with no costly redevelopment or installations. This project has received the support of Department of Facility Maintenance and, recently, the Mayor's Commission on Culture and the Arts.

Chinatown Watch – Fran Butera reported the following:

- Acknowledgments: Sincerest thanks to Councilmember Carol Fukunaga for her Proposed Amendment to the City's budget, which provides for the City to fund private security around City-owned buildings. This is a welcome, badly-needed emergency measure. Several City-owned properties in Chinatown are serious trouble spots, including the entire Hale Pauahi block and the Pauahi Recreation Center. Board Chair Chu Ian Shubert Kwock spearheaded the push to rein in illegal peddling on Kekaulike Mall. She worked with City DFM and Department of Parks and Recreation personnel to paint demarcation lines on the pavement to clearly outline the space for legally selling goods. She was out in her wheelchair at 5:30 a.m. each day of the project. She continues to visit the mall almost daily, on her own time, to monitor this and other issues. Chinatown Watch members report that the Green Line is an improvement and works as intended. Mental Health Kokua (Greg Payton) hired a security guard last week to monitor activity in front of the Safe Haven/Hygiene Center building. This is a welcome change and long overdue. Mahalo, Greg. We look forward to a sharp reduction in aberrant behavior around your facility.
- Continuing Problems Call For Security Presence: River of Life Mission, the City Hygiene Center and the seemingly unregulated liquor stores continue to draw homeless / mentally ill / substance abusers and criminals to our neighborhood where they roam freely around Chinatown among residents, shopkeepers, visitors and workers. From this toxic mix come the countless daily assaults on our community's health and safety: public drinking, drug use, drug sales, fights, psychotic outbursts, f-bomb barrages, shouting matches, urination and defecation in public spaces and on private property, sitting, lying, camping, littering on public sidewalks and in city parks, vandalism, theft, and purse snatchings and assaults by gangs on kupuna and other vulnerable people. These things go on throughout the day, putting the highest number of people at risk. As currently funded and staffed, HPD cannot control this volatile situation. Daily disruptions by homeless, mentally ill, and substance abusers steal HPD's time, resources, and attention away from its core mission of fighting crime and protecting the public. City-funded security will put more eyes and uniforms out in the public spaces. The guards are a middle layer between the merchants/residents/pedestrians and the HPD. They will help reinforce the message that "you have to obey the law here." For public safety, it is crucial that the guards patrol outdoors in the public spaces (sidewalk, streets, etc.) Around the city-owned buildings, not just inside or within the footprint of the buildings. Based on on-going citizen reports and our own daily reality, we believe that security patrols are needed immediately for all public property in the entire Downtown-Chinatown district. However, Councilmember Fukunaga's proposed amendment is a 1st step to change the course of this unfolding public safety nightmare.
- To the City Administration: The community would like that City to begin immediately to fund private security patrols for Chinatown, with special emphasis on the known crime zones surrounding the homeless services and liquor stores. Provide all additional funding needed to support HPD in protecting Chinatown's citizens. Close the Pauahi Street hygiene center and relocate Safe Haven out of Chinatown. Fast-track your negotiations with River of Life Mission so they may move their feeding operation to Iwilei this year. Close the liquor stores that sell alcohol and drugs to the homeless and mentally ill substance abusers who congregate in disproportionately high numbers in Chinatown.
- To Chinatown Residents, Merchants, Shoppers, Property Owners, and Visitors: Call 911 to report violations. Don't think you're inconveniencing the police by calling. They want you to call 911. Doing so gets the violations into their database and helps HPD help you. Talk to your neighbors about the problems. Encourage them to call 911, too. Post incidents anonymously to ChinatownWatch.com. Please encourage your neighbors to post, too. It's an unofficial but visible way to build our community's case for more support. Please note that posting to ChinatownWatch.com is not a substitute for calling 911. To order Chinatown Watch window signs for your business, go to ChinatownWatch.com, click the About link, then send a message via the Contact link. Please allow a few days for a response as the site is run by volunteers. Get some neighbors together to meet with the HPD's Community Policing Team (CPT). Call the CPT office at

(808) 732-3927. A strong community partnership with HPD is good for everyone. Merchants and property owners, please join the Chinatown Improvement District's neighborhood security patrol. Call Lee Stack at (808) 589-9927, email chinatownimprovementdistrict@gmail.com, or visit the website: cidchinatownhawaii.org. Support legislation to fund private security patrols for Downtown-Chinatown's public spaces. Contact Councilmember Fukunaga's office for details. Email cafukunaga@honolulu.gov or call 768-5006.

APPROVAL OF THURSDAY 7 MARCH 2019 REGULAR MEETING MINUTES – **Moore moved and Logue seconded to approve the Thursday 7 March 2019 regular meeting minutes. The motion was adopted by unanimous consent, 8-0-0** (**Aye**: Caravalho, Lye, Logue, McDonald, Mollring, Moore, Shubert-Kwock, Sturges; **Nay**: None; **Abstain**: None).

ANNOUNCEMENTS

- Next Meeting – The next meeting of the Downtown–Chinatown Neighborhood Board № 13 is scheduled for Thursday 2 May 2019 at Hawaii Pacific University, One Aloha Tower Drive, Multi-Purpose Room 2 at 6:00 p.m.
- Neighborhood Citizen Patrol – The Neighborhood Citizen Patrol meets each Tuesday on the Diamond Head side of Kukui Plaza at 8:00 p.m. Please join the patrol and support its efforts to express service and pride in our Downtown–Chinatown community.
- ʻŌlelo – Rebroadcasts of Downtown–Chinatown Neighborhood Board № 13 meetings are scheduled on ʻŌlelo channel 49 for every third Thursday at 9:00 p.m., as well as 6:00 a.m. on the second and fourth Saturdays of each month. An archive of past meetings may be found on http://olelo.org/olelonet/ and searching on <Downtown Chinatown>.

ADJOURNMENT – Chair Shubert-Kwock adjourned the meeting at 9:13 p.m.

Submitted by: Harry Cho, Public Relations Assistant
Reviewed by: Chris Naylon, Neighborhood Assistant

DOWNTOWN–CHINATOWN NEIGHBORHOOD BOARD № 13

NEIGHBORHOOD COMMISSION • 925 DILLINGHAM BOULEVARD, SUITE 160 • HONOLULU, HAWAII 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET http:///www.honolulu.gov/nco

REGULAR MEETING MINUTES
THURSDAY 3 OCTOBER 2019
ONE ALOHA TOWER, MULTI PURPOSE ROOM 2

CALL TO ORDER – Secretary Kamoshida called the meeting to order at 6:00 p.m. **Quorum was established with eight members present**. Note: This nine-member Board requires five members to establish a quorum and to take official Board action.

Board Members Present – Robert Armstrong, Roxie-Anne Kamoshida, James Logue, Kevin Lye, Sandy Ma, Kevin McDonald (arrived 6:03 p.m.), Dolores Mollring, Willis Moore, and Chu Lan Shubert-Kwock

Board Members Absent – None

Guests – Major Ryan Nishibun, Captain Glenn Hayashi, and Lieutenant Brian Taniguchi (Honolulu Police Department); Captain Russell Youth (Honolulu Fire Department); Alexander Zannes (Mayor Kirk Caldwell's representative); Damien Elefante (Governor David Ige's representative); Councilmember Carol Fukunaga and Kimberly Ribellia (Councilmember Carol Fukunaga's office); Senator Karl Rhoads; Damien Elefante (Governor David Ige's representative); Randy Chu (Department of Land Management); Lee Stack and Kainoa Adolpho (Chinatown Improvement District); Nicole Reid (Arts, Culture, Merchants, Etc.); Ronald Higa, Steve Lohse, Keith Kurahashi, Theresa Schubert, Mike Galmiche (community members); Harry Cho (Neighborhood Commission Office). **Name not included if not known or if illegible on the sign-in sheet.**

PUBLIC SAFETY REPORTS

Honolulu Police Department (HPD) – Lieutenant Taniguchi reported the following:

- September 2019 Statistics: There were 7 motor vehicle thefts, 9 burglaries, 54 thefts, 23 unauthorized entries into motor vehicles (UEMV), 15 assaults, 1 sex assault, 5 drug offenses, 1 graffiti incident, and 2,435 total calls for service.
- Safety Tip: Safety tips were given on Halloween safety.

McDonald arrived at 6:03 p.m. and assumed the Chair. Nine members present.

Questions, comments, and concerns followed:

1. Fourth Watch: Shubert-Kwock commended HPD's Fourth Watch for patrolling the area.
2. Bicycles: Ma raised concerns with bicyclists riding on the sidewalk.
3. Illegal Parking: Shubert-Kwock raised concerns with vehicles illegally parking and blocking sidewalks.
4. Citing: McDonald raised concerns that HPD cannot issue citations if the violation is not witnessed.

Honolulu Fire Department (HFD) – Captain Youth reported the following:

- September 2019 Statistics: There was 1 structure fire, 4 nuisance fires, 1 cooking fire, 11 activated alarms (no fire), 135 medical emergencies, 1 motor vehicle collision with a pedestrian, and 5 motor vehicle crash/collisions.
- Safety Tip: Safety tips were given on Halloween Safety.

Questions, comments, and concerns followed:

1. Fire Trucks: Shubert-Kwock raised concerns that fire trucks may have difficulties turning at Maunakea and Pauahi Streets.
2. Fire Hydrants: Mollring raised concerns with placing the steel poles in front of fire hydrants.

Neighborhood Citizens Patrol (NCP) – Mollring reported that the NCP had not been walking due to the rain.

Logue moved and Shubert-Kwock seconded to add election of Vice Chair to the agenda. The motion was adopted, 8-0-0 (**Aye**: Armstrong, Kamoshida, Logue, Ma, McDonald, Mollring, Moore, Shubert-Kwock; **Nay**: None; **Abstain**: None).

ELECTION OF VICE CHAIR

Shubert-Kwock nominated Logue and McDonald nominated Lye. Logue was elected Vice Chair, 7-1-0 (**Logue**: Armstrong, Kamoshida, Logue, Ma, Mollring, Moore, Shubert-Kwock; **Lye**: McDonald; **Abstain**: None).

ELECTED OFFICIALS

Governor David Ige's Representative – Damien Elefante reported the following:

- Capitol Connections: This month's *Capitol Connections* highlight Governor Ige's vision for sustainability in Hawaii, affordable housing, and local agriculture.
- Hawaii Annual Code Challenge: Kick-off for the event will take place on Saturday 19 October 2019.
- Aloha Stadium: The public is invited to participate in the comment period of the Aloha Stadium project until Thursday 7 November 2019.

Questions, comments, and concerns followed:

1. Ohana Zones: Logue raised concerns regarding Ohana Zones and their funding. McDonald also raised concerns with homelessness and asked for an update regarding Governor Ige's plans to end homelessness.

Mayor Kirk Caldwell's representative – Alexander Zannes reported the following:

- Follow-Up on Concerns:
    - Street Lights on Chaplain Lane: Department of Facility Maintenance (DFM) stated that the burnt out lights were replaced on Wednesday 11 September 2019.
    - Sidewalks: DFM stated that inspection of the traffic island/median at Pali Highway and South Beretania Street was unable to detect any residual fecal matter. Please call (808) 768-4381 to report such concerns with specific location details so timely investigations can be conducted.
    - Bus Stop Seating: Department of Transportation Services (DTS) stated that they have previously explained to NB 13 the health and safety reasons that prompted the removal of the bus stop benches at Smith and Hotel Streets. DTS may be willing to replace the benches at this location if NB 13 agrees to adopt and maintain the bus stops at which the replacement benches will be installed. Interested Neighborhood Board members may contact Coreen Blanco of DTS at (808) 768-8375 for more information on DTS' Bus Stop Volunteer Program.
    - TheBus Safety: DTS appreciates and shares the Neighborhood Board's interest in promoting safety on TheBus. DTS is working with Oahu Transit Services, Inc., the City bus operations contractor, to develop a rider awareness safety campaign for implementation later this year. Currently, TheBus promotes safety onboard all vehicles through a bus placard that encourages riders to be aware, take action, and report any suspicious activity by calling 911 or notifying the driver. The placard is translated into 18 different languages, and supports Transit Watch, the nationwide safety and security awareness campaign. Additionally, all buses are equipped with interior announcement systems that announce safety messages while a vehicle is in service. Announcements include safety tips, such as: stand clear of doors, keep aisles and seats clear, hold on when standing, hold on when the bus is departing, use caution when exiting, crosswalk safety, and pickpocket warnings.
    - Chinatown Trash: Department of Environmental Services (ENV) stated that they are looking at self-locking carts for businesses in Chinatown. They are not suggesting earlier nighttime collection as there are many businesses open 24–hours and some closing after midnight, which is why they go with a 4 a.m. route.
    - River Street Homeless: HPD stated that District 1 (Central Honolulu) patrol and Fourth Watch officers have been addressing homeless issues along River Street, as well as accompanying the Department of Facility Maintenance (DFM) in conducting their Stored Property Ordinance (SPO)/Sidewalk Nuisance Ordinance (SNO). The District 1 Crime Reduction Unit (CRU) and patrol have been patrolling and surveying the area for illegal activity. Residents in the area, the public, and shop owners are encouraged to call 911 when they see suspicious activities.
    - River of Life Relocation: Office of Housing stated that negotiations between the City and River of Life are progressing well and further details will be provided upon completion. Updates may be available by the next neighborhood board meeting.
    - Sidewalk Repairs: DFM requested to please provide the locations of the sidewalk that is needing repairs. DFM will make temporary repairs and schedule the permanent repairs by contract.
    - Magnum P.I.: Office of Economic Development stated that there are no dates mentioned, but if it involves Dillingham, it may be the shoot that occurred on 14 July 2019. Public notice was provided

in several different ways: notification letters were sent to affected area businesses, signage was posted including variable message boards, *no parking* signage, and a widely disseminated Traffic Advisory sent to the media by the city communication team that was broadcasted on television news outlets. Information would usually be brought to the neighborhood board, but in this instance the show was on hiatus until mid-June and the sequence was developed after that. NB 13 was on recess in July, so there was no option to come to the board.

- o Bulb-outs: DTS stated that the painted planters will be put back after the bulb-out reconstruction; anticipated completion 2020.

Questions, comments, and concerns followed:

1. Magnum P.I.: Shubert-Kwock requested for prior notice of any street closures that will occur in the Downtown–Chinatown area.
2. Trash Pick-Up: Shubert-Kwock raised concerns that trash pick-up is difficult in Chinatown due to the bulb-outs and barricades.
3. Loading Zone: Ma asked why DTS does not recommend a freight-loading zone.
4. Attendance at Neighborhood Board Meetings: Shubert-Kwock asked if a representative from DTS and Honolulu Liquor Commission can attend the Downtown–Chinatown Neighborhood Board meetings every other month to provide updates.
5. Public Bathrooms: Ma stated that she is aware that there are bathrooms at the Safe Haven Hygiene Center, and asked if there are plans to have public restrooms available for visitors and tourists.
6. Homeless: McDonald requested for monthly updates on any solutions to address homelessness in Chinatown.

Senator Karl Rhoads – Senator Rhoads reported the following:

- 26th Annual Children's Day: Hawaii's 26th Annual Children and Youth Day will take place on Sunday 6 October 2019 from 10:00 a.m. to 3:00 p.m. at the State Capitol grounds and surrounding areas. Children and Youth Day honors and celebrates our children and youth in Hawaii. There will be over 300 interactive, educational, fun activities for infants, toddlers, children, youth, and the entire family. Free parking will be available at neighboring State parking lots, Central Middle School, and Central Pacific Bank at the corner of King and Alakea Streets. For more information, please call Kama'aina Kids at (808) 262-3651 or visit www.HawaiiCYD.org.

Questions, comments, and concerns followed:

1. Homelessness: Shubert-Kwock asked for an update regarding the Institute of Human Services (HIS) petitioning the first 10 cases.
2. Senate Bill (SB) 1124: Armstrong commended Senator Rhoads for SB 1124, which requires a licensed psychiatrist or advanced practice registered nurse with prescriptive authority and psychiatric specialization to determine, prior to a person's discharge from a psychiatric facility, whether an assisted community treatment plan is indicated and to make certain arrangements if so indicated and amends the criteria for assisted community treatment.

Councilmember Carol Fukunaga – Kimberly Ribellia reported the following:

- Kamali'i Mini Park Changes: As a follow-up to Councilmember Fukunaga's September 2019 report on complaints about Kamali'i Mini Park, a copy of Resolution 19-250 was provided, requesting adoption of alternative uses for Kamali'i Mini Park and removal of this site from the city parks inventory. A hearing for this resolution is being requested for the Tuesday 22 October 2019 Parks, Community Services and Intergovernmental Agreements (PCSI) Committee meeting. Councilmember Fukunaga welcomes a resolution of support from Downtown–Chinatown NB 13. As reported previously, the Councilmember believes that a change in the designation of uses of the Kamali'i Mini Park would improve public safety and security in the downtown/Pali Highway gateway to Honolulu considerably, and it would save city taxpayers in reduced enforcement or clean-up expenditures. The Councilmember and her staff met with Chief Ballard and her team on Ordinance 18-14 (Bill 52, 2018 sidewalk and public space restrictions island-wide) to address HPD concerns over enforceability, and will be seeking further assistance from Senator Rhoads and Representative Holt as they harmonize state/county legislation involving public sanitation, vagrancy and related criminal activity.
- Nighttime Noise Complaints on Nimitz Highway: On 18 September 2019, HART's public affairs team and its contractors conducted a community forum at the request of Councilmember Fukunaga, to discuss the noise complaints raised about the nighttime pre-transit construction utility and grading work along Nimitz Highway. During September and October 2019, pre-construction utility and grading work resulted in several

noise complaints from Mann Tower and Harbor Court residents. Councilmember Fukunaga was able to work with the NAN Inc. project managers to address some of the Mann Tower complaints. However, with respect to complaints from other properties along Nimitz Highway, the Councilmember is working with the State Department of Health's Noise and Radiation Branch to determine whether alternative daytime work may be a better alternative. HART's noise variance permits authorizing nighttime and weekend work were issued early in the process for a 3-year time frame. As the utility and grading construction work enters urban Honolulu, where multiple high-rise structures are located along the Nimitz Highway/Ala Moana Boulevard corridor, it may be more practical to allow for daytime construction along portions of Nimitz Highway to be shifted to daytime hours to address neighbors' concerns.

- Nighttime Noise Variance Permit Meeting: In addition to nighttime utility and grading pre-transit construction work entering the urban Honolulu area, the City's Department of Design and Construction scheduled a nighttime noise variance permit meeting for its Downtown–Chinatown repaving projects on Thursday 3 October 2019 at 6:30 p.m. in the Central Middle School cafeteria. Councilmember Fukunaga received a notice of this community meeting on Thursday 26 September and immediately notified AECOM of the schedule conflict with tonight's neighborhood board meeting. DDC reported it was unable to reschedule the meeting, and area legislators Holt, Rhoads and Councilmember Fukunaga requested the following corrective actions: Providing two additional weeks for public feedback and comment on the proposed noise variance permit beyond the Thursday 3 October 2019 community meeting date, and providing a list of the addresses to whom the notice of the community variance permit meeting were sent. The Councilmember received complaints that residents of Honolulu Tower, one of the larger condo properties in downtown Honolulu, had not been notified of this meeting. Information about the noise permit request will be shared with constituents for other properties that may not have received notice about tonight's community meeting.

Questions, comments, and concerns followed:

1. Noise Variance Meeting: Ma asked that DDC present to the Neighborhood Board regarding the nighttime noise variance and requested a more legible map of the rehabilitation of streets.
2. Bulb-outs: Shubert-Kwock raised concerns that no community meeting was held by DTS for the permanent bulb-outs.
3. Trash: Shubert-Kwock requested late-night pick-ups and lockable refuse bins.
4. Homeless: McDonald raised concerns with homeless in the area.

Resident and Community Concerns:

- Public Bathrooms: A community member stated that although bathrooms in Chinatown would be good, it would invite more illegal activity from the homeless. A community member suggested private bathrooms for visitors and tourists.

NEW BUSINESS

Halewaiolu Senior Residence – Keith Kurahashi reported that the land owner is the City and County of Honolulu. The height limit for the project is 350 feet and the tower height will be 173 feet. It will be a BMX-4, business mixed use zoning. There will be 155 affordable senior dwelling units.

Questions, comments, and concerns followed:

1. Community Center: Shubert-Kwock asked about the community center and its use. Kurahashi stated that it will be around 4,000 square feet and its use will be determined by the association.
2. Ground Breaking: Armstrong asked when the ground breaking will take place. Kurahashi stated that it will take place in 2020.
3. Parking: Armstrong asked how many parking stalls there will be and Ma asked if there is visitor parking. Kurahashi stated that there will be 51 parking stalls and all stalls will be first come first serve.

Hallowbaloo Music and Arts Festival – Mark Tarone was present.

Shubert-Kwock moved and Logue seconded to defer discussion of this agenda item due to the lack of clarity of street closures on the agenda. The motion was adopted by majority vote, 5-3-0 (**Aye**: Armstrong, Kamoshida, Logue, Mollring, Shubert-Kwock; **Nay**: Ma, McDonald, Moore; **Abstain**: None).

Resolution 2019-006 Urging the City DTS to Prohibit DJ Booths During Non-Construction Street Closures in Chinatown:

Logue moved and Shubert-Kwock seconded to adopt the resolution. After discussion, the motion was not adopted, 0-8-0 (**Aye**: None; **Nay**: Armstrong, Kamoshida, Logue, Ma, McDonald, Mollring, Moore, Shubert-Kwock; **Abstain**: None).

Resolution 2019-007 Urging the City Administration and City Council and the State of Hawaii the Enforce HRS 281-78 to Control Public Liquor Consumption:

Logue moved and Shubert-Kwock seconded to adopt the resolution. After discussion, the motion failed, 4-4-0 (Aye: Kamoshida, Logue, Mollring, Shubert-Kwock; **Nay**: Armstrong, Ma, McDonald, Moore; **Abstain**: None).

Resolution 2019-009 Requesting Rescission of the Yellow Bag Mandate:

Logue moved and Shubert-Kwock seconded to adopt the resolution. After discussion, the motion failed, 2-6-0 (Aye: Logue, McDonald; **Nay**: Armstrong, Kamoshida, Ma, Moore, Mollring, Shubert-Kwock; **Abstain**: None).

COMMUNITY REPORTS

Safe Haven – Greg Payton reported the following from September 2019: 5 Safe Haven discharges/intakes, 2 activity center placements, 2 MHK – Oahu Case Management Housings, and 9 permanent housing placements. The grand total for 2019 is 74 placements through September.

Honolulu Authority for Rapid Transportation (HART) – Pat Lee was not present but provided a traffic update and report to the board. HART's weekly traffic notice for work in the area, which is described by intersections on Nimitz Highway and various streets in Downtown and Chinatown, is available and updated weekly at: http://hartdocs.honolulu.gov/docushare/dsweb/View/Collection-1470. For more information on the rail project, the public may visit the HART website at www.honolulutransit.org, call the project hotline at (808) 566-2299, or email a question to info@honolulutransit.org.

Chinatown Business and Community Association (CBCA) – The CBCA met on Tuesday 10 September 2019 at Golden Palace for the monthly dim sum meeting. Agenda items consisted of ongoing issues in Chinatown including illegal trash, sidewalk encroachment by merchants and homeless, burglaries and assaults, Kekaulike Mall, repairs of trip hazards, and liquor issues from open drinking and smoking along sidewalks and Kekaulike Mall. HPD has been cooperative resulting in the arrest and citation of illegal vendors. Mayor Caldwell had a press conference on using yellow bags to reduce illegal trash and breaking into trash by folks looking for valuables to recycle. Harry continues to be a problem, especially when he is high on either alcohol or drugs. He creates trash by turning over trash receptacles and dragging trash to various locations. Department of Opala has increased enforcement of illegal trash dumping, up to $2,500 fine. City continues to work on possible locked bins and night trash pickups for merchants and residents which might resolve these problems. CBCA's next Meeting is Tuesday 8 October 2019 at Golden Palace, 10:00 a.m. All are welcome. CBCA's 10th annual banquet to celebrate Chinatown Heroes is on Saturday 19 October 2019 at Golden Palace, with a ten-course dinner for $34 per person.

Chinatown Improvement District (CID) – Lee Stack reported that with grant funds received in July, CID rolled out a new patrol schedule for the community patrol project. The patrols now cover seven days per week and a have a new daytime walk-around patrol for certain streets in response to concerns and suggestions from small businesses in the area. We are working on setting up a meeting so that we can coordinate community patrol efforts with the City funded guard services on City properties. We have spoken with HPD about a new initiative where an HPD officer will sometimes accompany the daytime patrol guard. Approximately 200 to 300 people attended the Mid-Autumn Lantern Festival on 13 September 2019. At the event, there were moon cakes, lantern viewing, a raffle, and free lantern making activities (very popular with the children and some adults). Students had made a number of lanterns which were displayed and then given away at the end of the evening. We have posted photos from the event on our Facebook page. We have a suggestion regarding Sit-Lie Legislation in Chinatown. Given the concerns raised at various Neighborhood Board meetings about health and safety issues in the Chinatown District, NB members might be interested in talking with our Councilmember Fukunaga or the Administration about extending the hours of the sit–lie law to when nighttime businesses in the area close—around 2:00 a.m. In Waikiki, sit–lie legislation is in effect 24/7 while in Chinatown the sit–lie law is not enforceable between 11:00 p.m. and 5:00 a.m. Yet, there are businesses in Chinatown which close around 2:00 a.m. and whose businesses are blocked and impacted. Perhaps the legislation could be extended to 24/7 in the Chinatown District, similar to the commercial district of Waikiki—or to at least match the hours of nighttime businesses which close at 2:00 a.m. Lastly, we suggest that the heading for this portion of the agenda be changed back to Community Reports from the new title

"Community Concerns" because we participate in this portion of the agenda primarily to report on our projects and activities in the area.

APPROVAL OF MINUTES

The June 2019 meeting minutes, as presented by the Chair for review by the Board and not those originally circulated by the Neighborhood Assistant, were adopted, 6-0-2 (**Aye**: Kamoshida, Logue, McDonald, Mollring, Moore, Shubert-Kwock; **Nay**: None; **Abstain**: Armstrong, Ma).

Armstrong moved and Moore seconded to approve the August 2019 meeting minutes. Kamoshida moved and Logue seconded to amend the minutes on page 2 of 8, as printed, from "Shubert-Kwock then verbally announced her resignation from NB 13, made some inappropriate remarks out of turn and without being recognized by the chair towards several board members, and left the meeting at 6:45 p.m." to "Shubert-Kwock then verbally announced her resignation from NB 13 and immediately left the meeting at 6:45 p.m." The motion to amend the minutes was adopted, 7-1-0 (**Aye**: Armstrong, Kamoshida, Logue, Ma, Mollring, Moore, Shubert-Kwock; **Nay**: McDonald; **Abstain**: None). **The motion to adopt the amended minutes was adopted, 7-1-0** (**Aye**: Armstrong, Kamoshida, Logue, Ma, Mollring, Moore, Shubert-Kwock; **Nay**: McDonald; **Abstain**: None).

Logue moved and Mollring seconded to adopt the September 2019 minutes as amended to replace the extant CBCA report and to add a report from Chinatown Watch. The motion passed, 7-0-1 (**Aye**: Armstrong, Kamoshida, Logue, McDonald, Mollring, Moore, Shubert-Kwock; **Nay**: None; **Abstain**: Ma).

BOARD BUSINESS

Lye spoke through the interactive conference technology to the Board and noted that he had been in attendance of the entirety of the meeting from a remote location, duly noticed to the public as per the 2017 *Oahu's Neighborhood Board System Member Guidebook*, and had attempted to participate in the meeting as specified on page 38 of the *Guidebook* and §2-14-115(a) of the *Neighborhood Plan*, which collectively specify that presence at a Board meeting has been conferred since 1 July 2012 through remote participation using interactive conference technology, and hence voting on actions before the Board by Members participating thusly is permissible. Lye further noted that he was disenfranchised by not being permitted to be heard or vote on matters before the Board during the meeting.

ANNOUNCEMENTS

- Next Meeting – The next meeting of Downtown–Chinatown Neighborhood Board № 13 is scheduled for Thursday 7 November 2019 at Hawaii Pacific University, One Aloha Tower Drive, Multi-Purpose Room 2 at 6:00 p.m.
- Neighborhood Citizen Patrol – The Neighborhood Citizen Patrol meets each Tuesday on the Diamond Head side of Kukui Plaza at 8:00 p.m. Please join the patrol and support its efforts to express service and pride in our Downtown–Chinatown community.
- ʻŌlelo – Rebroadcasts of Downtown–Chinatown Neighborhood Board № 13 meetings are scheduled on ʻŌlelo channel 49 for every third Thursday at 9:00 p.m., as well as 6:00 a.m. on the second and fourth Saturdays of each month. An archive of past meetings may be found on http://olelo.org/olelonet/; select and expand <Community/Informational> from the list of On Demand categories on this page and then manually scroll to find listings for playback of <Downtown Board> meetings.

ADJOURNMENT – McDonald adjourned the meeting at 8:30 p.m.

Initial draft by Harry Cho, Neighborhood Assistant
Edited by NB 13 Secretary Roxie-Anne Kamoshida and Kevin Lye

Appendix P

Memorandum of Agreement
Cultural Surveys Hawai‘i, Inc.
April 2020

MEMORANDUM OF AGREEMENT
BETWEEN
THE CITY AND COUNTY OF HONOLULU
AND
THE HALEWAIʻOLU SENIOR DEVELOPMENT, LLC
AND
THE HAWAIʻI STATE HISTORIC PRESERVATION OFFICER
REGARDING THE
DEMOLITION AND REDEVELOPMENT OF
THE JOHN R. GILLILAND SR. BUILDING AND SURROUNDING PARKING LOT

THIS AGREEMENT ("Agreement") is made this_____ day of _____, 2020 by and among the City and County of Honolulu ("CCH") in its capacity as the Responsible Entity as defined below, the Hawaiʻi State Historic Preservation Office ("SHPO") through the office of the Hawaiʻi State Historic Preservation Division, a division of the Department of Land and Natural Resources of the State of Hawaiʻi ("SHPD") and Halewaiʻolu Senior Development, LLC, ("Developer" or "HSD") (collectively "Signatory Parties") for the purposes herein set forth.

RECITALS

WHEREAS, pursuant to 24 CFR §58, the U.S. Department of Housing and Urban Development ("HUD"), designated CCH as the Responsible Entity, as defined in 24 CFR §58.2(a)(7), for environmental reviews of projects previously assisted with certain HUD funding, and the Mayor of the City and County of Honolulu ("Mayor") as the certifying officer of the Responsible Entity. Pursuant to 24 CFR §§ 58.4 and 58.5, CCH, as the Responsible Entity, must assume responsibilities for environmental review, decision-making and action that would apply to HUD under the National Environmental Policy Act of 1969, as amended (42 U.S.C. §4321 et. seq.) ("NEPA"), Section 106 of the National Historic Preservation Act, as amended (54 U.S.C. §306108, formerly 16 U.S.C. §470f) ("Section 106"), and Section 106 implementing regulations at 36 CFR §800. Accordingly, pursuant to 24 CFR §§ 58.5 and 58.13, as the Responsible Entity's Certifying Officer, the Mayor is the "responsible Federal official" as that term is used in Section 102 of NEPA, and the "Agency Official" as that term is used in Section 106 and 36 CFR §800. The Mayor, as the Certifying Officer of the Responsible Entity and Section 106 Agency Official, hereby delegates authority to CCH to implement and monitor this Agreement; and

WHEREAS, together with its own funds, CCH used funds from HUD's Community Development Block Grant ("CDBG") to acquire the real property and improvements located at 1331 River Street in Honolulu, Hawaii, more particularly described as Tax Map Key ("TMK") number (1) 1-7-006:012 (the "Property"). The Property is therefore currently subject to CDBG restrictions; and

WHEREAS, the 0.6181-acre Property contains a building (the "Building") which was built in 1958 and has been determined eligible for listing in the State and National Registers of Historic Places, at the local level

under Criterion C, as a unique example of mid-twentieth century modern architecture. The historic name of the Building is the John R. Gilliland Sr. Building. The Building has become dilapidated and is currently functionally obsolete. The Building is currently unoccupied and together with the surrounding neighborhood, has become a gathering place for the homeless population; and

WHEREAS, a hazardous materials assessment survey ("Hazmat Survey")for the Building was conducted by Ford & Associates in April 2019 evidenced the presence of hazardous materials including, but not limited to, asbestos-containing materials. Nine of the asbestos-containing materials were found in amounts above regulatory safe levels; and

WHEREAS, HUD originally designated the Property as a blighted area; and

WHEREAS, HUD originally provided federal CDBG funds for the acquisition of the commercial property which met the national objective of removal of blight, however, the City proposes to change the designation of use pursuant to the provisions of 24 Code of Federal Regulations ("CFR") section 570.505. The change in the national objective is to affordable housing. All 100% of the units created will meet the CDBG national objective at 24 CFR 570.208(a)(3) Housing Activities.

WHEREAS, CCH has determined it best to provide low-income housing to Honolulu's senior population by entering into a public-private partnership; and

WHEREAS, through a Request for Proposals (RFP) process, CCH selected HSD to plan, design, construct, operate and manage redevelopment of the Property pursuant to the terms and conditions of that certain Development Agreement ("DA") dated May 17, 2016, as amended from time to time, made by and between CCH and HSD; and

WHEREAS, HSD was selected as the best qualified development proposal for the redevelopment of the Property and upon satisfaction of conditions precedent established in the revised DA, subsequent to 201H approval, the CCH will recommend to the City Council that HSD be approved for a long-term lease, and thus CCH has invited HSD to sign this Agreement as an Invited Signatory; and

WHEREAS, CCH, subject to the terms and certain conditions precedent in the revised DA, subsequent to 201H approval and City Council approval of a long-term lease, will approve HSD to demolish the existing Building located on the property with the intent to redevelop the Property into an affordable housing rental project for seniors aged 62 and over, at 80% Area Median Income (AMI) and below with the vast majority of units available to seniors with incomes at 60% AMI and below. The demolition and redevelopment together shall be referred to herein as the "Project;" and

WHEREAS, HSD both hosted and attended numerous community meetings with Concurring Parties which culminated in several design changes to the Project including, but not limited to, establishing setbacks of the Project from Lum Sai Ho Tong ranging from approximately 13 feet to 23 feet;

WHEREAS, due to the initial acquisition of the Property and Building with a portion of HUD CDBG funds, the Project is an undertaking subject to review under Section 106 and its implementing regulations, 36 CFR §800; and

WHEREAS, CCH has defined the undertaking's area of potential effect ("APE") as the area within the general boundaries of the H-1 Freeway to the northeast, Maunakea Street and Nuuanu Avenue to the southeast, North Beretania Street to the southwest and Aala Street to the northwest in Honolulu, Hawaii (includes the project site and portions of TMK Nos. (1) 1-7-005:019; (1) 1-7-005:021; (1) 1-7-006:003; (1) 1-7-006:008; (1) 1-7-006:010; (1) 1-7-006:012; (1) 1-7-006:013; (1) 1-7-007:001; (1) 1-7-007:002; (1) 1-7-007:021; (1) 1-7-008:001; (1) 1-7-008:002; (1) 1-7-023:033; (1) 1-7-023:034; (1) 1-7-023:036; (1) 1-7-026:004; (1) 1-7-026:010; (1) 1-7-026:011; (1) 1-7-026:012; (1) 1-7-026:013; (1) 1-7-026:015; (1) 1-7-026:016; and (1) 1-7-026:017 (see Exhibit A); and

WHEREAS, CCH has defined the undertaking's archaeological study area, a component of the APE as the 0.6181-acre project footprint, located at 1331 River Street (TMK (1) 1-7-006:012) (see Exhibit B); and

WHEREAS, CCH's historic property identification effort identified the following historic properties within the project's APE that may be affected by the undertaking: (1) *For Architectural Historic Properties***:** Please reference Exhibit C, Historic Architectural Resources Identified within the Halewai'olu Area of Potential Effect, (2) *For Archaeological Historic Properties*: Please reference Exhibit D, Historic Archaeological Resources Identified within the Halewai'olu Area of Potential Effect; and

WHEREAS, Mayor, as the certifying official of the Responsible Entity and Agency Official under Section 106, has determined that the undertaking will have an adverse effect on the following historic properties, which have been determined eligible for listing in the National Register of Historic Places: Lum Sai Ho Tong and the John R. Gilliland Building (Please Reference Exhibit C) and State Inventory of Historic Places (SIHP) 50-80-14-8840 (Please Reference Exhibit D). While the undertaking may have a potential adverse effect on Lum Sai Ho Tong, the potential adverse effects will be mitigated by providing the setbacks as stated above and implementing the mitigation measures as stipulated in this Agreement; and

WHEREAS, CCH consulted with SHPO under 36 CFR §800; and

WHEREAS, SHPO has reviewed and concurred with the evaluations and recommendations in the following referenced materials *Reconnaissance Level Survey for the John R. Gilliland Building* and *Archaeological Inventory Survey for the Halewai'olu Senior Residences Project, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu Island, Hawai'i TMK (1) 1-7-006:012* (Draft January 2019); and

WHEREAS, human skeletal remains were identified on the Property and in compliance with Hawai'i State burial law (HRS §6E-43 and HAR §13-300), CCH, together with HSD, further consulted with SHPO (including the SHPD History and Culture Branch), the O'ahu Island Burial Council ("OIBC"), and OIBC-recognized Native Hawaiian cultural descendants, including without limitation the Mana Caceres 'Ohana, the Keala Norman 'Ohana, the Marin Ohana represented by Donna and Daron Makaiwi, and the Ali'i Pauahi Hawaiian Civic Club; and

WHEREAS, in June 2019, CCH prepared and delivered over 100 letters of invitation ("Invitation") and accompanying background materials describing the proposed undertaking to organizations and individuals with a potential interest in the proposed undertaking and its potential to affect historic properties including all Native Hawaiian Organizations identified on the *Native Hawaiian Organization Notification List* published by the U.S. Department of the Interior, and maintained by the Office of Native Hawaiian Relations, to identify any Native Hawaiian Organizations and/or Native Hawaiian descendants who may have ancestral

lineal or cultural ties, knowledge, or religious attachment or concerns regarding the proposed undertaking (See Exhibit E). Multiple parties responded to the Invitation and, of these, the Historic Hawai'i Foundation (a Hawaii nonprofit corporation), Hawaiian Memorial Life Plan Ltd, dba Borthwick Mortuary, Chinatown Community Center Association, Lum Sai Ho Tong, the Ali'i Pauahi Hawaiian Civic Club, Mr. Mana Caceres and his family, and Mr. & Mrs. Donna and Daron Makaiwi, expressed a desire to participate in consultation as concurring parties ("Concurring Parties"); and

WHEREAS, CCH and HSD have consulted with the Concurring Parties regarding the effects of the undertaking on historic properties and have invited them to sign this Agreement as concurring parties**;** and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), CCH has notified the Advisory Council on Historic Preservation ("ACHP") of the adverse effect determination with specified documentation, and ACHP has chosen not to participate in the consultation pursuant to 36 CFR §800.6(a)(1)(iii) (see Exhibit F); and

NOW, THEREFORE, CCH, SHPO, and HSD agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

CCH, with the assistance of HSD, shall ensure that the following measures are carried out:

I. ADVISORY COMMITTEE COORDINATION

A. Within six (6) months of the execution of the Agreement, an advisory committee ("Advisory Committee") will be established. The purpose of the Advisory Committee is to assist HSR management with the development of the Story Map (see Section III.B. of this Agreement) and any other information needed for scope, content and final product. The Advisory Committee shall also assist HSR management with guidance, review and comment on the use of the Social Activities Center (SAC). HSR management will work with the Advisory Committee in good faith to include recommendations of the Advisory Committee for the use of the SAC so long as any recommendation does not fall within the purview of management.

B. The Advisory Committee will also assist with other provisions as stated in this Agreement.

C. HSD shall recruit representatives to the Advisory Committee from the following organizations:
- Downtown Chinatown Neighborhood Board Number 13;
- United Chinese Society;
- Chinese Chamber of Commerce; and
  Chinatown Community Center Association.

HSD shall also invite other representatives from the community to join the Advisory Community (including, but not limited to, representatives from the following organizations):
- Lum Sai Ho Tong:
- Ali`i Pauahi Hawaiian Civic Club
- Hawaiian Social or Civic Clubs;

- Japanese Social or Civic Clubs;
- Chinese Social or Civic Clubs;
- Filipino Social or Civic Clubs;
- Vietnamese Social or Civic Clubs;
- Adjacent Property Owners; and
- Halewai'olu Senior Residences Resident(s) (after Project is occupied).

The Advisory Committee will also include representatives from:

- Property Manager (Michaels Management);
- Resident Services Director (Better Tomorrows);
- HSD; and
- CCH.

D. The Advisory Committee shall establish Bylaws or Rules of Procedure to govern its operations. Additional representatives may be added from time to time by HSD or by a majority vote of the existing members. Except for HSD, Property Manager and the Resident Services Director (Better Tomorrows), representatives may be removed from the Advisory Committee for cause by majority vote of the existing members.

E. The Committee shall meet at least quarterly during the duration of the Agreement, but may forego a quarterly meeting if no meeting is necessary and by a majority vote. At the completion of the Agreement, the Advisory Committee may disband or decide to continue to meet as needed.

II. MITIGATION OF ARCHAEOLOGICAL HISTORIC PROPERTIES INCLUDING PREVIOUSLY IDENTIFED BURIAL SITES

A. Prior to Project-related ground disturbance that could affect archaeological historic properties including burial sites, HSD shall develop and implement, pursuant to Hawai'i State Rules of Practice and Procedure Relating to Burial Sites and Human Remains (HRS §6E-43 and HAR §13-300), a burial treatment plan ("BTP") for the previously identified Native Hawaiian burial site identified during the Project's archaeological inventory survey. HSD shall comply with the BTP and all applicable Federal, State and Local laws.

B. Prior to Project-related ground disturbance that could affect archaeological historic properties including burial sites, HSD shall develop and implement an archaeological monitoring program pursuant to HAR §13-279. The archaeological monitoring plan ("AMP"), prepared pursuant to HAR §13-279-4, shall include the description of a targeted data collection component to be developed in consultation with the SHPD. This targeted data collection component of the AMP shall be carried out during the interval between current building demolition and the start of project construction. The AMP shall be submitted to the SHPD for review and approval prior to implementation. All ground-disturbing work shall proceed in accordance with the approved AMP. This AMP shall be approved by the SHPD prior to the start of project construction and shall be implemented as project construction continues.

III. EDUCATIONAL AND INTERPRETIVE PROGRAMS

A. Consultation Protocol for Developing Materials

1. Within six (6) months of the formation of the Advisory Committee, HSD shall provide to the Advisory Committee a draft work plan that outlines the scopes of work, timelines and assigned personnel for the Web-Based Geographic Information System Story Map. Any comments received by HSD from Advisory Committee within thirty (30) days of receipt shall be considered by HSD in developing a scope of work.
2. HSD shall provide a response to all written comments received during the comment period, explaining how the comment was included in the scope of work, or, if not included, the rationale for the exclusion.
3. HSD shall prepare a close-out memo for each of the stipulations to document mitigation actions taken with a timeline and outcomes achieved by the action. HSD shall distribute the close-out memo to the Signatories and Concurring Parties.

B. Web-Based Geographic Information System (GIS) Story Map

1. Within six (6) months of finalizing the work plan, HSD shall develop a web-based GIS story map that provides interactive, interpretive, and educational content based on this Project's Reconnaissance Level Survey, Archaeological Inventory Survey, and Cultural Impact Assessment. Story maps are a relatively recent technological innovation that can fill the role of more traditional public interpretation measures, such as physical interpretive signage and self-guided tours with informational placards. Story maps are an application/platform for accessing information and incorporating geographic location data based on GPS and GIS through mobile devices such as smart phones, laptop computers, and tablets.
2. The story map's focus and working title shall be "River Walk through Honolulu's Chinatown—Historical and Cultural Sites Along Nu'uanu Stream."
3. In consultation with the Advisory Committee, Historic Hawai'i Foundation (HHF) and the SHPD, ten locations shall be selected for inclusion in the story map. From inland/*mauka* to seaward/*makai* places along the Nu'uanu Stream Corridor from which the ten story map locations shall be selected may include, but not be limited to, the following:
   a) Foster Botanical Garden
   b) Kuan Yin Temple
   c) Lum Sai Ho Tong Temple
   d) Izumo Taishakyo Temple
   e) The Halewai'olu Senior Residences project area
   f) The Gilliland Building
   g) "The Vineyard" and its ties to the Marin Family
   h) Dr. Sun Yat Sen Memorial Statue
   i) Chinatown Cultural Plaza
   j) Re-channelization of Nu'uanu Stream
   k) A'ala Park
   l) Kuwili and Kawa Fishponds
4. Preparation of the story map shall include the following steps:
   a) Initial consultation meeting with Advisory Committee, HHF, and the SHPD. This meeting will discuss and decide upon the ten locations along Nu'uanu Stream that

will be the subject of the story map. This meeting will offer the Advisory Committee the opportunity to specify the content of the story map.

b) Field inspection of the Nu'uanu Stream story map area to assess current conditions and collect any needed GPS location data and current photos.

c) Preparation of the draft story map text and images with links to other information sources – to include the following:
   i. Historical, archaeological, and cultural background in images and text.
   ii. Links to other Chinatown public interpretation and research, such as HART's HRTP documentation and resources, as well as the CCH's own resources.

d) Second consultation meeting with the Advisory Committee, HHF and the SHPD. Prior to this meeting the draft story map application will be provided to the Advisory Committee for their review and comment at the second consultation meeting.

e) Preparation of the final story map based on comments from the second consultation meeting.

f) HSD shall ensure that the story map is maintained and available for public use over the internet for at least five years following its completion.

IV. CONSTRUCTION PROTECTION PLAN

A. Pursuant to best management practices approved by CCH, HSD, in cooperation with its general contractor, will implement standard monitoring of effects, of the Project's construction, if any, on adjacent historic properties in the vicinity (e.g. Lum Sai Ho Tong and Borthwick Mortuary), in addition to procuring all necessary noise permits. Potential effects which shall be monitored include, but are not limited to, traffic, noise, vibration, dust and other effects associated with construction. Should an effect occur outside of the normal course of construction, HSD will make this information available through a written memo as required by Section VI.A. of this Agreement.

B. HSD shall ensure that any inadvertent damage resulting from the Project to adjacent historic structures shall be repaired in accordance with The Secretary of the Interior's Standards for the Treatment of Historic Properties, 36 CFR §68. HSD shall submit a scope of work or treatment plan to address inadvertent damage to the SHPD for concurrence before initiating repairs.

V. POSTREVIEW DISCOVERIES

B. Should additional human remains or burial sites be identified during project construction, CCH shall ensure that HSD treat them following Hawai'i State burial law governing inadvertent discoveries of human skeletal remains (HRS §6E-43.6, HAR §13-300-40).

C. If additional archaeological historic properties are discovered that may be historically significant or unanticipated effects on historic properties are found, CCH shall ensure that HSD implement a plan to address such discoveries following consultation and the procedures outlined in HAR §13-275-12 and HAR §13-280.

VI. MONITORING AND REPORTING

A. Each year following the execution of this Agreement, until it expires or is terminated, HSD shall provide the Signatory Parties and Concurring Parties a summary written memo detailing work undertaken with respect to the Project or problems encountered including any adverse effect to Eligible Properties.
B. Signatory Parties and Concurring Parties may request a meeting to discuss the summary written memo to facilitate review, comment on the annual report, to resolve questions, or to resolve adverse conditions.

VII. DURATION

A. If the terms of this Agreement have been fully implemented by five (5) years from the date of the execution of this Agreement, this Agreement will terminate and be considered null and void. In the event the terms of this Agreement have not been fully implemented by five (5) years from the date of the execution of this Agreement, CCH shall notify the Signatory Parties and Concurring Parties, and, in its sole discretion, if it chooses to continue with the undertaking, shall re-initiate review of the undertaking in accordance with 36 CFR § 800.

VIII. DISPUTE RESOLUTION

A. Should any Signatory Party to this Agreement object at any time to any actions proposed or the manner in which the terms of this Agreement are implemented, CCH shall consult with such party to resolve the objection. If CCH determines that such objection cannot be resolved, CCH will:

1. Forward all documentation relevant to the dispute, including CCH's proposed resolution, to ACHP. ACHP shall provide CCH with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, CCH shall prepare a written response that takes into account any timely advice or comments regarding the dispute from ACHP, HSD, and Signatory Parties, and provide them with a copy of this written response. CCH will proceed according to its final decision.

2. If ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, CCH may proceed according to its final decision. Signatories and Concurring Parties will be notified in writing.

B. Any terms of this Agreement that are not subject to dispute shall remain unchanged and in full force and effect.

XII. AMENDMENTS

A. This Agreement may be amended when such an amendment is agreed to in writing by each of the Signatory Parties with consultation by the Concurring Parties. Such amendment shall be

effective the date such amendment is executed by the Signatory Parties and delivered electronically to the ACHP.

XIII. TERMINATION

A. If any of the Signatory Parties to this Agreement, determines that its terms will not or cannot be carried out, that party shall immediately consult with the other Signatory Parties to attempt to develop an amendment per Stipulation XII, above. If within thirty (30) days an amendment cannot be reached, any Signatory may terminate the Agreement upon written notification to the other Signatories.

B. Once the Agreement is terminated, and prior to work continuing on the undertaking, CCH must either execute an agreement pursuant to 36 CFR § 800.6 or request, take into account, and respond to comments of ACHP under 36 CFR § 800.7; provided, however, nothing herein shall be construed to require the CCH to halt construction and related activities proceeding in accordance with this Agreement initiated prior to the termination of this Agreement. CCH shall notify the Signatories of action it will pursue. Concurring Parties will be notified in writing. Any new agreement pursuant to 36 CFR § 800.6 or action based under 36 CFR § 800.7 shall apply solely to activities initiated after the termination of this Agreement.

C. Execution of this Agreement by CCH and implementation of its terms evidence CCH has taken into account the effects of the undertaking on historic properties.

XIV. MISCELLANEOUS

A. Formal notices and communication between the Signatory Parties shall be sufficiently given if, and shall not be deemed given unless, dispatched by certified mail, postage prepaid, return receipt required, or sent by express delivery or overnight courier service, to the office of the Signatories shown as follows, or such other address as the Signatory may designate in writing from time to time:

CCH:
City and County of Honolulu
Department of Land Management
558 S. King Street
Honolulu, Hawai‘i 96813
Attention: Ms. Sandra Pfund, Director or her successor
Email:

SHPO:
Dr. Alan Downer, Deputy State Historic Preservation Officer
Hawai‘i Department of Land and Natural Resources
601 Kamokila Boulevard, Suite 555
Kapolei, HI 96707
Attention: Dr. Alan Downer, Deputy State Historic Preservation Officer or his successor
Email:

HSD:
Halewai'olu Senior Development
737 Bishop Street, Ste. 1520
Honolulu, HI 96813
Attention: Ms. Karen Seddon, Regional Vice President
Email:

HHF:
Historic Hawai'i Foundation
680 Iwilei Road, Ste. 690
Honolulu, HI 96817
Attention: Ms. Kiersten Faulkner, Executive Director
Email:

Chinatown Community Center Association
P.O. Box 37572
Honolulu, HI 96837
Attention: Mr. Wesley Fong, President
Email:

Lum Sai Ho Tong
1315 River Street
Honolulu, HI 96817
Attention: Mr. Howard Lum, President
Email:

Ali'i Pauahi Hawaiian Civic Club
99-045 Nalopaka Place
Aiea, HI 96701
Attention: Ms. Kehaulani Lum, Director
Email :

Lam Ohana
(808) 263-7777
Attention: Mr. Gerald N.Y.C. Lam
Email: naalii@aol.com

Ohana Kupono Consulting Inc.
(808)222-2777
Attention: Mr. Mana Caceres
Email: mana@ohanakupono.com

Marin Ohana
(808)381-6315
Attention: Mr. & Mrs. Daron & Donna Makaiwi

Email: Donmak808@yahoo.com

Hawaiian Memorial Life Plan, Ltd.
Dba. Borthwick Mortuary
1330 Maunakea Street
Honolulu, HI 96817
office 808.522.5233
Attention: Mr. Mel Kalahiki, Location Manager
Email:

B. This Agreement may be executed in counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same Agreement.

[signature page follows]

A. SIGNATORIES:

City and County of Honolulu (Responsible Entity)

By: _____
Kirk Caldwell
Mayor, City and County of Honolulu
Certifying Officer of Responsible Entity
Section 106 Agency Official
Date: _____

APPROVED AS TO FORM:

By: _____
Corporation Counsel

Date: _____

Hawaii State Historic Preservation Officer

By: _____
Dr. Alan Downer
Deputy State Historic Preservation Officer
Date: _____

APPROVED AS TO FORM:

By: _____
Deputy Attorney General of the State of Hawaii

Date: _____

B. INVITED SIGNATORY:

Halewaiolu Senior Development, LLC,
a limited liability company

By: _____
Karen Seddon, Regional Vice President
Date: _____

C. CONCURRING PARTIES:

Historic Hawaiʻi Foundation,
a Hawaii non-profit corporation

By: _____
Ms. Kiersten Faulkner, Executive Director
Date: _____

Hawaiian Memorial Life Plan Ltd., dba Borthwick Mortuary

By: _____
Mr. Mel Kalahiki, Location Manager
Date: _____

Chinatown Community Association

By: _____
Mr. Wesley Fong, President
Date: _____

Lum Sai Ho Tong

By: _____
Mr. Howard Lum, President

Date: _____

Aliʻi Pauahi Hawaiian Civic Club

By: _____
Ms. Kehaulani Lum, Director

Date: _____

Native Hawaiian Recognized Descendant

By: _____
Mr. Mana Caceres and Mrs. Kalehua Caceres, Caceres ʻOhana

Date: _____

Native Hawaiian Recognized Descendant

By: _____
Mr. Daron Makaiwi and Mrs. Donna Makaiwi, Marin ‘Ohana

Date: _____

NOTES

This document assumes that the term "Signatory" has been defined in the agreement to include both signatories and invited signatories.

The agency must submit a copy of the executed MOA, along with the documentation specified in Section 800.11(f), to ACHP prior to approving the undertaking in order to meet the requirements of Section 106. 36 CFR § 800.6(b)(1)(iv)

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EXHIBIT A

Area of Potential Effect Boundaries



Tax Map Keys Included within Area of Potential Effect:

1-7-005:019	1-7-006:013	1-7-023:033	1-7-026:012
1-7-005:021	1-7-007:001	1-7-023:034	1-7-026:013
1-7-006:003	1-7-007:002	1-7-023:036	1-7-026:015
1-7-006:008	1-7-007:021	1-7-026:004	1-7-026:016
1-7-006:010	1-7-008:001	1-7-026:010	1-7-026:017
1-7-006:012 (the "Property")	1-7-008:002	1-7-026:011	

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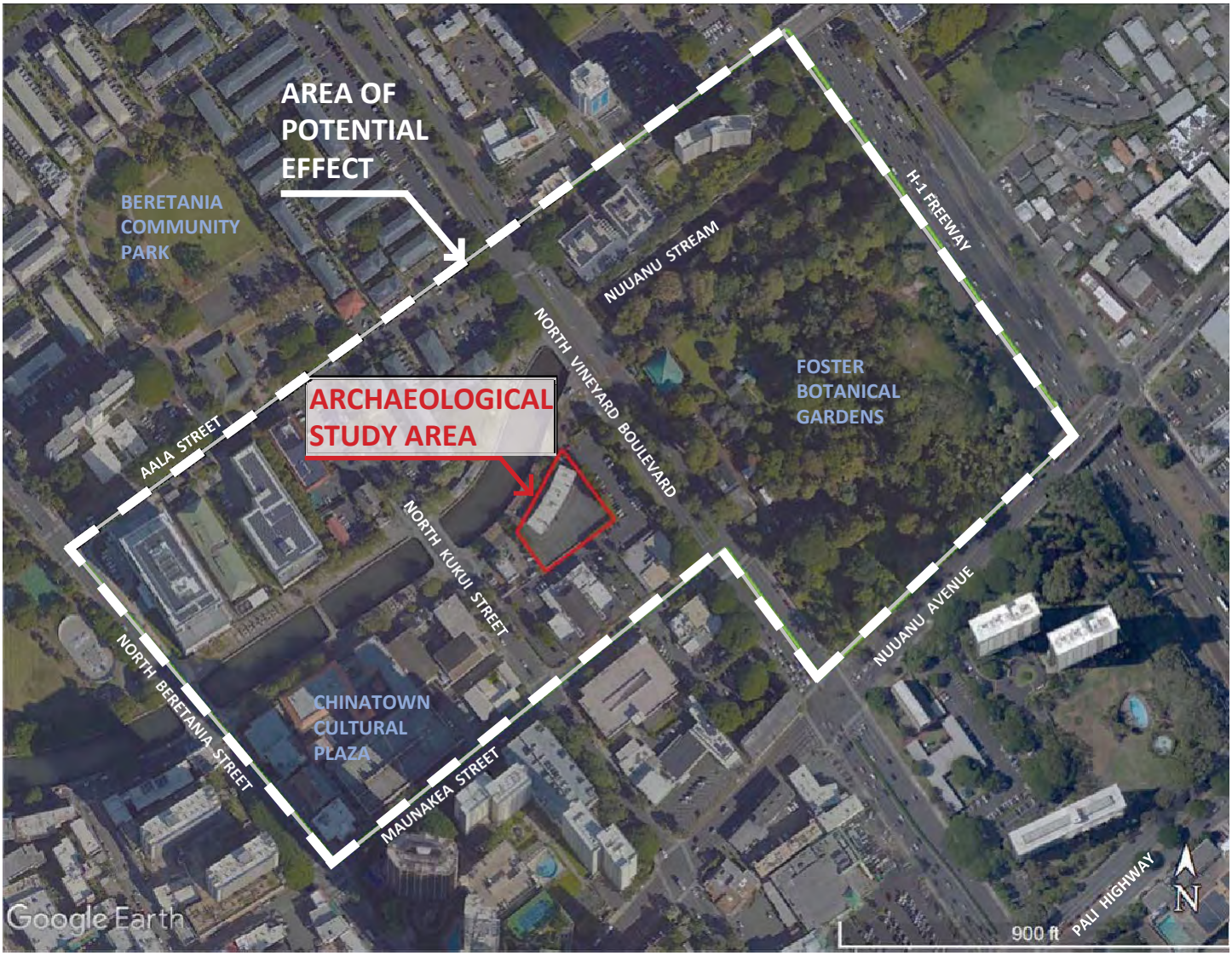
EXHIBIT B

Archaeological Study Area



Archaeological Study Area Limited to the following Tax Map Key within Area of Potential Effect:

1-7-006:012 (the "Property")

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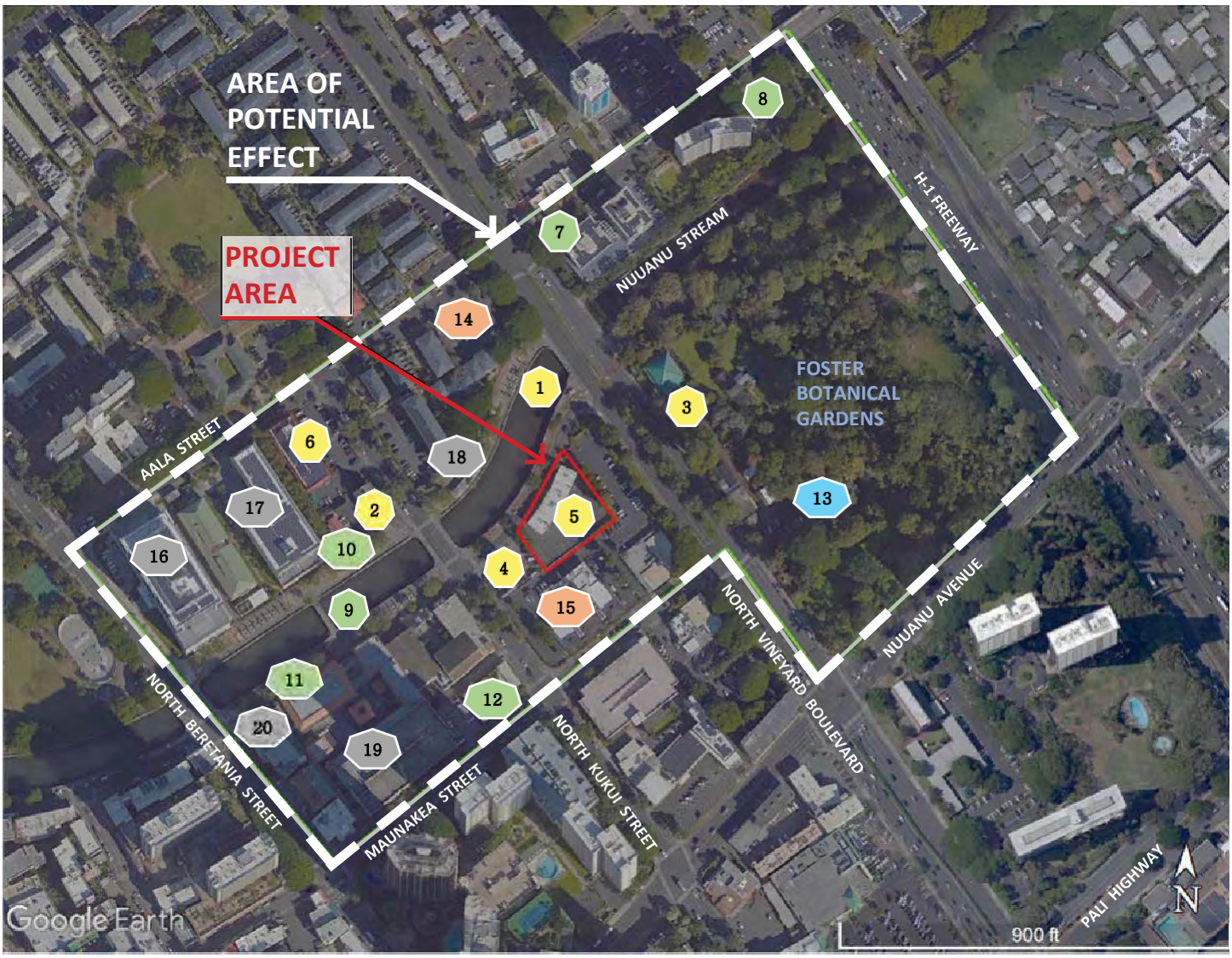
EXHIBIT C

Map: Historic Architectural Resources Identified within the Halewaiolu Area of Potential Effect



KEY

- # ELIGIBLE HISTORIC ARCHITECTURAL RESOURCE
- # POTENTIALLY ELIGIBLE AT A LATER DATE (SEE CORRESPONDING TABLE)
- # LISTED ON THE HAWAII & NATIONAL REGISTER OF HISTORIC PLACES
- # NOT AN ELIGIBLE HISTORIC RESOURCE
- # NOT WITHIN DATE RANGE ESTABLISHED BY PROJECT SCOPE

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EXHIBIT C

Table: Historic Architectural Resources Identified within the Halewaiolu Area of Potential Effect

List of Potential Resources & Evaluation											
	Present Name	*Historic Name*	*Address*	*TMK*	*SIHP Number/NRHP Number*	*Category*	*Date*	*Architect/Builder*	*Eligibility*	*Criterion*	*Condition*
1	Channelization of Nuuanu Stream	-	-	-	-	-	1899	-	Eligible	A	Good
2	Izumo Taishakyo Mission	Izumo Taishakyo Mission	215 North Kukui Street	(1) 1-7-026:012	-	Residential	1923	Hego Fuchino (architect) Ichisaburo Takata (builder)	Eligible	C	Excellent
3	Kuan Yin Temple	Kuan Yin Temple	170 North Vineyard Blvd	(1) 1-7-007:021	-	Religious	1960	Clifford F. Young	Eligible	C	Good
4	Lum Sai Ho Tong	Lum Sai Ho Tong	1315 River Street	(1) 1-7-006:010		Commercial	1953	George Sui	Eligible	C	Good
5	John R. Gilliland Building	John R. Gilliland Building	1331 River Street	(1) 7-0-006:012	-	Commercial	1958	Kenneth Sato	Eligible	C	Fair
6	Harry and Jeanette Weinberg Kukui Center	Harry and Jeanette Weinberg Kukui Center	245 North Kukui Street	(1) 1-7-026:011	-	Commercial	1968	Bradley & Wong	Eligible	C	Excellent
7	Aloha United Way	The Aloha United Fund Building	200 North Vineyard Blvd.	(1) 1-7-023: 034	-	Commercial-Nonprofit	1970	Leo S. Wou & Associates	Eligible in 2020	C	Good
8	Keola-Hoonanea	Keola-Hoonanea	1465 Aala Street	(1) 1-7-023-036	-	Residential	1971	Frank Slavsky	Eligible in 2021	C	Good
9	Chinatown Bridge- Nuuanu Stream	-	-	-	-	-	1971	-	Eligible in 2021	C	Good
10	"Gateway" Sculpture	-	-	-	-	-	1971	Edward Brownlee	Eligible in 2021	C	Good
11	"Ts'ung" Sculpture	"Ts'ung" Sculpture	-	-	-	-	1971	Edward Brownlee	Eligible in 2021	C	Good
12	Mun Lun School	Mun Lun School	1290 Maunakea Street	(1) 1-7-005:021	-	Commercial	1972	-	Eligible in 2022	A	Good
13	Foster Botanical Gardens	Foster Botanic Garden	51 North Vineyard Blvd	(1) 1-7-007-001 : 002	SIHP# 80-14-1389 NRHP # 93000377	Public	1855	-	Listed on the Hawaii & NRHP	A&B	Excellent
14	Waena Apartments	Kukui Gardens	408 North Beretania Street	(1) 1-7-026: 013	-	Residential	1969	Cesar Pelli	Not Eligible	-	Good
15	Borthwick Mortuary	Borthwick Mortuary	1370 & 1330 Maunakea Street	(1) 1-7-006:008	-	Commercial	1963	-	Not Eligible	-	-
16	American Savings Bank	-	1332 & 1221 Aala Street	(1) 1-7-026:004, 016	-	Commercial	2019	Leo F. Daly and ZGF Architect	Not within date range	-	-
17	Hawaii Federal Credit Union	-	1226 College Walk	(1) 1-7-026:010	-	Commercial	1994	-	Not within date range	-	-
18	Clean Team Maintenance - City and County of Honolulu	-	-	-	-	Public Service	1999	-	Not within date range	C	Good
19	Chinatown Cultural Plaza	Chinatown Cultural Plaza	100 North Beretania Street	(1) 1-7-005:019	-	Commercial	1973-1975	Daniel, Mann, Johnson and Mendenhall	Not within date range	C	Good
20	Dr. Sun Yat Sen Memorial Statue	Dr. Sun Yat Sen Memorial Statue	100 North Beretania Street	-	-	-	1984	-	Not within date range	-	-

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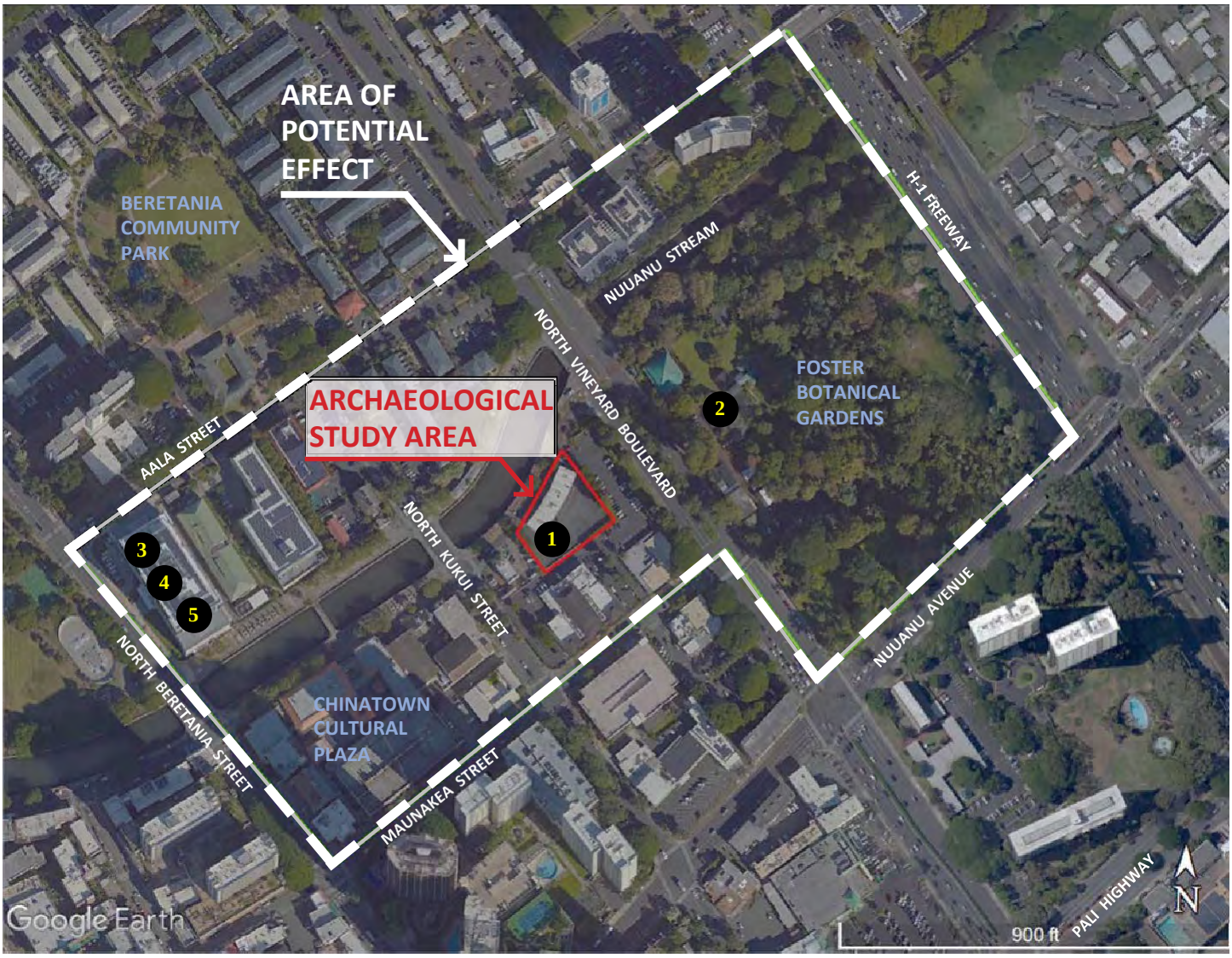
EXHIBIT D

Map: Historic Archaeological Resources Identified within the Halewaiolu Area of Potential Effect



Archaeological Study Area Limited to the following Tax Map Key within Area of Potential Effect:

1-7-006:012 (the "Property")

KEY

1. = State Inventory of Historic Places (SIHP) # 50-80-14-8840
2. = Inadvertent Discovery of Human Remains, 10 August 2004, no SIHP # assigned
3. = SIHP # 50-80-14-7933
4. = SIHP # 50-80-14-7935
5. = SIHP # 50-80-14-7934

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EXHIBIT D

Table: Historic Archaeological Resources Identified within the Halewaiolu Area of Potential Effect

# On Map Exhibit D	SIHP # 50-80-14-	Formal Type/Name	Function	Age	Hawai'i State Significance Criteria	National Register Eligibility Criteria
					HAR § 13-275-6	36 CFR 60.4
1	8840	Subsurface cultural deposits	Agriculture, habitation, human interment, commercial and residential infrastructure	Pre-Contact to mid-twentieth century	d and e	D
2	NA, not assign-ed	Subsurface burial site, inadvertent discovery of previously disturbed remains	Burial interment	Undetermined	d and e	ineligible
3	7933	Subsurface burial site, interments and associated features	Burial interment	Early post-Contact to mid-nineteenth century	d and e	D
4	7935	Subsurface wall remnants	Boundary	Nineteenth century	d	D
5	7934	Subsurface building remnants	Foundation, paving	Twentieth century	d	D

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EXHIBIT E

Native Hawaiian Organization Notification List

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
Aha Moku Advisory Committee Department of Land and Natural Resources (DLNR)	Leimana DaMate	Executive Director	Agency/Govt
Chamber of Commerce Hawaii	Sherry Menor-McNamara		Agency/Govt
City and County of Honolulu	Roy K. Amemiya, Jr.	Managing Director	Agency/Govt
City and County of Honolulu City Council	Ann Kobayashi	Councilmember	Agency/Govt
City and County of Honolulu City Council	Carol Fukunaga	Councilmember	Agency/Govt
City and County of Honolulu City Council	Joey Manahan	Councilmember	Agency/Govt
City and County of Honolulu Department of Community Services	John Chang		Agency/Govt
City and County of Honolulu Department of Planning and Permitting			Agency/Govt
Honolulu Police Department	Major Roy Sugimoto	District 1 Commander	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Alvin Au	Chair	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Chu Lan Shubert-Kwock		Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Ernest Caravalho		Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Tom Smyth		Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Anthony Chang	Member	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Jasmine Mancos	Member	Agency/Govt
Neighborhood Board #13 (Downtown/Chinatown)	Robert Tom	Member	Agency/Govt
O‘ahu Island Burial Council (OIBC)	Mana Caceres	‘Ewa Moku Representative	Agency/Govt
Office of Hawaiian Affairs	Kamana‘opono Crabbe CEO	Ka Pouhana	Agency/Govt
OIBC Kona Rep./Chairperson	HinaleimoanaWong-Kalu (OIBC Chair)	Chair, Kona Moku Representative	Agency/Govt

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
State Historic Preservation Division (SHPD) Archaeology and Culture & History/Burials Program branches	Regina Hilo	Burial Sites Specialist (O'ahu)	Agency/Govt
State Historic Preservation Division (SHPD) Archaeology and Culture & History/Burials Program branches	Dr. Susan Lebo	Archaeology Branch Chief	Agency/Govt
State Historic Preservation Division (SHPD) Archaeology and Culture & History/Burials Program branches	Ka'ahiki Solis	Cultural Historian (Oahu, Kauai, Niihau)	Agency/Govt
State of Hawaii - Senate, District 13	Karl Rhoads		Agency/Govt
State of Hawaii, House of Representatives, District 20	Calvin Say		Agency/Govt
State of Hawaii, House of Representatives, District 29	Daniel Holt		Agency/Govt
Aala Dog Park Association	Cathy Au Hoy		Chinatown
American Savings Bank	Michelle Bartell	Director of Communication and Community Advancement	Chinatown
Arts District Merchants Association (ADMA)	Nicole Reid		Chinatown
Borthwick Mortuary	William Mendel		Chinatown
Borthwick Mortuary	Ennilaee Anulao		Chinatown
Borthwick Mortuary	Jay Morford	Funeral Services	Chinatown
Chinatown Business and Community Association (CBCA)	Chu Lan Shubert-Kwock		Chinatown
Chinatown Business and Community Association (CBCA)	Stanley Yon (US China People's Friend)		Chinatown
Chinatown Business Association	Gifford Chang		Chinatown
Chinatown Community Center Association (CCCA)	Allen Stack, Jr.		Chinatown
Chinatown Community Center Association (CCCA)	Alvin Ozaki		Chinatown
Chinatown Community Center Association (CCCA)	Dolores Mollring		Chinatown

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
Chinatown Community Center Association (CCCA)	Liana Benn		Chinatown
Chinatown Community Center Association (CCCA)	Sandra Siu		Chinatown
Chinatown Community Center Association (CCCA)	Walter Chang		Chinatown
Chinatown Community Center Association (CCCA)	Wesley Fong		Chinatown
Chinatown Improvement District	Lee Stack	President	Chinatown
Chinatown Improvement District	Robert Wu		Chinatown
Chinatown Merchants Association	Denton Chun		Chinatown
Chinese Chamber of Commerce Hawaii	Eddie Flores, Jr.		Chinatown
Chinese Chamber of Commerce Hawaii	Mona Choy-Beddow		Chinatown
Chinese Physical Culture Association			Chinatown
Chung Wah Chung Kung Hui	Stanford Yuen	Neighborhood Board President and Community Leader	Chinatown
Dr. Sun Yat- Sun Yat Sen Memorial			Chinatown
Filipino Community Center - Joseph Rizal Memorial			Chinatown
Foster Botanical Gardens			Chinatown
Friends of Chinatown	Eric Wong		Chinatown
Friends of Chinatown	Johnny Ng		Chinatown
Friends of Chinatown	Kim Tran		Chinatown
Ft Street Mall BID Assoc	Victor Lim		Chinatown
Hawai‘i Chinese Association of Hawai‘i			Chinatown
Hawai‘i Chinese Buddhist Society			Chinatown

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Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
Hawai‘i Chinese History Center			Chinatown
Hawai‘i Chinese Multicultural Museum and Archives			Chinatown
Hawaii Theater	Ruth Bolan		Chinatown
Hawaiian Chinese Civic Association	Sharon L. Pang		Chinatown
Izumo Taishakyo Mission of Hawai‘i	Richard Miyao		Chinatown
Kuan Yin Temple	Merle Chong		Chinatown
Longevity International Enterprises Corporation dba Chinatown Cultural Plaza	Vina Quick		Chinatown
Louis Pohl Gallery	Sandra Pohl		Chinatown
Lum Sai Ho Tong	Howard Lum		Chinatown
Lum Sai Ho Tong	Kehaulani Lum		Chinatown
Lum Sai Ho Tong	Lita Lum		Chinatown
Lum Sai Ho Tong	Luther Chong		Chinatown
Lum Sai Ho Tong	Milton Hee		Chinatown
Lung Doo Benevolent Society	Buck Yong Lee		Chinatown
Lung Kong Kung Shaw	Kristi Quon Esquef		Chinatown
Lung Kong Physical Culture Club	Ernest Loo		Chinatown
Mun Lun School	Kin Ching		Chinatown
Mun Lun School (Center Assoc. & Kalihi-Palama NB 15)	Roland Louie		Chinatown
Pacific Gateway Center	Christy MacPherson	Executive Director	Chinatown
Pacific Gateway Center	Dr. Tim Myaing Thein, Ph.D.	Executive Director	Chinatown
See Dai Doo Society			Chinatown

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Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
See Yup Benevolent Society	Henry Chan		Chinatown
Sing Tao Newspaper, LTD	Joseph Chow		Chinatown
Sui Wah School- Cultural Language School			Chinatown
Sun Yat Sen School- Cultural Language School			Chinatown
Tsung Tin Association	Keith Lim		Chinatown
UCS and Chinatown Community Center Association	Larry Siu		Chinatown
United Chinese Society	Henry Ou	President	Chinatown
United Chinese Society	Ted Li		Chinatown
United Chinese Society	Victor Lim		Chinatown
Wong Kong Har Tong Society	Kimo Wong		Chinatown
	Joseph Young	Honorary Mayor of Chinatown; D.D.S Retired	Chinatown
Hiroshima Peace Bell			Chinatown
Caceres 'Ohana	Mana Caceres		Cultural Descendant
Kaleikini 'Ohana			Cultural Descendant
Lam 'Ohana	Gerald Lam		Cultural Descendant
Makaiwi 'Ohana	Donna Makaiwi		Cultural Descendant
	Ali‘ikaua Kaleikini		Cultural Descendant
	Hāloa Kaleikini		Cultural Descendant
	Kala Kaleikini		Cultural Descendant
	Mahiamoku Kaleikini		Cultural Descendant

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
	Moehonua Kaleikini		Cultural Descendant
	No‘eau Kaleikini		Cultural Descendant
	Paulette Ka‘anohi Kaleikini		Cultural Descendant
	Tuahine Kaleikini		Cultural Descendant
	Betty Keana‘āina		Cultural Descendant
	Kīhei Keana‘āina		Cultural Descendant
	Luther Keana‘āina		Cultural Descendant
	Noelani Keana‘āina		Cultural Descendant
	Regina Keana‘āina		Cultural Descendant
	Vicky Keana‘āina		Cultural Descendant
	Wilsam Keana‘āina		Cultural Descendant
	Bruce Keaulani		Cultural Descendant
	Kalahikiola Keli‘inoi		Cultural Descendant
	Kilinahe Keli‘inoi		Cultural Descendant
	Leon Letoto		Cultural Descendant
	Michael Lee		Cultural Descendant
	Haumea Lew		Cultural Descendant
	Leina'ala Lopes		Cultural Descendant
	Alika Luka		Cultural Descendant
	Donna Makaiwi		Cultural Descendant
	Carolyn Norman		Cultural Descendant

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
	Eileen Norman		Cultural Descendant
	Kaleo Norman		Cultural Descendant
	Keli‘inui Norman		Cultural Descendant
	Theodore Norman		Cultural Descendant
	Kaleo Paik		Cultural Descendant
	Dayleen Yokooji		Cultural Descendant
	Michael Lee		Cultural Descendant
	Natalie Baldauf		Cultural Descendant
	Roddy Akau		Cultural Descendant
Hawai‘i Biological Survey - Nu'uanu Stream			Geographic/Environmental
Nuuanu Stream River Corridor			Geographic/Environmental
Nu'uanu Valley Auwai Study Group	Shannon Wilson		Geographic/Environmental
Ali‘i Pauahi Hawaiian Civic Club	Bruce Keaulani		Hawaiian
Association of Hawaiian Civic Clubs	Hailama Farden	Vice President	Hawaiian
Association of Hawaiian Civic Clubs	Soulee LKO Stroud		Hawaiian
Community Engagement & Resources Group, Kamehameha Schools	Hailama Farden		Hawaiian
Friends of ‘Iolani Palace			Hawaiian
Hawaiian Civic Club of Honolulu			Hawaiian
Native Hawaiian Church			Hawaiian
	William Mendel	Kamaaina of Honolulu	Hawaiian
Japanese Cultural Center of Hawaii			Interested party

Affiliation/Organization	Point of Contact	Point of Contact Title	General Grouping
	Nanette Napoleon Purnell	Trustee of Oahu Cemetery; Author and Researcher	Interested party
	Tom Dang		Interested party
WRNS Studio	Adam Woltag		Interested party
WRNS Studio	Jeff Warner		Interested party
WRNS Studio	Rochelle Nagata-Wu		Interested party
Michaels Development Company	Brandon Hegland		Contractor
Michaels Development Company	Karen Seddon		Contractor
Michaels Development Company	Questor Lau		Contractor
Docomomo US, Hawaii Chapter	Tonia Moy		Architecture
Docomomo US, Hawaii Chapter	Alison Chiu	Director	Architecture
Historic Hawaii Foundation	Kiersten Faulkner	Executive Director	Architecture
Better Tomorrows	Anni Peterson	Director	other
Care Companions and Consulting	Sharon L. Pang		other
Enterprise Honolulu	Pono Shim		other
Faith Action for Community Equity	Leotele Togafau	Executive Director	other
Interstate Realty Management	Mary Keshishian		other
Interstate Realty Management	Stacie Brach		other
Kalanihuia Home for the Aged			other
Onward Creative	Jeff Mull		other
Transit Oriented Development			other
World Journal	Karl Kao		Other

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EXHIBIT F

Advisory Council on Historic Preservation
Notice of Election Not to Participate in Consultation

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Preserving America's Heritage

November 7, 2019

Ms. Rebecca C. Borja
U.S. Department of Housing and Urban Development
1132 Bishop Street, Suite 1400
Honolulu, HI 96813

Ref: *Proposed Halewaiolu Senior Residence Project at 1331 River Street*
Honolulu, Hawaii
ACHPConnect Log Number: 14616

Dear Ms. Borja:

The Advisory Council on Historic Preservation (ACHP) has received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and it is determined that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Hawaii State Historic Preservation Officer (SHPO), and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA, and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the notification of adverse effect. If you have any questions or require further assistance, please contact Ms. Sarah Stokely at (202) 517-0224 or via email at sstokely@achp.gov.

Sincerely,

LaShavio Johnson

LaShavio Johnson
Historic Preservation Technician
Office of Federal Agency Programs

401 F Street NW, Suite 308 • Washington, DC 20001-2637
Phone: 202-517-0200 • Fax: 202-517-6381 • achp@achp.gov • www.achp.gov

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Appendix Q

Cultural Impact Assessment
Cultural Surveys Hawai‘i, Inc.
December 2019

FINAL
Cultural Impact Assessment for the Halewai‘olu Senior Residence Project Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 1-7-006:012

Prepared for
Halewai‘olu Senior Development, LLC

Prepared by
Chantellee Konohia Spencer, B.A.,
and
Hallett Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: HONOLULU 88)

December 2019

O‘ahu Office
P.O. Box 1114
Kailua, Hawai‘i 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office
1860 Main St.
Wailuku, Hawai‘i 96793
Ph.: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Cultural Impact Assessment for the Halewai‘olu Senior Residence Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 1-7-006:012 (Spencer and Hammatt 2019)
Date	October 2019
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: HONOLULU 88
Agencies	Office of Environmental Quality Control (OEQC)
Land Jurisdiction	The City and County of Honolulu
Project Location	The project area is located at 1331–1347 River Street and encompasses the entirety of the existing building and its surrounding parking lot.
Project Description	The proposed project involves the construction of an affordable housing facility for seniors aged 62 and over at 80% Area Median Income (AMI) and below, with the vast majority of units (139 units) available to seniors with incomes at 60% AMI and below. To facilitate construction, the existing building and its surrounding parking lot is planned for demolition; it will be replaced by the proposed housing facility. The housing facility will consist of 155 units (plus one resident manager unit), a community room with warming kitchen, restrooms and storage, computer room, social services activity rooms, social services office, property management offices, with mail and package boxes and elevator lobby on the ground level. A courtyard, retail space and parking access, along with trash compactor room and loading area are also on the ground level. Vehicle and bicycle parking are on the next two levels with a recreation area, laundry room and equipment rooms on the fourth level. Residential units are on the fifth through seventeenth levels.
Project Acreage	Approximately 27,000 square feet (sq ft) (0.6 acres)
Document Purpose	A Cultural Impact Assessment (CIA) is not required for this Project. Governor David Ige signed and adopted Hawaii Administrative Rules, Chapter 11-200.1 on July 30, 2019, which took effect on August 9, 2019. The Project complies with eligibility criteria listed in preparation of an Environmental Assessment and Cultural Impact Assessment. However, at the request of Halewaiolu Senior Development, LLC on behalf of the City and County of Honolulu, CSH conducted a CIA for this Project. While it is no longer a requirement for this Project, this CIA was prepared following standard practice associated with Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project’s potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts to cultural beliefs, practices, and

	resources (pursuant to the Office of Environmental Quality Control's *Guidelines for Assessing Cultural Impacts*) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance Criterion e, pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that "have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6 and §13-284-6). The document will likely also support the project's historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS §6E-8 and HAR §13-284.
Results of Background Research	Background research for this study yieded the following results in approximate chronological order: 1. Pukui et al. (1974:49–50) literally translates Honolulu as "protected bay," which refers to the protection of Honolulu Harbor. Older names for the harbor are Kou and Māmala. 2. Traditionally known as Kou, Honolulu had a long tradition as a royal center where the *ali‘i* (chiefs) would meet and entertain. Kou stretched from "Nu‘uanu to Alakea Streets and from Hotel Street to the sea" (McAllister 1933:80). 3. The *ahupua‘a* (land division extending from the mountain to the sea) of Kou was subdivided into several smaller land divisions, known as *‘ili* (land section within an *ahupua‘a*). The area between Maunakea Street and Nu‘uanu Stream and *makai* (toward the sea) of King Street was known as Kapu‘ukolo. The area between Maunakea and Nu‘uanu Stream *mauka* (toward the mountains) of King Street to Beretania Street was called Kīkīhale. 4. Near the current alignment of Richards and Queens streets was Hono-kau-pu—a noted field for *‘ulu maika,* an ancient Hawaiian game similar to bowling (Westervelt 1915:16). Kou was the popular *‘ulu maika* field amongst chiefs. The track at Hono-kau-pu was approximately 12 ft wide and extended from the current location of Merchant and Fort streets, traveling ‘Ewa (westward) to the intersection of Merchant Street and Nu‘uanu Avenue. It is said that Kamehameha I used this *maika* (stone used in *‘ulu maika*) track (Westervelt 1915:16). 5. Pākākā was the name of a coastal point, a canoe landing, and wharf built off the point in 1827, and the name of a

	heiau (pre-Christian place of worship) built on that same. The name literally means “to skim, as stones over the water” (Pukui et al. 1974:175). Thrum (1906) generated several lists and surveys of *heiau* and noted that Peter Corney, a visitor to the island in 1819, saw several *heiau* along the Honolulu shore. 6. Following the Māhele in 1845, an 1871 map shows the original property owners of the land which sits under the current existing building. This included individuals named Kaukoke and Makahopu, and Lahilahi Marin, daughter of Francisco Paulo de Marin, confidant of Kamehameha I. 7. In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the Islands. 8. In 1899, the first case of bubonic plague was identified in Hawai‘i, in a Chinese bookkeeper named You Chong. After an examination by Dr. G.H. Herbert, who noted a high temperature and swelling in the groin, the patient died the next night. After an autopsy, the diagnosis of bubonic plague was determined. 9. From 12 December 1899 to 31 March 1900, 71 cases of bubonic plague were reported, with 61 deaths, 41 of whom lived within the established Chinatown quarantine area. The Board of Health concluded they could not contain the plague and decided the best remedy was to set “sanitary fires” to infected wooden buildings. A total of 41 controlled fires were set between 31 December 1899 and 13 August 1900.
Results of Community Consultation	CSH attempted to contact Native Hawaiian organizations (NHOs), agencies, and community members. Below is a list of individuals who showed interest in sharing their *mana‘o* (thought, opinions) and *‘ike* (knowledge) about the project area and Honolulu Ahupua‘a. 1. Gerald Lam, *Kama‘āina*, Attorney at Law 2. Howard Lum and Kehaulani Lum of Lum Sai Ho Tong 3. Wesley Fong, Chinatown Community Association
Impacts and Recommendations	Based on information gathered from the cultural and historical background and the community consultation, potential impacts were identified and the following preliminary recommendations were made. 1. Project construction workers and all other personnel involved in the construction and related activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are identified during construction activities, all activities will

	cease in that area and the SHPD will be notified pursuant to HAR §13-280-3. In the event that *iwi kūpuna* (ancestral remains) are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD, coroner, and Police Department will be notified pursuant to HAR §13-300-40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended. 2. In the event that *iwi kūpuna* and/or cultural finds are encountered during construction, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.

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Section 1 Introduction

1.1 Project Background

At the request of Halewai‘olu Senior Development, LLC (HSD) on behalf of the City and County of Honolulu (City), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Halewai‘olu Senior Residence Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, Tax Map Key (TMK): [1] 1-7-006:012. The project area, located at 1331 River Street, consists of approximately 27,000 square feet (sq ft) (0.62 acres) encompassing the entirety of the existing building and its surrounding parking lot. The project area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), a tax map plat (Figure 2), and a 2013 aerial photograph (Figure 3).

The proposed project involves the construction of an affordable housing facility for seniors aged 62 and over at 80% Area Median Income (AMI) and below, with the vast majority of units (139 units) available to seniors with incomes at 60% AMI and below. To facilitate construction, the existing building and its surrounding parking lot is planned for demolition; it will be replaced by the proposed housing facility. The housing facility will consist of 155 units (plus one resident manager unit), a community room with warming kitchen, restrooms and storage, computer room, social services activity rooms, social services office, property management offices, with mail and package boxes and elevator lobby on the ground level. A courtyard, retail space and parking access, along with trash compactor room and loading area are also on the ground level. Vehicle and bicycle parking are on the next two levels with a recreation area, laundry room and equipment rooms on the fourth level. Residential units are on the fifth through seventeenth levels. Please refer to Figure 4 for a site development plan.

The City purchased the project area in 1992 utilizing funding from U.S. Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG). Project construction is funded with equity through the Low Income Housing Tax Credit program and Hawai‘i State funds. With the use of HUD CDGB funding for initial land purchase, the project is subject to HUD’s CDBG environmental/historic preservation review regulations (24 CFR Part 58), which includes compliance with the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). Following 24 CFR Part 58, the City is the responsible entity to carry out this federal environmental and historic preservation review compliance. As a City project on City-owned land, the City is also responsible for the project’s State of Hawai‘i environmental (Hawai‘i Revised Statutes [HRS] §343) and historic preservation (HRS §6E) review. A Cultural Impact Assessment (CIA) is not required for this Project. Governor David Ige signed and adopted Hawaii Administrative Rules, Chapter 11-200.1 on July 30,2019, which took effect on August 9, 2019. The Project complies with eligibility criteria listed in Chapter 11-200.1-15, which authorizes the exemption from the preparation of an Environmental Assessment and Cultural Impact Assessment. However, at the request of Halewaiolu Senior Development, LLC on behalf of the City, CSH conducted a CIA for this Project. The CIA consultation effort and outreach will generally dovetail with the project’s federal and state environmental and historic preservation review consultation.

At the time of Western Contact at the end of the eighteenth century, the project area would have been on the outskirts of the settlement of Kou, the traditional Native Hawaiian community that

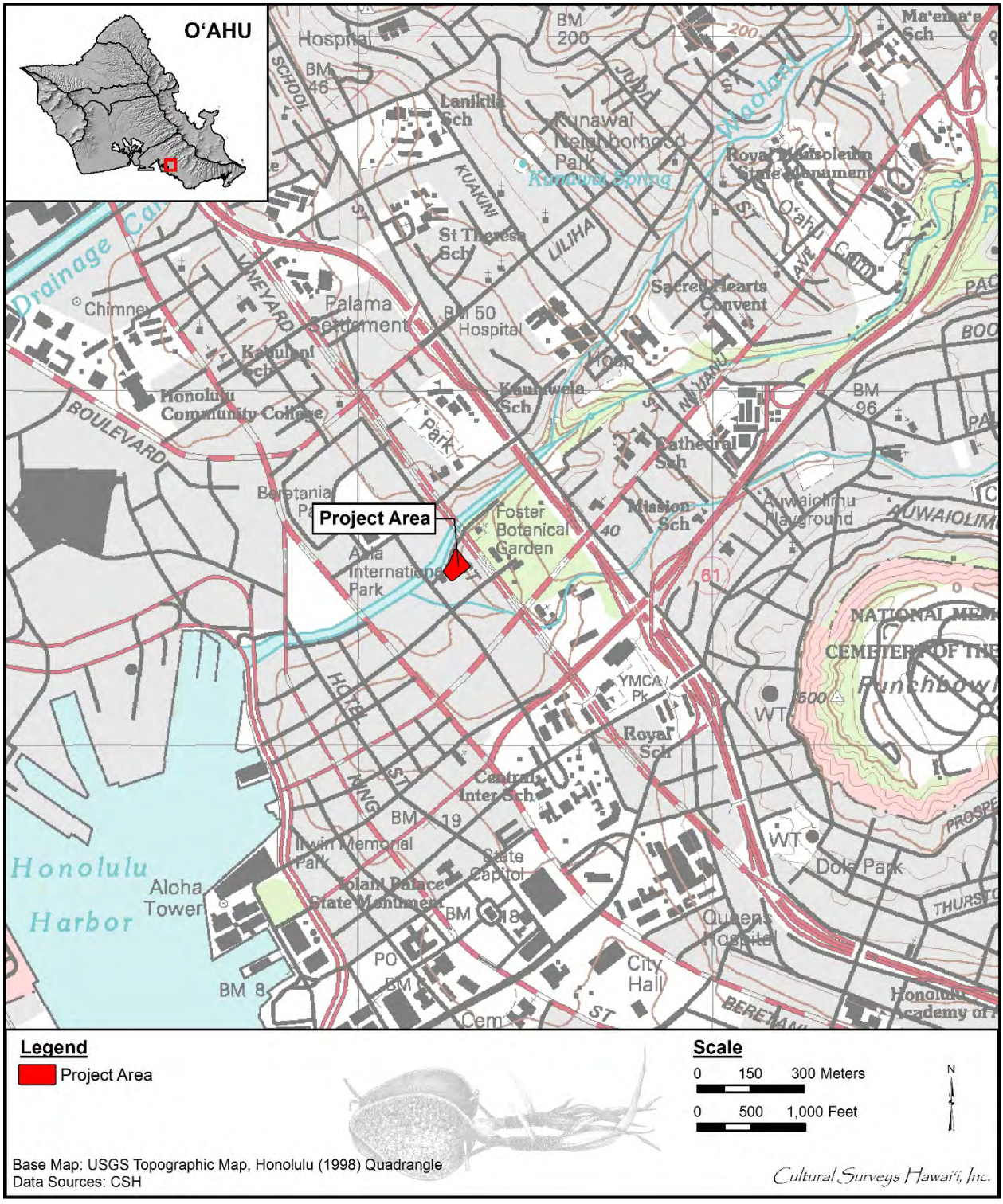

Figure 1. Portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangles showing the location of the project area

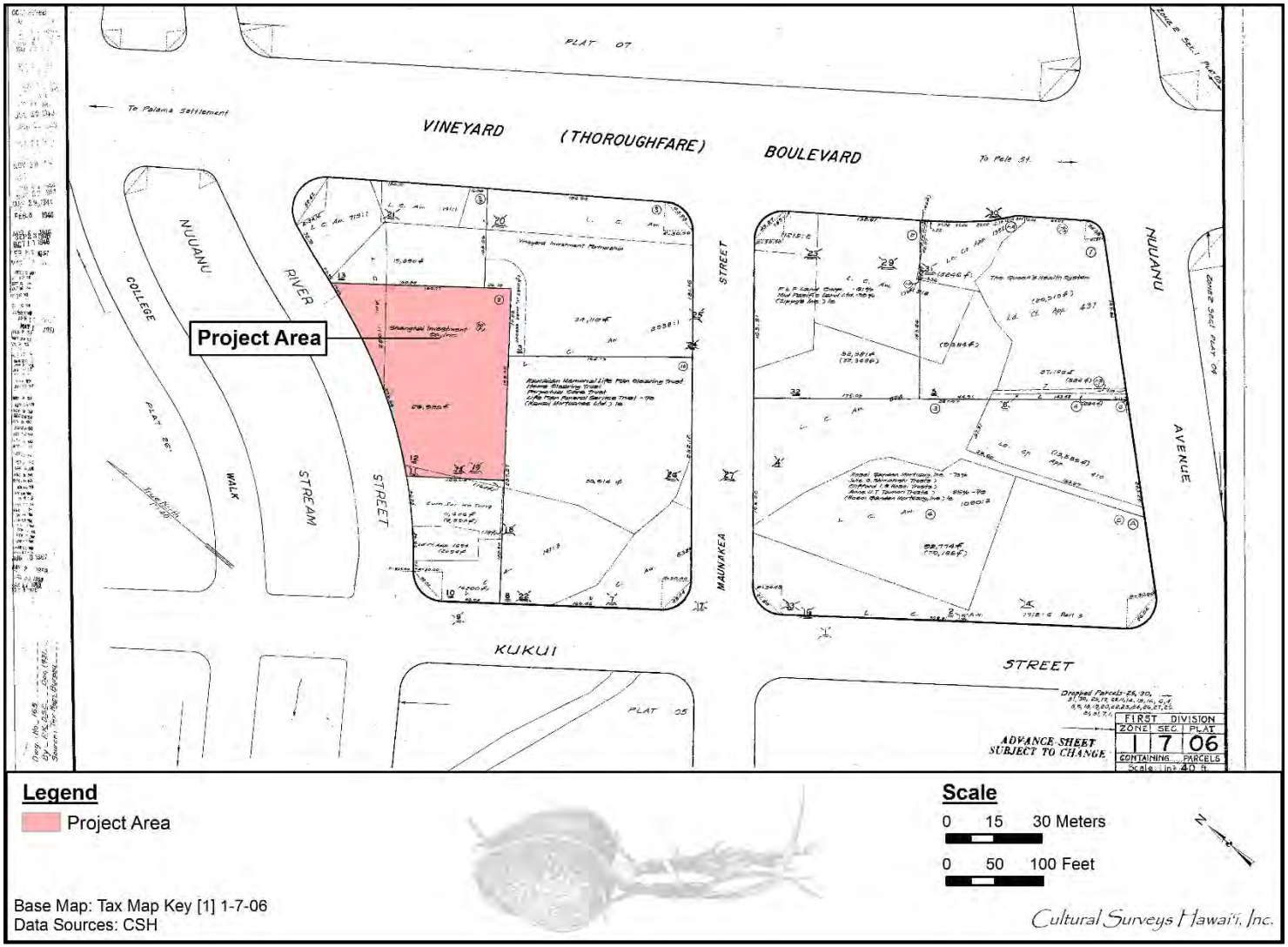

Figure 2. Tax Map Key (TMK) [1] 1-7-06 showing the project area (Hawai‘i TMK Service 2014)



Figure 3. Aerial photograph showing the location of the project area (Google Earth 2013)

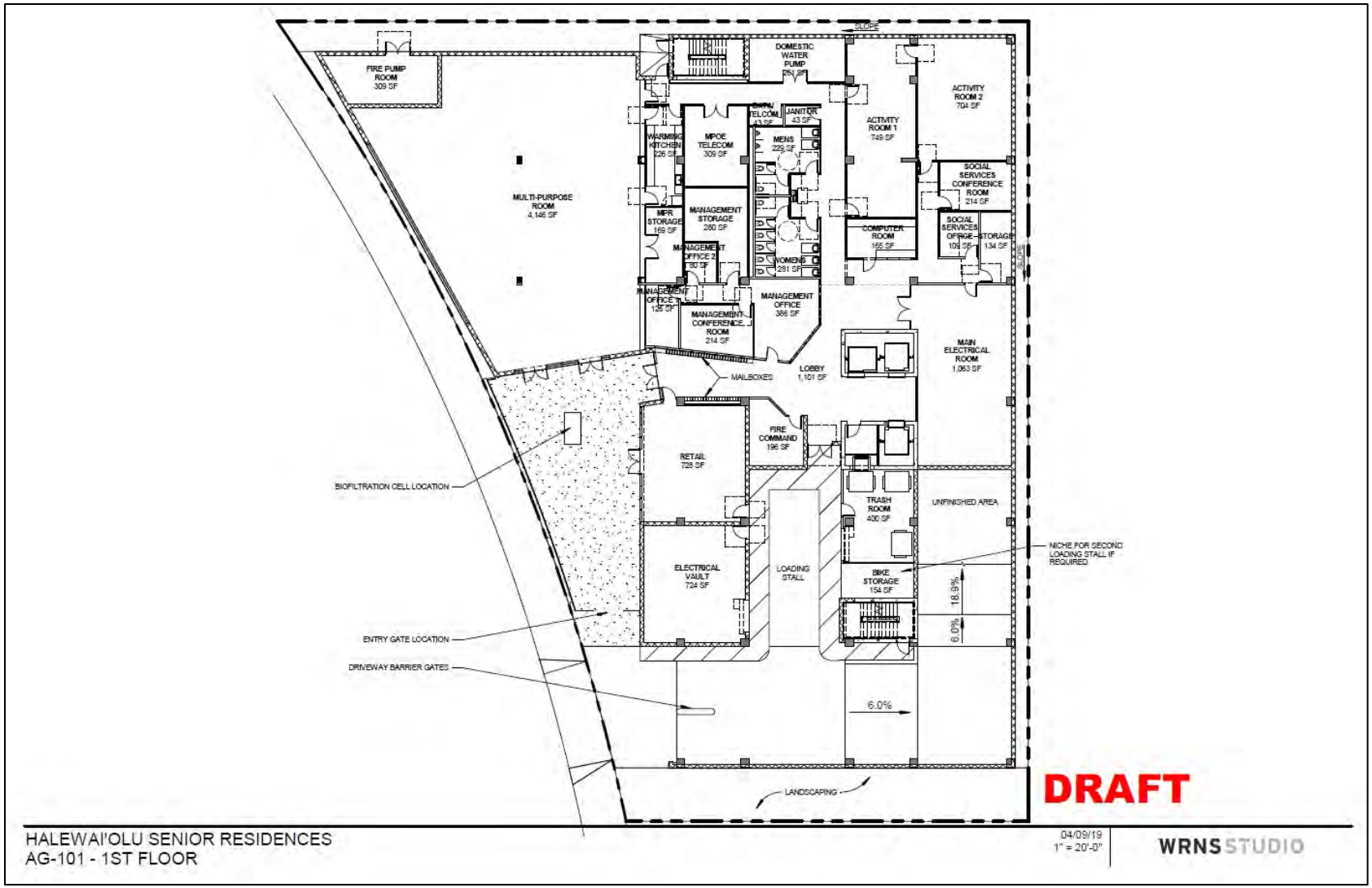

Figure 4. Site development plan (courtesy of client)

developed into Honolulu. Native Hawaiians and increasingly non-Native Hawaiians continued to inhabit and use the project area and its vicinity in the nineteenth and twentieth centuries as Honolulu developed and expanded. The project area is generally considered part of Honolulu's Chinatown, although it is outside the designated Chinatown National Historic District boundary. In studies to support the Honolulu Authority for Rapid Transit's Honolulu Rapid Transportation Project, Chinatown was identified as a potential traditional cultural property eligible for listing on the National Register of Historic Places. Nu‘uanu Stream and the Lum Sai Ho Tong building are immediately adjacent to the project area.

1.2 **Document Purpose**

A Cultural Impact Assessment is not required for this Project. Governor David Ige signed and adopted Hawaii Administrative Rules, Chapter 11-200.1 on July 30, 2019, which took effect on August 9, 2019. The Project complies with eligibility criteria listed in Chapter 11-200.1-15. Which authorizes the exemption from the preparation of an Environmental Assessment and Cultural Impact Assessment. However, at the request of Halewaiolu Senior Development, LLC on behalf of the City and County of Honolulu, CSH conducted a CIA for this Project. While it is no longer a requirement for this Project, this CIA was prepared following standard practices associated with Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the proposed project's potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project's potential impacts to cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control's *Guidelines for Assessing Cultural Impacts*) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai‘i significance Criterion e, pursuant to Hawai‘i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that "have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6 and §13-284-6). The document will likely also support the project's historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS §6E-8 and HAR §13-284.

1.3 **Scope of Work**

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and environs.

4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

1.4 Environmental Setting

1.4.1 Natural Environment

The Honolulu leeward coastal plain is stratified with late-Pleistocene coral reef substrate overlaid with calcareous marine beach sand, terrigenous sediments, and/or stream-fed alluvial deposits (Armstrong 1983:36). Terrigenous sediments are formed and deposited on land, or are materials derived from land mixed with purely marine material. The modern Hawaiian shoreline configuration, including that of Honolulu Harbor, is primarily the result of three factors: the rising sea level following the end of the Pleistocene (Macdonald et al. 1983; Stearns 1978); the 1.5-2.0 m (4.9-6.6 ft) highstand of the sea during the mid- to late Holocene; and prehistoric and historic human landscape modification. The elevation of the project area is approximately 1.5 m (5.0 ft) above mean sea level (AMSL).

1.4.2 *Ka Lepo* (Soils)

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist primarily of Ewa silty clay loam, moderately shallow, 0 to 2% slopes (EmA) (Figure 5). Soil of the Ewa series is described below:

> This series consists of well-drained soils in basins and on alluvial fans on the islands of Maui and Oahu. These soils developed in alluvium derived from basic igneous rock. They are nearly level to moderately sloping. Elevations range from near sea level to 150 feet. The annual rainfall amounts to 10 to 30 inches. Most of it occurs between November and April […]
>
> These soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of fingergrass, kiawe, koa haole, klu, and uhaloa. [Foote et al. 1972:29]

1.4.3 *Ka Makani* (Wind)

Each small geographic area in Hawai‘i had a Hawaiian name for its own wind, rain, and seas. The area of Honolulu was no exception to this naming practice. A wind specific to Honolulu is one also named after a rain of Honolulu, Kūkalahale. *The Wind Gourd of La‘amaomao* tells the story of Pāka‘a and his son Kuāpāka‘a who are descendants of the wind goddess La‘amaomao. With their possession of her special wind gourd, they could control and call forth the winds of Hawai‘i. Pāka‘a's chant traces the winds of and surrounding the Honolulu Ahupua‘a. Pāka‘a's chant is listed below:

He Kuehu lepo ko Kahua,	Kuehu-lepo is of Kahua,
He Kukalahale ko Honolulu,	Kukalahale is of Honolulu,
He Ao-a-oa ko Mamala,	‘Ao‘aoa is of Māmala,
He Olauniu ko Kapalama,	‘Ōlauniu is of Kapālama,
He Haupeepee ko Kalihi	Haupe‘epe‘e is of Kalihi

[Nakuina 1902:56–57; 1992:50]

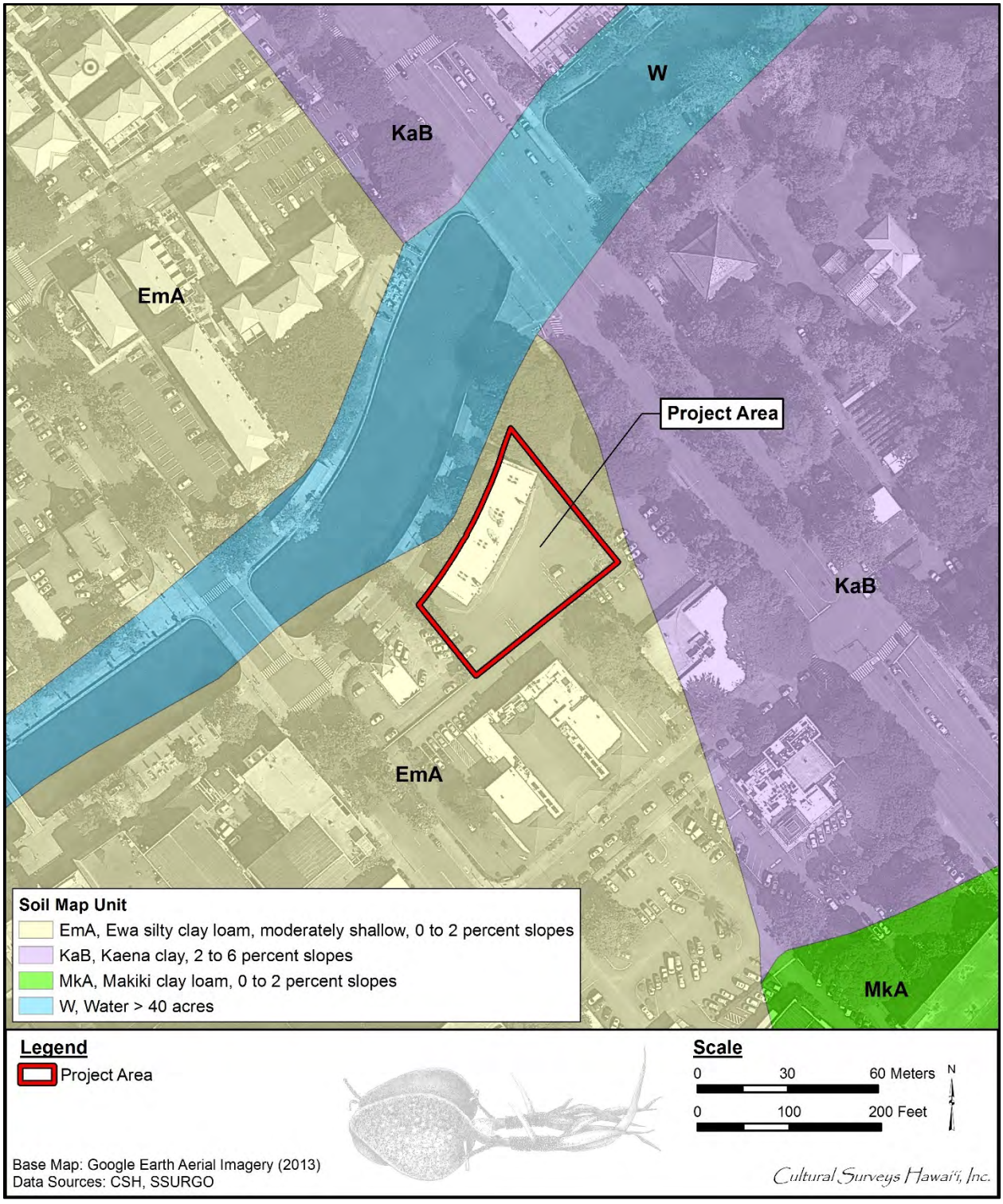

Figure 5. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972) on a 2013 Google Earth aerial photograph, indicating soil types within and surrounding the project area (USDA SSURGO 2001)

1.4.4 *Ka Ua* (Rain)

Precipitation is a major component of the water cycle accountable for depositing fresh water on local flora. Pre-Contact *kānaka ʻōiwi* (Native Hawaiians) recognized two distinct annual seasons. The first, known as *kau* (period of time, especially summer), lasts typically from May to October and is a season marked by a high-sun period corresponding to warmer temperatures and steady trade winds. The second season, *hoʻoilo* (winter, rainy season), continues through the end of the year from November to April and is a much cooler period when trade winds are less frequent, and widespread storms and rainfall become more prevalent (Giambelluca et al. 1986:17). Typically, the maximum rainfall occurs in January and the minimum in June (Giambelluca et al. 1986:17).

It was a customary and necessary tradition to grant a name for each type of rain. Rains were named to show their action toward plants or the supposed effects on people or their possessions (Pukui and Elbert 1986:361). The ability to identify rain names showed a great deal of knowledge a person has of their homeland. As explained by Collette Akana:

> Rains are a source of pride for one's homeland. To know one's home is to know its stories and legends, its famous aliʻi, its landmarks, and its rains. […] Rain names were an important component in the traditional, largely place-based, information imparted to Hawaiian youngsters. Knowledge of local weather patterns ensured survival and proliferation, and knowledge of one's homeland was held in high esteem. [Charlot cited in Akana and Gonzalez 2015:xvii]

Types of rain referencing the *moku* of Honolulu include Kuiʻilima and Kūkalahale.

1.4.4.1 Ka Ua Kuiʻilima

The Kuiʻilima rain (same as the Kuilima rain) is one closely associated with the Honolulu Ahupuaʻa. Kuiʻilima means "to string ʻilima flowers" and Kuilima means "to lock arms" (Pukui and Elbert 1986:174). This rain was mentioned in a *mele inoa* or name chant for Albert Ka Haku o Hawaiʻi composed by his uncle, Kamehameha V, Lot Kapuāiwa:

Kuʻu hoa i ka ua Kuilima

Ua Kūkalahale o Honolulu

Translation:

My companion in the Kuilima rain

The Kūkalahale rain of Honolulu

[Akana and Gonzalez 2015:126]

Mentioned in another *mele inoa,* the Kuilima rain is described below:

Aloha Nuʻuanu i ke kāmakahala lā

Ke kuia maila e ka ua noe ē

Ka ua Kuilima o Nuʻuanu lā

Ke hehi [maila] i ka maka o ka ʻāhihi ē

Translation:

Beloved Nu‘uanu with its kāmakahala plants

Strung together by the misty rain

The Kuilima rain of Nu‘uanu

Treading on the face of the ‘āhihi flowers

[Akana and Gonzalez 2015:127]

1.4.4.2 Ka Ua Kūkalahale

The Kūkalahale rain is another rain associated with Honolulu and the larger Kona district of O‘ahu. *Kū kala hale* means “standing under the eaves of the house” or “striking the house gables” while *Kūkala hale* means “announcing to the homes” (Akana and Gonzalez 2015:127). This rain was mentioned in a *mele kanikau* (lamentation) for Joseph Nāwahīokalani‘ōpu‘u:

Nākolo, nakulu, pa‘apa‘a‘ina kaupoku o Kākuhihewa ē

Hewa ka i‘a a ‘Umiamaka i ka lili a ka ua Kūkalahale

Translation:

The roofs of Kākuhihewa are roaring, rumbling, and crackling

The fish of ‘Umiamaka was wronged by the jealousy of the Kūkalahale rain

[Akana and Gonzalez 2015:127]

The Kūkalahale rain is also referred to in the legend of Hi‘iakaikapoliopele:

A i ia wā i uhau a‘e ai ‘o Hi‘iaka i kēia kau, ‘oiai nō ka ua Kūkalahale o Honolulu nei e ho‘okawewe ana i ka lau lā‘au a me nā hākala ho‘i o nā hale pili o ia mau lā aloha o ka nohona o ko kākou mau kūpuna.

Translation:

Then Hi‘iaka offered up this chant, while the Kūkalahale rain of Honolulu pattered upon the leaves of the trees and the thatched roofs of those beloved days of our ancestors. [Akana and Gonzalez 2015:127]

Another section of the same legend notes the Kūkalahale rain:

I ia wā i ha‘alei aku ai ‘o Kauakahiapaoa i kāna kilu.... ‘He mau wahi hua mele paoa loa kā ho‘i ka‘u i oli a‘e nei. E‘eha ana ho‘i au i ke kaikamahine o ka ua Kūkalahale.’

I kēlā wā, lālau ihola ‘o Pele‘ula i kāna ipu, a oli a‘ela noō ho‘i.

. . . . . .

Eia au ē, ka ua Kūkalahale

A pā!

Translation:

At that point, Kauakahiapaoa tossed his kilu . . . ‘Those were certainly unlucky

lines I just chanted. I shall be wounded by the girl of the Kūkalahale rains.’

Whereupon Pele‘ula reached for her gourd maker and chanted.

. . . . . .

Here am I, the Kūkalahale rain

Let it strike!

[Akana and Gonzalez 2015:127]

1.4.5 *Nā Au ‘Oko‘a* (Different Currents)

Published by Fornander, the following *oli* (chant) was composed by Kapa‘ahulani honoring chief Kūali‘i. Kūali‘i sat as paramount chief of the Hawaiian Islands from 1720–1740 (Cordy 2002:19). This *oli,* some 600 lines in length, mentions the different currents and their characteristics in the Honolulu area.

He kai he‘enalu ko Kahaloa,

He kai hului ko Kalia,

He kai hele kohana ko Mamala,

He kai au ko Kapueone,

He kai kaha-nalu ko Makaiwa,

He kai ka anae ko Keehi,

He kai elemihi ko Leleiwi,

He kai awalau ko Puuloa

[Fornander 1880:379]

Translation:

The sea for surf-riding is at Kahaloa, [in Waikīkī]

The sea for casting the net is at Kalia, [in Waikīkī]

The sea for going naked is at Mamala, [mouth of Honolulu Harbor]

The sea for swimming is at Kapuuone, [in Kapālama/Kalihi]

The sea for surf riding sideways is at Makaiwa, [in Kapālama, Kalihi]

The sea for kicking up mullet is at Keehi, [in Moanalua]

The sea for small crabs is at Leleiwi, [in Moanalua]

The sea of many harbors is at Puuloa, [in ‘Ewa]

[Fornander 1880:378]

1.4.6 Built Environment

The project area is located within central Honolulu, surrounded by modern urban development including commercial buildings, paved streets, sidewalks, utility infrastructure, and landscaped margins. The project area is covered by commercial warehouses and parking lots.

Section 2 Methods

2.1 Archival Research

Research centers on Hawaiian activities including *ka‘ao* (legends), *wahi pana* (storied places), *‘ōlelo no‘eau* (proverbs), *oli*, *mele* (songs), traditional *mo‘olelo* (stories), traditional subsistence and gathering methods, ritual and ceremonial practices, and more. Background research focuses on land transformation, development, and population changes beginning with the early post-Contact era to the present day.

Cultural documents, primary and secondary cultural and historical sources, historic maps, and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH library. CSH cultural researchers also gather information at other archives and libraries including the Hawai‘i State Archives, the Bishop Museum Archives, the University of Hawai‘i at Mānoa’s Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau.org 2014), the State Historic Preservation Division (SHPD) Library, the State of Hawai‘i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives. Information on Land Commission Awards (LCAs) were accessed via Waihona ‘Aina Corporation’s Māhele database (Waihona ‘Aina 2000), the Office of Hawaiian Affairs (OHA) Papakilo Database (Office of Hawaiian Affairs 2015), and the Ava Konohiki Ancestral Visions of ‘Āina website (Ava Konohiki 2015).

2.2 Community Consultation

2.2.1 Scoping for Participants

The cultural department commences our consultation efforts by utilizing our previous community contact list to facilitate the interview process. We then review an in-house database of *kūpuna* (elders), *kama‘āina* (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs; includes Hawaiian Civic Clubs and those listed on the Department of Interior’s NHO list), and community groups. CSH also contacts agencies such as the SHPD, OHA, and the appropriate Island Burial Council where the proposed project is located for their response on the project and to identify lineal and cultural descendants, individuals and/or NHO with cultural expertise and/or knowledge of the study area. CSH is also open to referrals and new contacts.

2.2.2 “Talk Story” Sessions

Prior to the interview, CSH cultural researchers explain the role of a CIA, how the consent process works, the project purpose, the intent of the study, and how their *‘ike* (knowledge) and *mana‘o* (opinion, understanding) will be used in the report. The interviewee is given an Authorization and Release Form to read and sign.

“Talk Story” sessions range from the formal (e.g., sit down and *kūkā* [consultation, discussion] in the participant’s place of choice over set interview questions) to the informal (e.g., hiking to cultural sites near the study area and asking questions based on findings during the field outing). In some cases, interviews are recorded and transcribed later.

CSH also conducts group interviews, which range in size. Group interviews usually begin with set, formal questions. As the group interview progresses, questions are based on interviewees' answers. Group interviews are always transcribed and notes are taken. Recorded interviews assist the cultural researcher in 1) conveying accurate information for interview summaries, 2) reducing misinterpretation, and 3) adding missing details to *mo‘olelo*.

CSH seeks *kōkua* (assistance) and guidance in identifying past and current traditional cultural practices of the study area. Those aspects include general history of the *ahupua‘a* (traditional land division); past and present land use of the study area; knowledge of cultural sites (for example, *wahi pana*, archaeological sites, and burials); knowledge of traditional gathering practices (past and present) within the study area; cultural associations (*ka‘ao* and *mo‘olelo*); referrals; and any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the study area.

2.2.3 Interview Completion

After an interview, CSH cultural researchers transcribe and create an interview summary based on information provided by the interviewee. Cultural researchers give a copy of the transcription and interview summary to the interviewee for review and ask that they make any necessary edits. Once the interviewee has made those edits, CSH incorporates their *‘ike* and *mana‘o* into the report. When the draft report is submitted to the client, cultural researchers then prepare a finalized packet of the participant's transcription, interview summary, and any photos taken during the interview. We also include a thank you card and honoraria.

It is important that CSH cultural researchers cultivate and maintain community relationships. The CIA report may be completed, but CSH researchers continuously keep in touch with the community and interviewees throughout the year—such as checking in to say hello via email or by phone, volunteering with past interviewees on community service projects, and sending holiday cards to them and their *‘ohana* (family). CSH researchers feel this is an important component to building relationships and being part of an *‘ohana* and community.

"*I ulu no ka lālā i ke kumu*—the branches grow because of the trunk," is an *‘ōlelo no‘eau* (#1261) shared by Mary Kawena Pukui with the simple explanation: "Without our ancestors we would not be here" (Pukui 1983:137). As cultural researchers, we often lose our *kūpuna* but we do not lose their wisdom and words. We routinely check obituaries and gather information from other community contacts if we have lost our *kūpuna*. CSH makes it a point to reach out to the *‘ohana* of our *kūpuna* who have passed on and pay our respects including sending all past transcriptions, interview summaries, and photos for families to have on file for genealogical and historical reference.

Section 3 *Ka‘ao* and *Mo‘olelo*

Hawaiian storytellers of old were greatly honored; they were a major source of entertainment and their stories contained teachings while interweaving elements of Hawaiian lifestyles, genealogy, history, relationships, arts, and the natural environment (Pukui and Green 1995:IX). According to Pukui and Green (1995), storytelling is better heard rather than read for much becomes lost in the transfer from the spoken to the written word and *ka‘ao* are often full of *kaona* or double meanings.

Ka‘ao are defined by Pukui and Elbert (1986:108) as a "legend, tale […], romance, [and/or], fiction." *Ka‘ao* may be thought of as oral literature or legends, often fictional or mythic in origin, and have been "consciously composed to tickle the fancy rather than to inform the mind as to supposed events" (Beckwith 1970:1). Conversely, Pukui and Elbert (1986:254) define *mo‘olelo* as a "story, tale, myth, history, [and/or] tradition." The *mo‘olelo* are generally traditional stories about the gods, historic figures or stories which cover historic events and locate the events with known places. *Mo‘olelo* are often intimately connected to a tangible place or space.

In differentiating *ka‘ao* and *mo‘olelo* it may be useful to think of *ka‘ao* as expressly delving into the *wao akua* (realm of the gods), discussing the exploits of *akua* (gods) in a primordial time. *Mo‘olelo* on the other hand, reference a host of characters from *ali‘i* (royalty), to *akua* and *kupua* (supernatural beings), to finally *maka‘āinana* (commoners), and discuss their varied and complex interactions within the *wao kānaka* (realm of man). Beckwith elaborates, "In reality, the distinction between *ka‘ao* as fiction and *mo‘olelo* as fact cannot be pressed too closely. It is rather in the intention than in the fact" (Beckwith 1970:1). Thus a so-called *mo‘olelo*, which may be enlivened by fantastic adventures of *kupua*, "nevertheless corresponds with the Hawaiian view of the relation between nature and man" (Beckwith 1970:1).

Both *ka‘ao* and *mo‘olelo* provide important insight into a specific geographical area, adding to a rich fabric of traditional knowledge. The preservation and passing on of these stories through oration remains a highly valued tradition. Additionally, oral traditions associated with the study area communicate the intrinsic value and meaning of a place, specifically its meaning to both *kama‘āina* as well as others who also value that place.

The following section presents traditional accounts of ancient Hawaiians living in the vicinity of the project area. Many relate an age of mythical characters whose epic adventures inadvertently lead to the Hawaiian race of *ali‘i* and *maka‘āinana*. The *ka‘ao* in and around the project area shared below are some of the oldest Hawaiian stories that have survived; they still speak to the characteristics and environment of the area and its people.

3.1.1 The Story of Haumea and Kū-hoʻoneʻe-nuʻu

Westervelt shares his account of the Polynesian deity Haumea and a young girl named Mulei‘ula who has traveled to Tahiti with her father and soon after goes into labor. The deity Haumea, on her own supernatural journey, passes by and offers aid for a successful delivery during labor in exchange for the girl's beautiful tree named Kūhoʻoneʻenuʻu. In this version, the young princess, in her stubbornness, retracts the exchange and almost loses her life and that of her child due to her fondness for her favorite tree. The voyage of this tree continues in a second *mo‘olelo*, as this is the wooden source used to carve the god of Pākākā Heiau.

> The story of the god of this temple is a story of voyages and vicissitudes. Olopana had sailed away from Waipio, Hawaii, for the island of distant seas. Somewhere in all the great number of islands which were grouped under the general name ‘Kahiki’ Olopana found a home. Here his daughter Mu-lei-ula (Mu-with-the-red-garland) was experiencing great trouble being near to childbirth. For some reason, Haumea, one of the Polynesian ancestors, had stopped for a time to visit the people of that land. When the friends were afraid that Mu-lei-ula would die, Haumea came to help, saying: ‘In our land the mother lives. The mother and child both live.’ The people said, ‘If you give us aid, how can we render payment or give you a reward?’
>
> Haumea said: ‘There is a beautiful tree with two strange but glorious flowers, which I like very much. It is “the tree of changing leaves” with two flowers, one kind singing sharply, and the other singing from time to time. For this tree I will save the life of the chief’s daughter and her child.’
>
> Gladly, the sick girl and her friends promised to give this beautiful tree to Haumea. It was a tree dearly loved by the princess.
>
> Haumea commenced the prayers and incantations which accompanied her treatment of the sick, and the chiefess rapidly grew stronger. This had come so quickly and easily that she repented the gift of the tree with the beautiful flowers, and cried out, ‘I will not give the tree.’
>
> Immediately she began to lose strength, and called to Haumea that she would give the tree if she could be forgiving and healed. However, as strength came to her once more she again felt sorry for her tree and refused to let it go. Again the incantations were broken off and the divine aid withdrawn.
>
> Olopana in agony cried to his daughter: ‘Give up the tree. Of what use will it be with its flowers if you die?’ Haumea, with the most powerful incantations, gave her the final strength, and mother and child both lived and became well and strong.
>
> Haumea took the tree and travelled over the far seas to distant Hawaii. On that larger island she found no place to plant the tree. She crossed over to the island Maui, and came to the ‘four rivers.’ There she found the awa of the gods and prepared it for drinking, but needed fresh water to mix with it.
>
> She laid her tree on the ground at Puu-kume by the Wai-hee stream and went down after water. When she returned the tree had rooted. While she looked it began to stand up and send forth branches. She built a stone wall around it, to protect it from the winds. When it blossomed Haumea returned to her divine home in Nuumealani, the land of mists and shadows where the gods dwelt. [Westervelt 1915:21–25]

3.1.2 The God of Pākākā Heiau and the Story of Kū-ho‘one‘e-nu‘u

The following *mo‘olelo* describes the same great tree known by the name of Kalauokekāhuli. This tree was given to the deity Haumea in exchange for her services as a midwife. The tree goes with Haumea on a mythical journey eventually becoming carved into a god form of Kūho‘one‘enu‘u used for worship at the Pākākā Heiau in Honolulu. The following is an excerpt from Kamakau’s account of this epic story:

> PĀKĀKĀ was an ancient *heiau*, a *waihau po‘o kanaka*. It was built by Ka-maunu-i-Halakaipo; the god for whom it was built was Kū-ho‘one‘e-nu‘u. Kū-ho‘one‘e-nu‘u was a god from Kahiki-kū; this is his story.
>
> When Haumea was traveling in Kahiki-kū and Kahiki-moe, Mulei‘ula, the daughter of ‘Olopana, ruler of those lands, was having difficulty in childbirth. Sounds of lamentation filled the air, and preparations were being made to cut open her stomach. The mother would die, but the child would live. Haumea said, ‘In our land the mother lives. The mother and the child would both live.’ ‘Olopana said to her, ‘Then deliver my daughter so that my daughter and my grandchild may live. What payment do you want for the delivery?’ Haumea answered, ‘This tree with beautiful flowers.’
>
> The name of the tree was Ka-lau-o-ke-kāhuli, and its flowers were Kanikawī and Kanikawā. This precious tree with exceedingly beautiful flowers belonged to the daughter of ‘Olopana of Kahiki-kū, the ‘‘*iwa kilau moku*’ of Kahiki, whose perfection among the chiefs was without compare in the world. Not wanting to die, she consented to the giving of the tree. [Kamakau 1991:6–8]

The story of the tree continues:

> One branch of this tree was made into a rack on which wooden bowls or netted calabashes were slung (that was Ka-haka-iki). Another branch became a shelf on which bundles were placed (that was Keolo‘ewa). Another branch landed of the seashore at Oneawa, in Kailua, O‘ahu. The fish followed it, and this became a place where schools of fish would come in. When this branch (that is, Mākālei) was taken inland of Kailua, the fish of Kawainui Pond followed it inland. The trunk of the tree was used as a dung heap and as a place for throwing wastes. This was Kū-ho‘one‘e-nu‘u.
>
> Wai-la‘ahia the husband and Halelua the wife were people without gods. The god Kū-ho‘one‘e-nu‘u came at night in a dream to have them go and get it [the tree trunk] for a god themselves. For three nights and three days they were urged to go and carve a god [from the tree] for themselves. On the third day of urging. Wai-la‘ahia prepared the things that had been ordered—a pig, coconuts, red fish, garments, and *kohekohe* grass. Then he went and laid down his offering and freed the *kapu.* Then he took the tree trunk inland to Polipoli at Nāpoko there in Waiehu. Wai-la‘ahia erected a *waihau* [a *heiau* for Kū-ho‘one‘e-nu‘u], dedicated it, and freed it.
>
> This god became famous as a god of *mana* [divine power] and a god who seized kingdoms (*he akua kā‘ili aupuni*). The chiefs as far as O‘ahu heard of him. Wai-la‘ahia was a *kahu* of Ka-maunu-i-Halakaipo, chief of O‘ahu. He brought the god to O‘ahu, and Ka-maunu-i-Halakaipo built Pākākā as a heiau for it.
>
> Kū-ho‘one‘e-nu‘u was a god of the chiefs of O‘ahu from remote times to the times of Kūali‘i, Ka-pi‘i-oho-o-ka-lani, Pele-i‘ō-hōlani, Kūmahana, and Kahahana. It is said that this was the most ancient god from Hawai‘i to Kaua‘i. [Kamakau 1991:6–8]

3.1.3 Hi‘iaka Travels to Kou

Kou, the ancient name of Honolulu, was known as a place where chiefs gathered to play and where the people gathered to watch them. Pukui (1983:120) relates the poetical saying *“Hui aku nā maka i Kou”* (“the faces will meet at Kou”) in reference to such gatherings. It is briefly mentioned in the legend of Hi‘iaka, beloved sister of the goddess, Pele. Hi‘iaka and her companions have been traveling around O‘ahu on the land trails and decide to travel from Pu‘uloa (Pearl Harbor) to Waikīkī by canoe. At Pu‘uloa, Hi‘iaka met a party who were planning to travel to the house of the chiefess Pele‘ula in Waikīkī. Hi‘iaka recited a chant, telling the people that although they were going by land and she was going by sea, they would meet again in Kou:

‘O Kou ka papa	Kou is the coral flat
‘O Ka‘ākaukukui ka loko	Ka‘ākaukukui is the pool
‘O ka ‘alamihi a‘e nō	Some ‘alamihi [a black crab], indeed
‘O ka lā a pō iho	Wait all day until night
Hui aku i Kou nā maka	Friends shall meet in Kou

[Ho‘oulumāhiehie 2008a:297; 2008b:277]

3.1.4 ‘Ai‘ai and Puniaiki in Kou

The *ahupua‘a* of Kou was subdivided into several smaller land divisions, known as *‘ili*. The area between Maunakea Street and Nu‘uanu Stream and *makai* of King Street was known as Kapu‘ukolo. The area between Maunakea and Nu‘uanu Stream *mauka* of King Street to Beretania Street was called Kīkīhale. In Pukui et al.’s (1974:110) *Place Names of Hawaii*, no meanings are given for these names, but they do state that Kīkīhale was named for the daughter of the chief, Kou, for whom the district was named. Many of these names are mentioned in the legend of ‘Ai‘ai (Thrum 1998:230–254).

Kū‘ula, the god presiding over the fish of the sea had a son named ‘Ai‘ai. He was the first to teach the Hawaiians how to make various fishing lines and nets, the first to set up a *ko‘a kū‘ula*, a rock shrine, on which the fishermen would place their first catch as an offering to Kū‘ula, and the first to set up *ko‘a i‘a*, fishing stations, where certain fish were known to gather (Thrum 1998:231). Leaving his birthplace in Maui, ‘Ai‘ai traveled around the islands, establishing *ko‘a kū‘ula* and *ko‘a i‘a*.

He landed first at Keana Point, then traveled around the island of O‘ahu, stopping in Kaka‘ako (an *‘ili* now covered by One Waterfront Plaza) to visit his friend, Apua. Here he met the famed O‘ahu chief, Kou, a skilled fisherman who caught the large *aku* (bonito; *Katsuwonus pelamis*) in the bay of Māmala (ancient name for the mouth of Honolulu Harbor). ‘Ai‘ai soon met a young woman named Puiwa. They married and had a son named Puniaiki. One day the family went to a dam on the Nu‘uanu Stream to catch *‘o‘opu* (gobies) and *‘ōpae* (shrimp). When Puiwa left the newborn, Puniaiki, on the bank of the river, the baby started to cry. ‘Ai‘ai told his wife to tend to the child but she answered him back saucily, so ‘Ai‘ai called on his ancestors and a storm came up, flooding the dam and sweeping the child into the stream. Leaving his wife, he went downstream to the *‘ili* of Kaumakapili. Here he saw the chiefess Kīkīhale gather a large *‘o‘opu* from the stream.

Kīkīhale’s guardian advised her to put it in a calabash with water and keep it as a pet. ‘Ai‘ai realized that the *‘o‘opu* was Puniaiki, his transformed child who had been swept downstream to Kīkīhale (the person and also the *‘ili* named Kīkīhale). The next day the chiefess’ guardian saw that the *‘o‘opu* had turned back into a child and Kīkīhale instructed her to raise the child until it was an adult, so that she could take the young man for a husband. This came to pass, but the chiefess was not satisfied with her husband Puniaiki since he did not bring fish home as the other men in the islands. Puniaiki was annoyed with her complaints, and took the pearl fishhook, Kahuai, given to him by his father ‘Ai‘ai, and went out with the men of Kou to fish for the *aku*. The story goes that when Puniaiki held the pearl fishhook in his hand:

> . . . the akus, unprecedented in number, fairly leaped into the canoes. They became so filled with the fish, without labor, that they sank in the water as they reached Kapuukolo, and the men jumped overboard to float them to the beach. [Thrum 1998:247–248]

This suggests that not only was Kapu‘ukolo an *‘ili* name, but also a canoe landing, a place to come ashore after *aku* fishing.

3.2 *Wahi Pana* (Storied Places)

Wahi pana are legendary or storied places of an area. These legendary or storied places may include a variety of natural or human-made structures. Oftentimes dating to the pre-Contact period, most *wahi pana* are in some way connected to a particular *mo‘olelo*, however, a *wahi pana* may exist without a connection to any particular story. Davianna McGregor outlines the types of natural and human-made structures that may constitute *wahi pana*:

> Natural places have mana, and are sacred because of the presence of the gods, the akua, and the ancestral guardian spirits, the ‘aumakua. Human-made structures for the Hawaiian religion and family religious practices are also sacred. These structures and places include temples, and shrines, or heiau, for war, peace, agriculture, fishing, healing, and the like; pu‘uhonua, places of refuge and sanctuaries for healing and rebirth; agricultural sites and sites of food production such as the lo‘i pond fields and terraces slopes, ‘auwai irrigation ditches, and the fishponds; and special function sites such as trails, salt pans, holua slides, quarries, petroglyphs, gaming sites, and canoe landings. [McGregor 1996:22]

As McGregor makes clear, *wahi pana* can refer to natural geographic locations such as streams, peaks, rock formations, ridges, offshore islands and reefs, or they can refer to Hawaiian land divisions such as *ahupua‘a* or *‘ili*, and man-made structures such as fishponds. It is common for places and lanscape features to have multiple names, some of which may only be known to certain *‘ohana* or even certain individuals within an *‘ohana*, and many have been lost, forgotten, or kept secret through time. Place names also convey *kaona* and *huna* (secret) information that may even have political or subversive undertones. Before the introduction of writing to the Hawaiian Islands, cultural information was exclusively preserved and perpetuated orally. Hawaiians gave names to literally everything in their environment, including points of interest that may have gone unnoticed by persons of other cultural backgrounds. Hawaiians have named taro patches, rocks and trees that represented deities and ancestors, sites of houses and *heiau*, canoe landings, fishing stations in the

sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place (Pukui et al. 1974:x).

Pukui et al. (1974:49–50) literally translates Honolulu as “protected bay,” which refers to the protection of Honolulu Harbor. Older names for the harbor are Kou and Māmala. According to Westervelt, Honolulu is a name made by the union of the two words “*Hono*” and “*lulu*.” Westervelt explains as follows:

> Some say it means ‘Sheltered Hollow.’ The old Hawaiians say that ‘Hono’ means ‘abundance’ and ‘lulu’ means ‘calm,’ or ‘peace,’ or ‘abundance of peace.’ The navigator who gave the definition ‘Fair Haven’ was out of the way, inasmuch as the name does not belong to a harbor, but to a district having ‘abundant calm,’ or ‘a pleasant slope of restful land.’ ‘Honolulu’ was probably a name given to a very rich district of farm land near what is now known as the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs of the time of Kakuhihewa, according to the legends. [Westervelt 1915:14]

Traditionally known as Kou, Honolulu had a long tradition as a royal center where the *ali‘i* would meet and entertain. Kou stretched from “Nu‘uanu to Alakea Streets and from Hotel Street to the sea” (McAllister 1933:80). Westervelt adds that Honolulu was most likely a name of a very rich farm land near the junction of Liliha and School streets. A high chief of this area was known as Honolulu. According to legends, he ruled this area during the time of Kākuhihewa.

Kākuhihewa was the *mō‘ī* (king, sovereign) of O‘ahu prior to Kamehameha’s rule. Kākuhihewa divided the island of O‘ahu amongst his favorite chiefs and officers and offered their names to the places that they received, hence the traditional name Kou. The area was named after a chief who was an *ilāmuku* (marshall) under Kākuhihewa.

3.2.1 Honokaupu

Near the current alignment of Richards and Queens streets was Hono-kau-pu—a noted field for *‘ulu maika,* an ancient Hawaiian game similar to bowling (Westervelt 1915:16). Kou was the popular *‘ulu maika* field amongst chiefs. The track at Hono-kau-pu was approximately 12 ft wide and extended from the current location of Merchant and Fort streets, traveling ‘Ewa to the intersection of Merchant Street and Nu‘uanu Avenue. It is said that Kamehameha I used this *maika* track (Westervelt 1915:16). At the foot of the present Richards Street was once the site of lumber yards. In ancient times, this area was called Ula-kua and idols were made here. Near Ula-kua was Ke-kau-kukui, a place where people gathered to play *kōnane*, an ancient game that resembled checkers. Ke-kau-kukui was also where Kekūanāo‘a, father of Kamehameha V (Lot Kapuāiwa), built his home (Westervelt 1915:17).

3.2.2 Pākākā and the Honolulu Fort

Pākākā was the name of a coastal point, a canoe landing, and wharf built off the point in 1827, and the name of a *heiau* built on that same point. The name literally means “to skim, as stones over the water” (Pukui et al. 1974:175). Thrum (1906) generated several lists and surveys of *heiau* and noted that Peter Corney, a visitor to the island in 1819, saw several *heiau* along the Honolulu shore:

> There are several morais [*heiau*], or churches in the village, and at new moon the priests, chiefs and hikanees (aikane) [friends] enter them with offerings of hogs,

> plantains, and cocoanuts, which they set before the wooden images. The place is fenced in, and have [*sic*] pieces of white flags flying on the fences. [Corney 1896:101]

Westervelt (1915:21) identifies Pākākā Heiau as once being the main royal temple in Honolulu and the headquarters for priests, with the nearby wharf a possible part of the complex. The walls of the *heiau* were decorated with sacrificial heads of men. Westervelt relates that Pākākā was built before the time of Kākuhihewa, and was later owned by Kīna‘u, the mother of Kamehameha V.

In 1816, a fort named Kekuanohu was constructed in this area, roughly *mauka* of Pākākā Heiau; the adjacent street was called Fort Street. Liholiho, Kamehameha II, built a palace complex in this area in 1821, possibly on the former Pākākā Heiau platform. Christiaan Klieger (1997:15–16) has suggested the Pākākā Palace complex may have lasted until around 1826, when a new royal compound was built for Kamehameha III within the town of Honolulu, near the modern junction of Alakea and Beretania streets.

Kekuanohu Fort was demolished in 1857 and the stones from the wall were used to create a seawall (Pukui et al. 1974:30), which was then filled to create a new land, called the Esplanade or ‘Āinahau, from the *hau* tree (beach hibiscus; *Hibiscus tiliaceus*) land (Pukui et al. 1974:7).

3.3 *‘Ōlelo No‘eau* (Proverbs)

Hawaiian knowledge was shared by way of oral histories. Indeed, one’s *leo* (voice) is oftentimes presented as *ho‘okupu* (“to cause growth,” a gift given to convey appreciation, to strengthen bonds); the high valuation of the spoken word underscores the importance of the oral tradition (in this case, Hawaiian sayings or expressions), and its ability to impart traditional Hawaiian “aesthetic, historic, and educational values” (Pukui 1983:vii). Thus, in many ways these expressions may be understood as inspiring growth within the reader or between speaker and listener:

> They reveal with each new reading ever deeper layers of meaning, giving understanding not only of Hawai‘i and its people but of all humanity. Since the sayings carry the immediacy of the spoken word, considered to be the highest form of cultural expression in old Hawai‘i, they bring us closer to the everyday thoughts and lives of the Hawaiians who created them. Taken together, the sayings offer a basis for an understanding of the essence and origins of traditional Hawaiian values. The sayings may be categorized, in Western terms, as proverbs, aphorisms, didactic adages, jokes, riddles, epithets, lines from chants, etc., and they present a variety of literary techniques such as metaphor, analogy, allegory, personification, irony, pun, and repetition. It is worth noting, however, that the sayings were spoken, and that their meanings and purposes should not be assessed by the Western concepts of literary types and techniques. [Pukui 1983:vii]

Simply, *‘ōlelo no‘eau* may be understood as proverbs. The Webster dictionary notes it as “a phrase which is often repeated; especially, a sentence which briefly and forcibly expresses some practical truth, or the result of experience and observation.” It is a pithy or short form of folk wisdom. Pukui equates proverbs to a treasury of Hawaiian expressions (Pukui 1995:xii). Oftentimes within these Hawaiian expressions or proverbs are references to places. This section draws from the collection of author and historian Mary Kawena Pukui and her knowledge of Hawaiian proverbs describing *‘āina* (land), chiefs, plants, and places. The following proverbs are

from Mary Kawena Pukui's *‘Ōlelo No‘eau* (Pukui 1983) and describe the broader region of Honolulu.

3.3.1 *‘Ōlelo No‘eau* #407

The following *‘ōlelo no‘eau* paints a picture of Honolulu as an area of recreation where games were held.

> *Hāhā pō‘ele ka pāpa‘i o Kou.*
>
> The crabs of Kou are groped for in the dark.
>
> Applied to one who goes groping in the dark. The chiefs held *kōnane* and other games at the shore of Kou (now central Honolulu), and people came from everywhere to watch. Very often they remained until it was too dark to see and had to grope for their companions. [Pukui 1983:51]

3.3.2 *‘Ōlelo No‘eau* #1016

The following *‘ōlelo no‘eau* describes the early landscape of Honolulu.

> *Ho‘ā ke ahi, kō‘ala ke ola. O na hale wale no ka i Honolulu; o ka ‘ai a me ka i‘a i Nu‘uanu.*
>
> Light the fire for there is life-giving substance. Only the houses stand in Honolulu; the vegetable food and meat are in Nu‘uanu.
>
> An expression of affection for Nu‘uanu. In olden days, much of the taro lands were found in Nu‘uanu, which supplied Honolulu with poi, taro greens, ‘o‘opu, and freshwater shrimp. So it is said that only houses stand in Honolulu. Food comes from Nu‘uanu. [Pukui 1983:109]

3.3.3 *‘Ōlelo No‘eau* #1128

The following *‘ōlelo no‘eau* speaks of Kou and its popularity in leisure and recreation.

> *Hui aku na maka i Kou.*
>
> The faces will meet in Kou.
>
> We will all meet there. Kou (now central Honolulu) was the place where chiefs played games, and people came from everywhere to watch. [Pukui 1983:120]

3.3.4 *‘Ōlelo No‘eau* #1423

The following *‘ōlelo no‘eau* speaks of the usual weather of Honolulu.

> *Ka lā ikiiki o Honolulu.*
>
> The intensely warm days of Honolulu.
>
> People from the country often claim that Honolulu is excessively warm. [Pukui 1983:154]

3.3.5 *‘Ōlelo No‘eau* #1575

The following *‘ōlelo no‘eau* mentions the Kūkalahale rain previously mentioned in Section 1.4.4.2.

Ka ua Kukalahale o Honolulu.

The Kukalahale rain of Honolulu.

The rain that announces itself to the homes by the pattering it makes on the roofs as it falls. Often mentioned in songs. [Pukui 1983:170]

3.4 *Mele* (Songs)

3.4.1 “He Aloha Nō ‘o Honolulu”

The following *mele* retraces the sea routes of the famed ship *Maunaloa*. These routes included Honolulu to Maui and onward to the west coast of Hawai‘i. This *mele* also describes the feel of the landscape with a different rain and wind for each place.

He aloha nō ‘o Honolulu i ka ua Kūkalahale
Ka nuku a‘o Māmala ‘ae a‘e nei ma hope
Kau mai ana ma mua ka malu ‘ula a‘o Lele
Kukui ‘a‘ā mau, pio ‘ole i ke Kaua‘ula
‘Au aku i ke kai loa oni mai ana ‘o ‘Upolu
Ho‘okomo iā Mahukona i ka makani ‘Āpa‘apa‘a
E wiki ‘oe ‘apa nei eia a‘e ‘o Kawaihae
Ho‘ohaehae Nāulu, i ka makani ku‘ehu ‘ale
‘O ka hao a ka Mūmuku poho pono nā pe‘a heke
‘O ka heke nō nā Kona i ke kai mā‘oki‘oki
Ki‘ina ke koi‘i koi i ka piko o Hualālai
A la‘i wale ke kaunu ‘a‘ole pahuna hala
Hale ‘ole nō kāua i ke kole maka onaona
E haupā ‘oe a kena i ka piko ‘oe a lihaliha
Hāli‘ali‘a mai ana kou aloha kākia iwi
Ho‘okomo iā Honu‘apo i ke kai kauha‘a
Ha‘alele ka Maunaloa i ka pohu la‘i a‘o Kona
Ho‘okomo iā Ho‘okena i ka pewa a‘o ka manini
Ha‘ina mai ka puana ‘o ka heke nō nā Kona
No Kona ke kai malino kaulana i ka lehulehu

Translation:

Dearly loved is Honolulu in the Kūkalahale rain
The entrance of Māmala Bay fares on behind

Up ahead is the breadfruit shade of Lele
The ever-blazing torch unextinguished by the Kaua‘ula wind
Faring out to the deep sea of ‘Upolu Point appears
Entering Mahukona in the ‘Āpa‘apa‘a wind
Make haste, slowpoke, for hers is Kawaihae
Where the Nāulu showes stir up wave gustling winds
The buffering of the Mūmuku wind fills out the topsails
The Kona districts are foremost with their sea-patterned hues
The rush sweeps to the summit of Hualālai
And love is contended, no thrust is missed
We make no error with the tender-eyed kole fish
You eat heartily, right to the rich oily belly
I‘m reminded of your love holding me fast
Coming in to Honu‘apo in the restless sea
The *Maunaloa* departs the quiet tranquility of Kona
Porting into Ho‘okena in her bay like a manini tail
The story is told that the Kona districts are the finest
For Kona are the clam seas, famous among all people.
[Wilcox 2003:50–51]

Section 4 Background Research

4.1 Pre-Contact to 1800s

By approximately AD 1310, *ali‘i* Māweke partitioned O‘ahu into three districts: the Kona region; the ‘Ewa, Wai‘anae, and Waialua region; and the windward Ko‘olau region. Then, in approximately AD 1490, the *‘aha ali‘i* (council of chiefs) chose Mā‘ilikūkahi, an *ali‘i kapu* (sacred chief) who was born at the sacred site of Kūkaniloko in the uplands of Waialua to be the new *ali‘i nui* (paramount chief) of O‘ahu. After his paramountship was installed, Mā‘ilikūkahi instituted an explicit land division and administrative structure. O‘ahu was further divided into six *moku*—Kona, ‘Ewa, Wai‘anae, Waialua, Ko‘olauloa, and Ko‘olaupoko—that were divided again into 86 *ahupua‘a* and smaller territorial units, such as *‘ili* or land section (Kirch 2010:84–90). Upon his ascent to *ali‘i nui*, Mā‘ilikūkahi shifted his residence from Waialua to Waikīkī, which may have initiated the pattern of royal residence at Waikīkī (McAllister 1933:74).

Kamehameha defeated Kalanikūpule at the battle of Nu‘uanu in 1795, and in 1809, moved his court, government, and residence from Waikīkī to Honolulu. Kamehameha was known to have taken a special interest in farming and would work in the fields alongside the commoners to demonstrate the importance of agriculture (Figure 6). Crops such as yams were developed under Kamehameha and were often sold to the captains of foreign ships in need of provisions at Honolulu Harbor (‘Ī‘ī 1959:69).

Honolulu was somewhat slow to catch on as a major destination for foreigners visiting the archipelago. The only stop of Cook’s ships on O‘ahu was at Waimea Bay (1779), not viable as a significant port owing to the famous winter swell that breaks there. A discouraging factor for early trade at O‘ahu was political instability. The ruling chief Peleiōhōlani died around 1780, and his heir, Kumuhana was almost immediately deposed in a coup d’etat. A period of political unrest followed including the successful invasion of Maui by Kahekili in 1783, the bloody crushing of the O‘ahu rebellion in 1786, the invasion by the Kaua‘i ruler Ka‘eokūlani in 1791, the passing of the rule following Kahekili’s death in 1794 to Kalanikūpule, and finally, his defeat by Kamehameha I in 1795 (Beechert 1991:12–14).

E.S. Craighill Handy and Elizabeth G. Handy give a description of Honolulu:

> What is now Honolulu was originally that flatland area between the lower ends of Nu‘uanu and Pauoa Valleys and the harbor. Westervelt (1915, p. 1) wrote that ‘Honolulu’ was probably a name given to a very rich district of farm land near what is now […] the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs at the time of Kakuhihewa […] It is probable that the chief referred to by Westervelt took his name from the harbor and adjoining land. The original name of the land where the town grew when the harbor became a haven for foreign ships was Kou (Pukui and Elbert, 1957, p. 154). The number of heiau in this area indicates that it was a place of first importance before the era of foreign contact. [Handy and Handy 1972:479]

Rev. Hiram Bingham arrived in Honolulu in 1820. He described Honolulu as a still predominantly native Hawaiian environment—still a “village”—on the brink of western transformations:

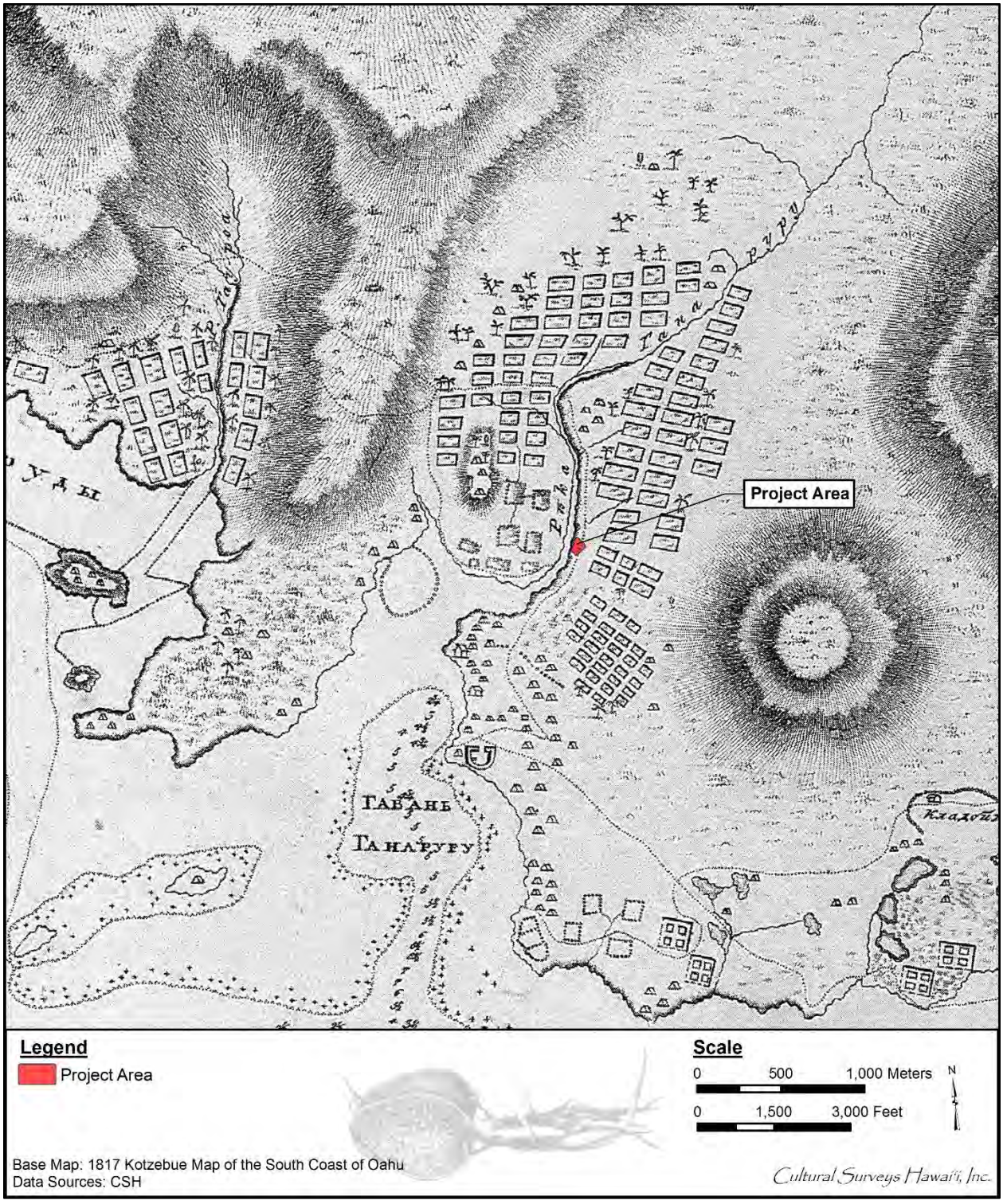

Figure 6. 1817 Kotzebue map showing the project area just along Nu‘uanu Stream. The rectangle shapes along the stream represent *lo‘i kalo*.

> We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity […] Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning southeasterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the northeast part of the village or town […] Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt making pools along the seashore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of *kalo* (*arum esculentum*) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes. [Bingham 1847:92–93]

Waikīkī was the favored area for chiefly residences in the pre-Contact period. Honolulu's prominence had to wait until the peace established by Kamehameha I led to open reliable trade at Honolulu Harbor. Francisco de Paula Marin, a Spaniard who arrived in the Hawai‘i in 1793 or 1794 and had become a confidante of Kamehameha and recorded in his journal, "In the end of 1809 and beginning of 1810 I was employed building a stone house for the King" (Gast and Conrad 1973:200). This was the first stone structure in Honolulu, a town that, according to Marin, was "[by 1810] a village of several hundred native dwellings centered around the grass houses of Kamehameha on Pākākā Point near the foot of what is now Fort Street. Of the 60 white residents on O‘ahu, nearly all lived in the village, and many were in the service of the king" (Gast and Conrad 1973:29).

4.2 **Mid-Nineteenth Century**

4.2.1 The Māhele and the Kuleana Act

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established "for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property" (Chinen 1958:8). This led to the Māhele, the division of lands among the king of Hawai‘i, the *ali‘i*, and the common people, which introduced the concept of private property into Hawaiian society. In 1848, Kamehameha III divided the land into four divisions: Crown Lands reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali‘i* and their *konohiki* (supervisors); and *kuleana* (native land rights), habitation and agricultural plots claimed by the common people (Chinen 1958:8–15).

Upon confirmation of a land claim, the *ali‘i* were required to pay a commutation fee to the government. This commutation (meaning a substitution of one form of payment or charge for another) could be satisfied with a cash payment or the return of land of equal value. This payment was usually one-third of the value of the unimproved land at the date of the award (Chinen 1958:9–12). The *ali‘i* usually retained some of the land they were awarded and then returned some of the land to pay the commutation fee. The returned land usually became Government Land. In 1851, Government Lands became available for purchase "in lots of from one to fifty acres in fee simple, to residents only, at a minimum price of fifty cents per acre" (U.S. Department of the Interior 1882:23). These costs did not include the survey fee, which was to be paid by the interested buyer.

Under the Kuleana Act of 1850, the *maka‘āinana* were required to file their claims with the Land Commission within a specified time period in order to apply for fee-simple title to their lands. The claim could only be filed after the claimant arranged and paid for a survey, and two witnesses testified that they knew the claimant and the boundaries of the land, knew that the claimant had lived on the land since 1839, and knew that no one had challenged the claim. Then, the *maka‘āinana* could present their claims to the Land Commission to receive their Land Commission Award (LCA) (Kame‘eleihiwa 1992).

Not everyone who was eligible to apply for *kuleana* lands did so and not all of the claims were awarded. Some claimants failed to follow through and come before the Land Commission, some did not produce two witnesses, and some did not get their land surveyed. In addition, some *maka‘āinana* may have been reluctant to claim *‘āina* that had been traditionally controlled by their *ali‘i*, some may have not been familiar with the concept of private land ownership, and some may have not known about the Māhele, the process of making claims (which required a survey), or the strict deadline for making claims. Further, the Land Commission was comprised largely of foreign missionaries, so the small number of claimants and awards may reflect only those *maka‘āinana* who were in good standing with the church. Significantly, the surveying of land was not standardized (Kame‘eleihiwa 1992:296–297).

An 1847 Metcalf map shows the project area near Nu‘uanu Stream in the *‘ili* of Kalawahine, situated below Waikahalulu (Figure 7). Other *‘ili* present on this map are Kamakela, Leleo, Kikihale, Kaakaukukui, Ka‘akopua, and Pāmo‘o. Māhele records show that Pehu submitted testimony to the Land Commissioner to claim ownership of property in the area of Ka‘akaukukui. His testimony also mentions a chinaman who lived there:

> [...] there was peace for the chief while Pehu was the property owner. He had enclosed the lot. The servants' area had several patches but the road had cut through them remaining a small portion. I have not seen cane growing there but the land which was planted with sugar cane is separated from the sugar mill area. I had seen Pehu settle a Chinaman there but I did not see Kekuanaoa drive that Chinaman away. Kinau was left these lands at the time Poki had gone on a trip and Pehu lived under Kinau where he continuously lived until his death. After Kinau had died, Pehu lived under Kekuanaoa. He had bequested all of his work with Kekuanaoa to Mahuka. I believe this place is for Pehu, Pahuwai, Aa, Kamae, Napulima and there are several people there now who have lived under Pehu. Three houses are standing there.
>
> Pahuwai, sworn, I had been a servant of Pehu and had lived there at the time of Kaahumanu and by Pehu's request. I was there when the sugar mill had started to operate. I have not known who had put Pehu there nor have I known whether this place is in the sugar mill lot. I do not know the chief who owns that place. I have seen the Chinaman living there but I did not hear Kekuanaoa say to evict him. Previously I have not known anyone had objected, I do know now someone has objected.
>
> Kauaua, sworn, I am a native of this place and I am very familiar with this place. Kaakaukukui is the land of the chiefs and I had seen Pehu build the enclosure for

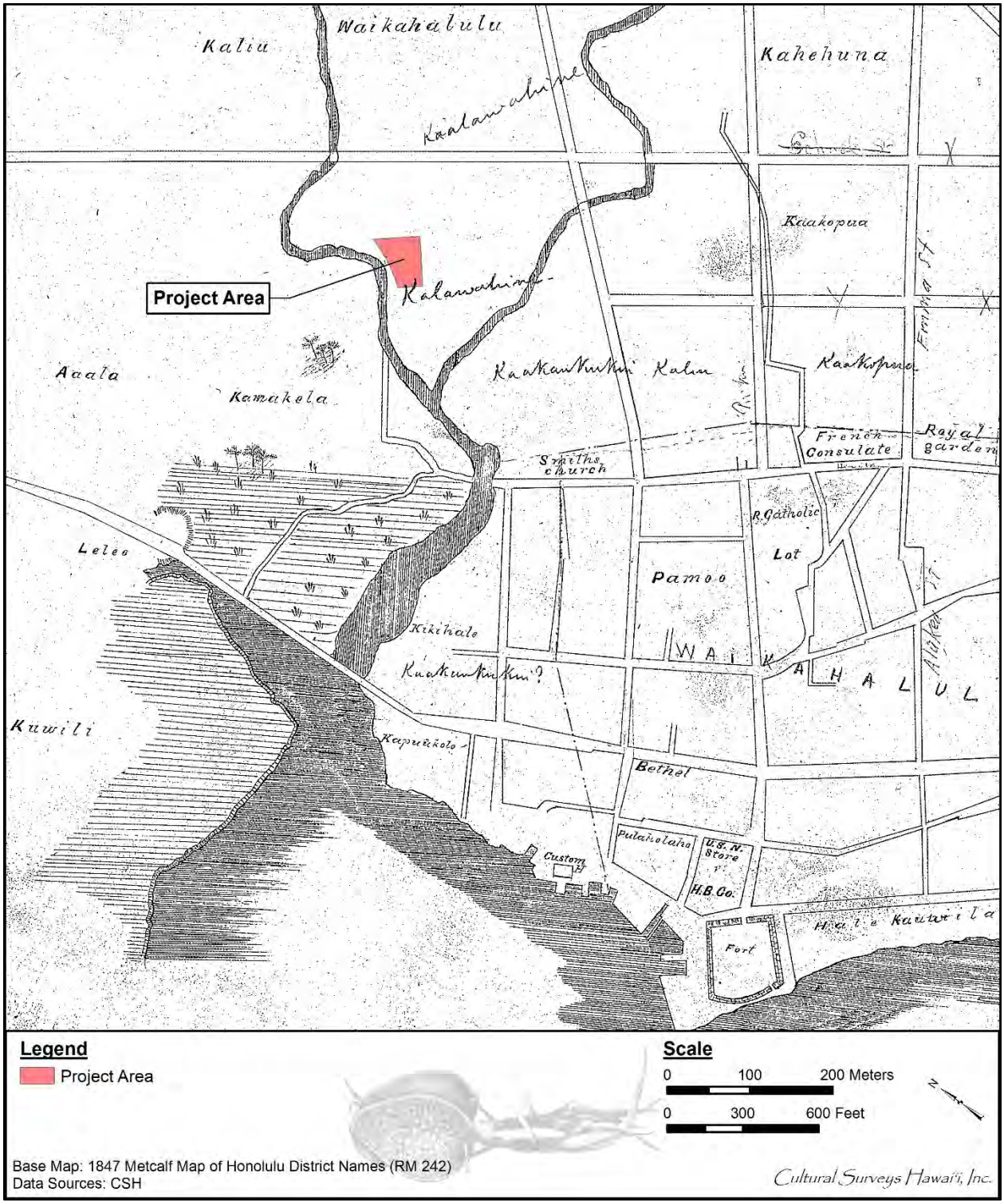

Figure 7. 1847 Metcalf map showing location of project area alongside Nu‘uanu Stream

> this place, also a house was built.
>
> Kalawaia, the father of Pehu and the husband of Pahuwai, was placed there. Later the Chinaman under Pehu built his house. The sugar mill was a separate place and because I had wanted to plant taro, I built a patch. The road has cut through it leaving only a half portion. Pehu had built a wooden fence for this place during the time of Kaahumanu, but it fell apart and a mud enclosure was built in its place at the time Kinau was yet alive.
>
> Poki then selected Pehu as konohiki for all the lands in Honolulu here when he had seen that this place had been included in Kaakaukukui while the ahupuaa is still his under the chiefs. I had not heard the objections to the Chinaman nor have I heard he had been evicted.
>
> The land officers will make a decision. [Waihona ‘Aina 2000]

An 1871 Lyons map (Figure 8) shows the current project area and those who owned property where the current building stands today: Kaukoke, Huanu o Lahilahi (Gilliland ‘Ohana), and Makahopu.

Witness testimony submitted for Makahopu claims is as follows:

> The representative for Keikenui said, Those taro patches and that place called Waimakaakamanu are all for Makahopu, of which the konohiki had entangled as his from long ago, until the time Keliiahonui had stirred Makahopu to have himself separated from the land. Makahopu then had complained to Hooliliamanu, the tax assessor, and a hearing was held before him where the decision was in favor of Makahopu, in that all of these lands were ruled for him. Makahopu lived there until his death and this same right was bequested to his heir without any objection.
>
> Kaukoke, sworn, I have seen this place over which there is a dispute. It is true that the patch which is mentioned is not for the konohiki, but the pandanus trees which are standing there are for him. The reason I think this way is because Kaahumanu I had brought the seeds and planted them there and they were for her at the time they were grown and had matured. When she died, they had become Kinau's property and now they are for Kekauonohi and the heirs of Makahopu.
>
> Makahopu had lived there a long time under Kaahumanu I and the patch, Kawaliula, and the pasture are for the konohiki, also the produce from these two places have been for Kaahumanu, then for Kinau and now they are for Kekauonohi. The lumber belonging to the foreigner is being stored there with the konohiki by rental. This is not with Makahopu.
>
> It has been agreed by the land commissioners and surveyor to have the land surveyed and divided, separating each claimant one from the other in these disputed places, then a certified document may be issued.
>
> It would be well only when the konohiki and Makahopu have agreed together. [Waihona ‘Aina 2000]

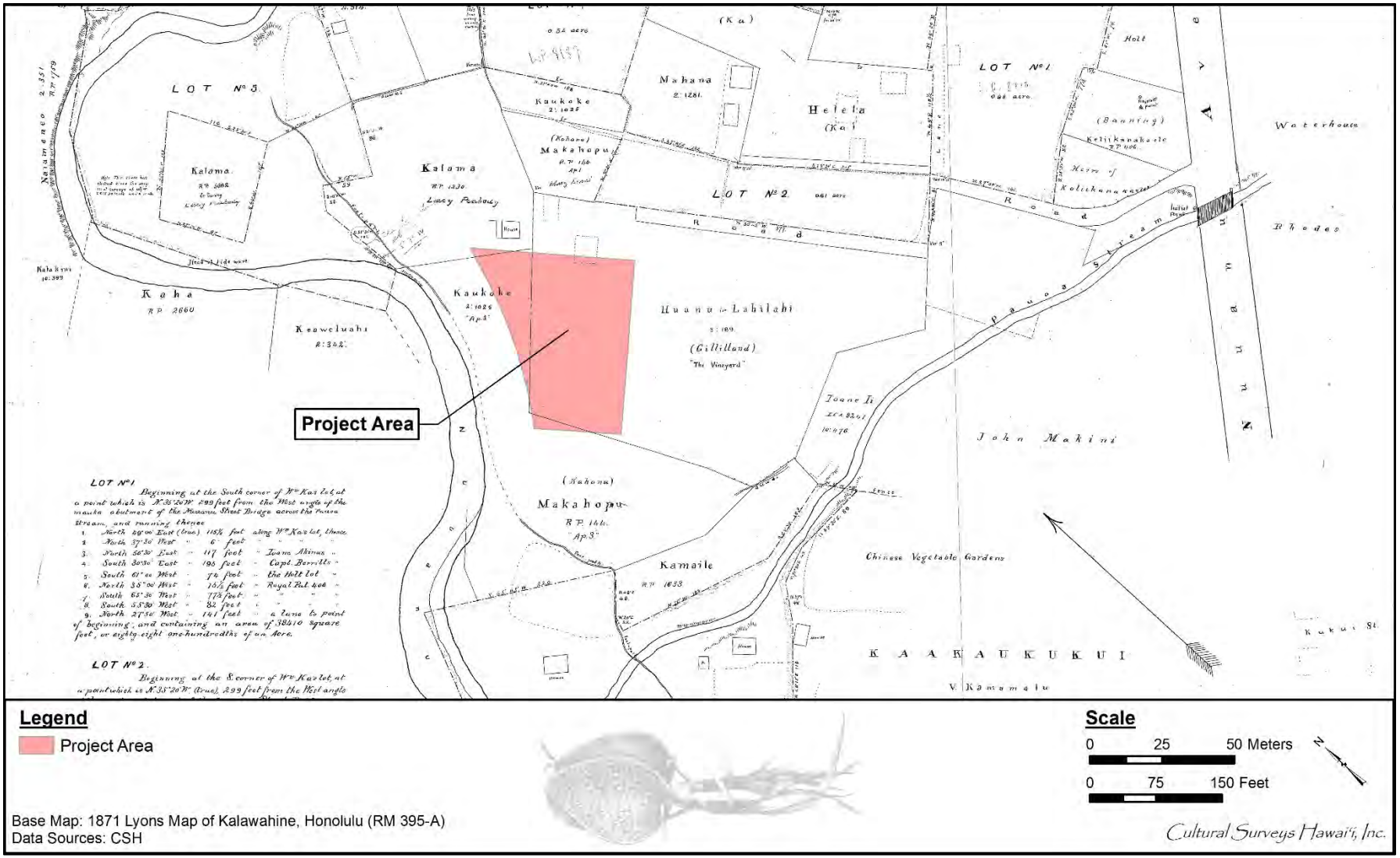

Figure 8. 1871 Lyons map with outline of project area; the original property owners surrounding the project area were Kaukoke, Huanu o Lahilahi (Gilliland ‘Ohana), and Makahopu

A claim submitted by Kaukoke lists the boundaries of his property:

> To the Honorable Land Commissioners of the Hawaiian Islands, Greet-ings: I hereby state my claim for lo‘i land, however, it is a half of a lo‘i, at Kalawahine, Honolulu. It is bounded on the north by the vineyard; on the east by the lo‘i of Kawelo; on the south by the lo‘i of Makahopu; on the west by the half of Makahopu. I got if from Makahopu and have been there twelve years. [Waihona ‘Aina 2000]

4.2.2 Francisco Paulo de Marin and the Gillilands

The demolition of the existing building (the John R. Gilliland building) will provide the area for the proposed project. The history of the Gillilands in Hawai‘i begins first with Francisco Paulo de Marin who was a confidant of Kamehameha I. He had atleast three wives of Hawaiian blood and many children.

The following Māhele document lists the heirs of Marin (also called Manini) and the heirs of Lahilahi, one of Francisco’s daughters, in their testimony for property in Honolulu. Their property was named Huanu o Lahilahi:

> P. Manini formerly held this land from Kamehameha I, having received it from him. On death of Manini it came to his daughter, Lahilahi and on her death to her children, Francis, John, & Rosalia. Francis is dead. The lot is fenced round & has been cultivated & never disputed. I have lived on this lot ever since time of Kamehameha I.
>
> Kaoani, sworn, I saw the survey made by Mr. Turner & it is according to the wall of the lot. I have lived there since Kamehameha I and there is no dispute to the Title. [Waihona ‘Aina 2000]

Witnesses to their claim also provided testimony:

> S. Reynolds, sworn, I have known these four land sections here well. They are for their grandparent, Manini. I had first seen sections 1,2,3 in 1811, one house lot and the land sections. I was living mauka of this place in 1823, and since that time Manini's interest had never been objected for the rest of life.
>
> When Manini died he had bequested these places to Lahilahi, his daughter and when she died her children, Palakiko, Rosalia, and Huanu inherited this land. Kaapuiki is the guardian, no objections. Palakiko is deceased and I am the administrator. Palakiko had bequested his one-third interest in these land sections to Juanu, he now has two-thirds interest. No objections. [Waihona ‘Aina 2000]

4.3 Late Nineteenth Century

In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the Islands. Charles Wilkes, commander of the U.S. Exploring Expedition, visited Hawai‘i in 1841 and related that Honolulu was “very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia” (Wilkes 1856:373).

Honolulu was in a period of rapid change. Reverend Sereno Bishop offers a unique perspective on the changes in the layout of Honolulu and the structures that lined the streets:

> When I returned to Honolulu in 1853, after an absence of thirteen years, I was struck by the many changes. […] [In 1840] The major portion of the residents of Honolulu still lived in thatched houses. In fact the town was almost entirely composed of this kind of dwellings […] When I went away there were only Punchbowl Road, Beretania Street, King Street and Merchant Street. This was the condition of the city in 1840. [Bishop 1916:58]

Beginning at the start of the whaling era (1820) and extending into the 1840s and 1850s when seamen came ashore for "rest and relaxation," the downtown area from Nu‘uanu Street west to Nu‘uanu Stream was a district of "dilapidated native huts and tenements, tiny bar-rooms, coffeeshops, and run-down boarding houses, all turning to the harbor for their opportunities and income" (Daws 2006:239) (Figure 9, Figure 10, Figure 11).

There was some movement of wealthy Caucasian residents into the lower section of Nu‘uanu in the mid- to late part of the nineteenth century. Malcolm Brown noted,

> Towards the latter part of the 1800's, Nuuanu became the fashionable residential district, and there were many beautiful homes lining Nuuanu Ave. and the cross streets in the valley. […] The houses were big because there were many children in most families, and the house lots were large because they needed pasture space for their horses. [Brown 1918:28]

4.4 Twentieth Century to Present

4.4.1 Repatriation of Bones in Chinatown

Land records associated with Mataio Kekuanaoa's LCA 170 at Kapukolo (also known as Kapu‘ukolo) indicate traditional Hawaiian land use on the property. However, the immediate area was also part of a rich Chinese cultural landscape. This particular parcel is within the area today known as Chinatown and is bound between North King Street (*mauka*) and North Nimitz Highway (*makai*). For nearly a century, the common practice was for Chinese patriots to disinter their fellow countrymen's bones and prepare them for shipment back to their homeland of China. In a general sense, it is logical to assume that many of these bones most likely passed through Honolulu's Chinatown, but the details are not well-known. Maly and Maly (2013) provide the following account:

> Preparing Bones for Shipment to China from Honolulu's Chinatown (1896)
>
> *Hawaiian Gazette*
>
> February 14, 1896 (page 4)
>
> A Strange Occupation.
>
> A House in Nuuanu Stream Where This Is Done—
>
> A Gruesome Trade Carried On.



Figure 9. 1855 LaPasse map with outline of project area surrounded by fields of *lo‘i kalo*

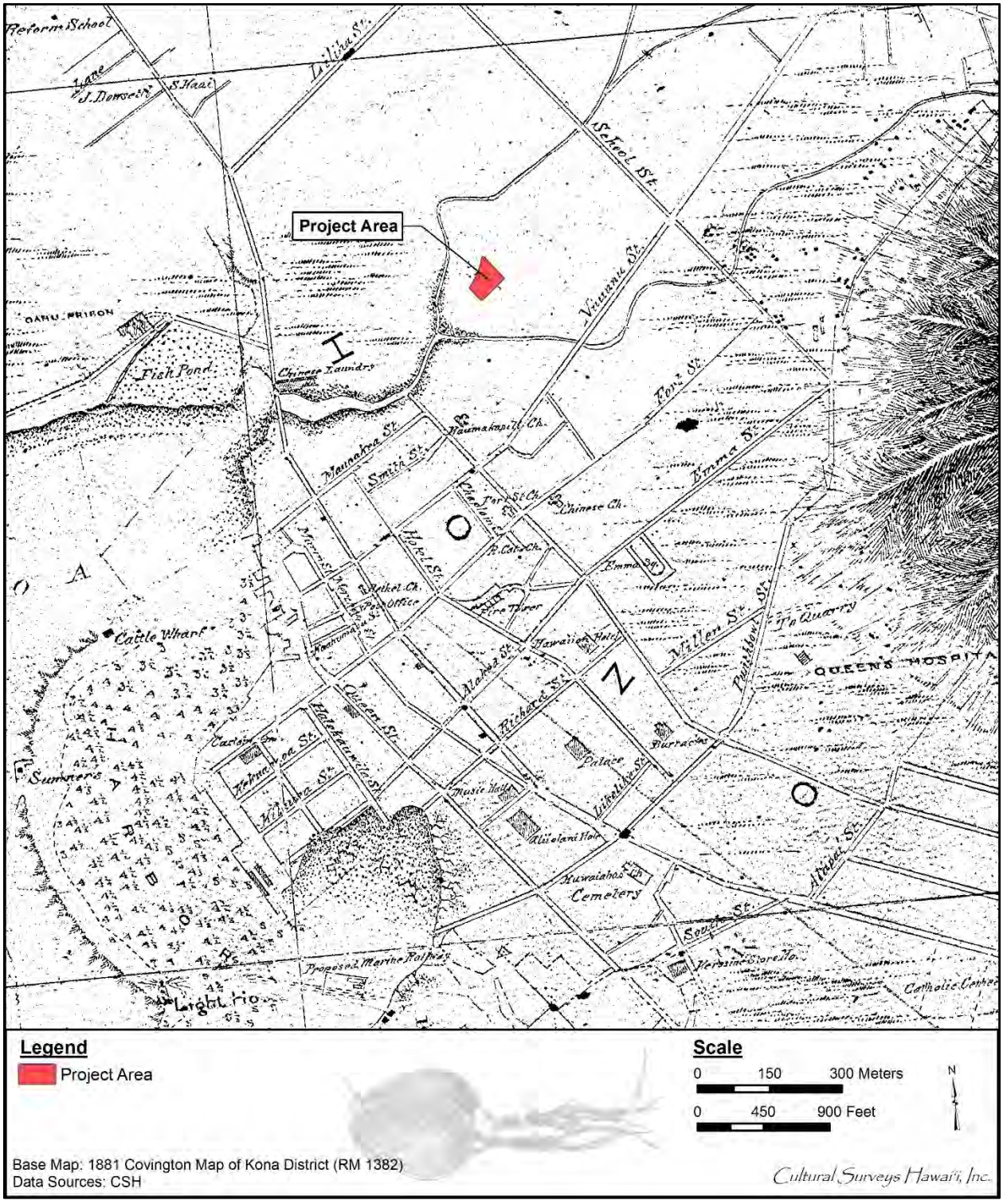

Figure 10. 1881 Covington map with outline of project area; notice side streets are now visible in Honolulu

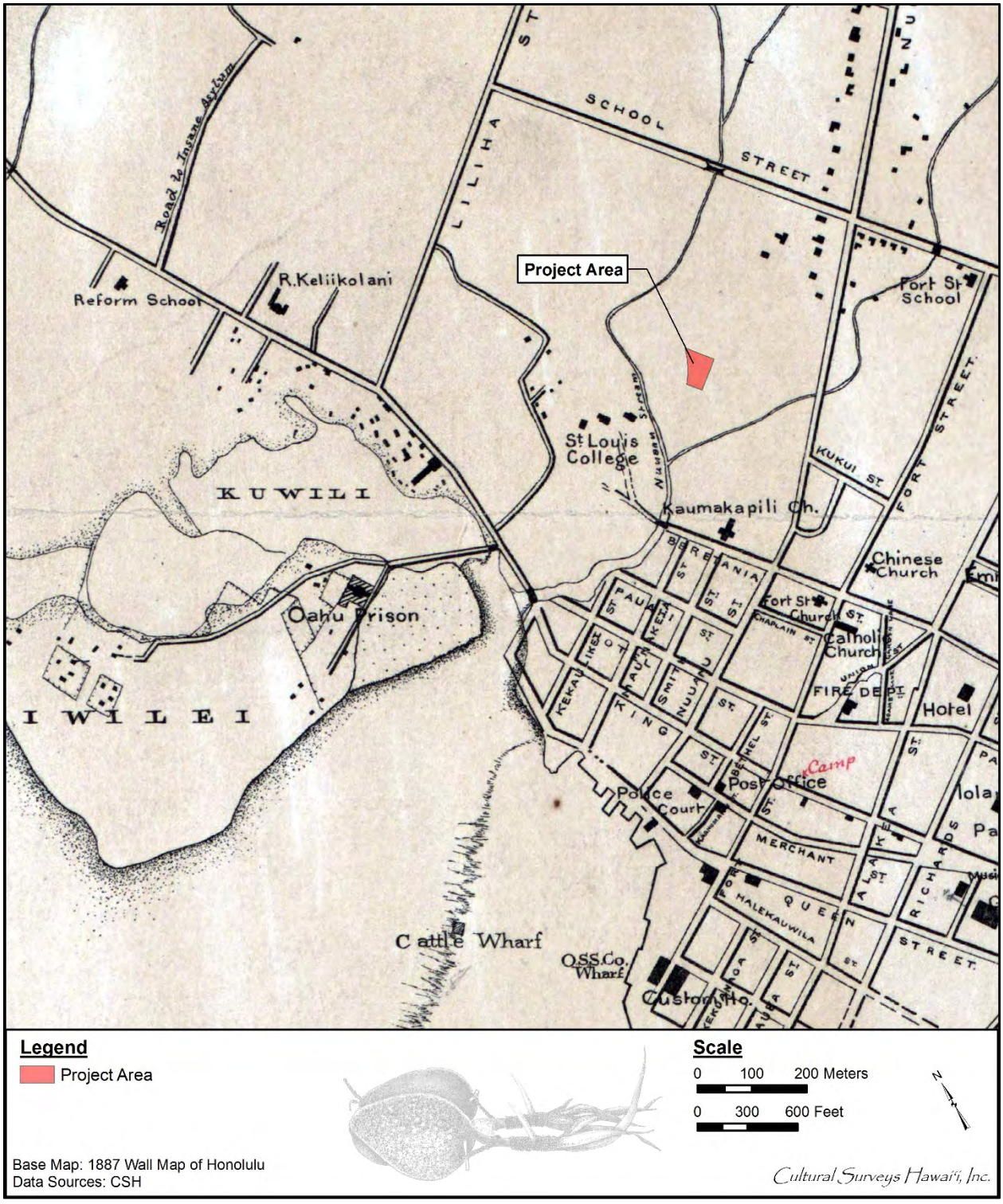

Figure 11. 1887 Wall map with outline of project area and showing a more developed Honolulu

> Situated just at the foot of Hotel street and a little back of the buildings fronting on the land now being built up by the dredger mud, silt and sand, is a very rough 8 x 12 structure of most unpromising appearance. It stands on four posts about four feet from the ground and looks for all the world like a top-heavy pigeon coop. To look at its exterior would mean nothing to the observer, but to know of its inside workings would make everything about it interesting at once.
>
> It is known as the Chinese club house. Whenever a Chinaman has a bag of human bones to prepare for transportation to China it is inside the very narrow limits of this structure that the work of scraping away dried-up skin fragments and other unnecessary matter is done.
>
> A peep in at the window close on to the hour of midnight in the dark of the moon is perhaps the best mode of receiving a lasting impression on seeing a couple of Chinamen seated on the floor, each with a pile of bones in front of him and working by the dim rays of a peanut oil lamp. A broken sickle in the hands of one serves to cut away the unnecessary dried skin and ligaments, while a cocoanut grater in the hands of the other, does good work toward removing what the sickle has failed to do. A couple of black oil cloth valises constitute the receptacles for the bones which are done up, some in cloth and others in brown paper. Such portions as the skulls are always wrapped in cloth while the legs and arms suffer the indignity of brown paper. A pile of scrapings here and there furnish the only decorations that the room affords. Cracks in the walls serve, on a windy night, to make peculiar noises, which seem a fitting accompaniment for the work of the industrious ones inside.
>
> Ever since the Chinese first came into the country has this custom been observed, and as long as they remain here will the same thing go on. No matter if the law says they shall not dig up the dead from places of burial, they will continue to do it some way or other. If the present club house is removed they will have recourse to another place.
>
> The former position of the club house was where the dredger pipes are now emptying their mud. It will be remembered that Nuuanu stream was in a very decidedly marshy condition at that point before the introduction of improvements.
>
> Then, as now, Chinamen made nightly visits to the place and scraped the bones of their relatives preparatory to transportation, but instead of carrying all waste material as they have to do now, they simply dumped this into the stream to be carried out to sea or to settle among the bulrushes. [Maly and Maly 2013:155–156]

The exact location of the place where the processing of human bones is described as an 8 by 12 structure is unknown. The “Chinese club house” is said to be “where the dredger pipes are now emptying their mud” presumably in or at the edge of Nu‘uanu Stream. In previous maps a structure labeled Joss House (a Chinese temple or shrine) was a block east of Nu‘uanu Stream. This building may have been the “Chinese club house” referred to in the 1896 *Hawaiian Gazette* article of “A Strange Occupation.” This would have been south of the current project area (Figure 12).



Figure 12. 1906 Dakin fire map showing out line of project area

4.4.2 1900s

4.4.2.1 The 1900 Chinatown Fire

In 1852, there were only about 71 Chinese living around Honolulu, most of whom had come to the Islands as merchants and continued to carry out this trade. In 1852, sugar planters began to import large numbers of Chinese "coolies" to work on their sugar plantations. Once their contracts were filled, some of the workers moved to Honolulu to open their own businesses in the area that soon came to be known as Chinatown. The unsanitary and over-populated area alarmed the white business class who noted, "Most Chinese businesses were housed in decaying buildings on the depressed lower blocks of Nu‘uanu and Maunakea Street, and in Chinatown the womanless coolies congregated to gamble, smoke opium or simply pass the time" (Daws 2006:300). By the 1870s, a sizeable population of Chinese immigrants had settled in Honolulu, especially concentrated in the blocks between Nu‘uanu and Maunakea streets. An 1878 census recorded 1,299 Chinese in Honolulu; the total city population numbered 14,114.

In 1899, the first case of bubonic plague was identified in Hawai‘i, in a Chinese bookkeeper named You Chong. After an examination by Dr. G.H. Herbert, who noted a high temperature and swelling in the groin, the patient died the next night. After an autopsy, the diagnosis of bubonic plague was determined.

Since the disease had broken out in the immigrants' area of Honolulu, all Chinese and Japanese were barred from leaving Honolulu for other ports. Two other cases were reported on the same day and the Board of Health laid down a strict quarantine for Chinatown, that area of Honolulu bound by Nu‘uanu, Kukui, River, and Queen streets. Within this area about 7,000 people, primarily Chinese and Japanese immigrants, lived and worked (Iwamoto 1967:122–124). A third ethnic group who inhabited the area were Hawaiians; about 1,000 lived in areas their families had occupied for generations (Mohr 2005:63).

From 12 December 1899 to 31 March 1900, 71 cases of bubonic plague were reported, with 61 deaths, 41 of whom lived within the established Chinatown quarantine area. The Board of Health concluded they could not contain the plague and decided the best remedy was to set "sanitary fires" to infected wooden buildings. A total of 41 controlled fires were set between 31 December 1899 and 13 August 1900:

> Therefore, on December 30, after careful deliberation, the Board of Health chose fire as the 'surest, most thorough, and most expeditious' method. Fire would destroy the plague germs, kill rats, cleanse the soil and open it up to the purifying influence of sun and air, and would prevent any occupancy of the premises until a safe period of time had elapsed. [Iwamoto 1967:124]

Infected patients were moved to a quarantine camp at Kaka‘ako. Some people, not necessarily patients, whose houses were burned were housed at the barracks of the Kaka‘ako Rifle Range. Their belongings were stored in the cellars of Kaumakapili Church.

On 20 January 1900, a fire was set between Kaumakapili Church and Nu‘uanu Avenue, which quickly got out of control. Rising winds swept burning embers to the roof of the church; the fire then jumped to several other blocks and then to the wharfs:

> By 1:30 p.m. the fire began making its way from Beretania Street along Achi Lane toward Kukui Street. People feared that the *mauka* section of the city would be destroyed. Chinatown refugees rushed back to save belongings, but were driven back by fire and smoke; they formed a seething mob near the bridge and Kukui Street. […] The Chinese consul and vice consul also circulated among the people and tried to pacify them, since at this time the Chinese believed that the Board of Heath had purposely burned their homes. [Iwamoto 1967:130–131]

No one was killed in the fire, but Chinatown was destroyed. Many people were homeless and bereft of all belongings, which were lost when Kaumakapili Church burned to the ground. No additional patients were identified with the disease in April 1900, and the Hawaiian Islands were declared free of the plague (Iwamoto 1967:125, 129). Figure 13 through Figure 16 show the succession of development before, during, and after the plague.

4.4.3 Contemporary Land Use

Honolulu in the late nineteenth century consisted of many streets still unpaved and several small lanes (that no longer exist) between major roads. Bishop Street, the main road now between Fort and Alakea streets, did not exist. Union Street exists now only as a pedestrian walkway between buildings.

By 1919, however, Honolulu had wide paved streets with blocks of contiguous brick and stone stores along all major downtown roads. The first section of Bishop Street, between Fort and King streets, was built in 1900. This street quickly became the financial sector of the city, and many of the "Big Five" companies built their headquarters and their banks on this street (Ames 1996:27). By 1918, the section from the harbor to King Street had been completed and paved (Ames 1996:119). In 1919, the *mauka* extension of Bishop Street from Hotel to Beretania Street began. The city condemned all the property in the way of this new thoroughfare and in 1927, razed all of the structures, including several of the residences near the project area (Ames 1996:120).

The first efforts to deepen Honolulu Harbor were made in the 1840s. The idea of using the dredged material composed of sand and crushed coral to fill in low-lying lands was quickly adopted. From 1857 to 1870, the "Esplanade" between Fort Street and Alakea Street was created on 22 acres of former reef and tideland. By 1874, Sand (Quarantine) Island, site of the first immigration station, had been created over "reclaimed" land on reefs.

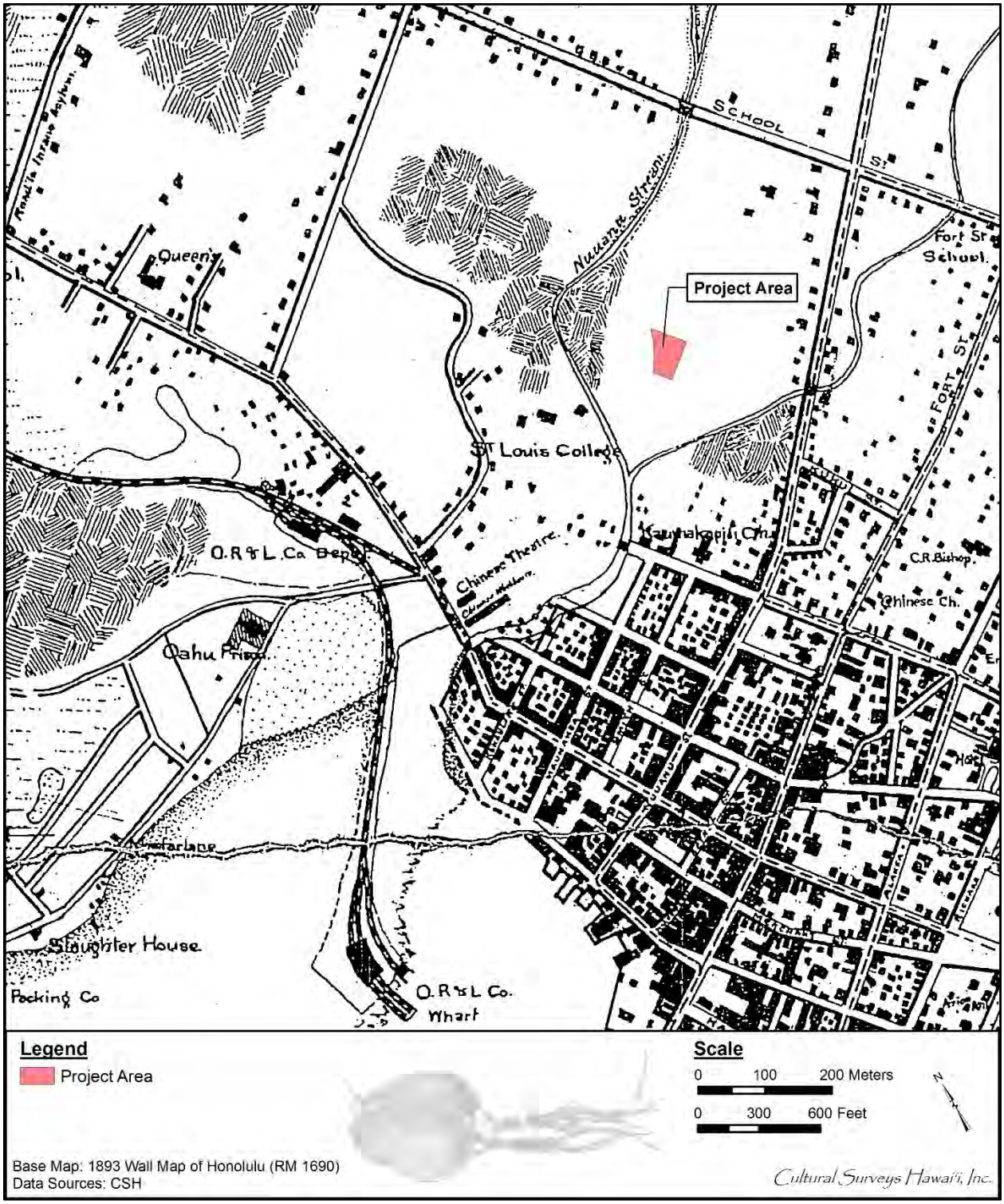

Figure 13. 1893 Wall map of Honolulu with outline of project area

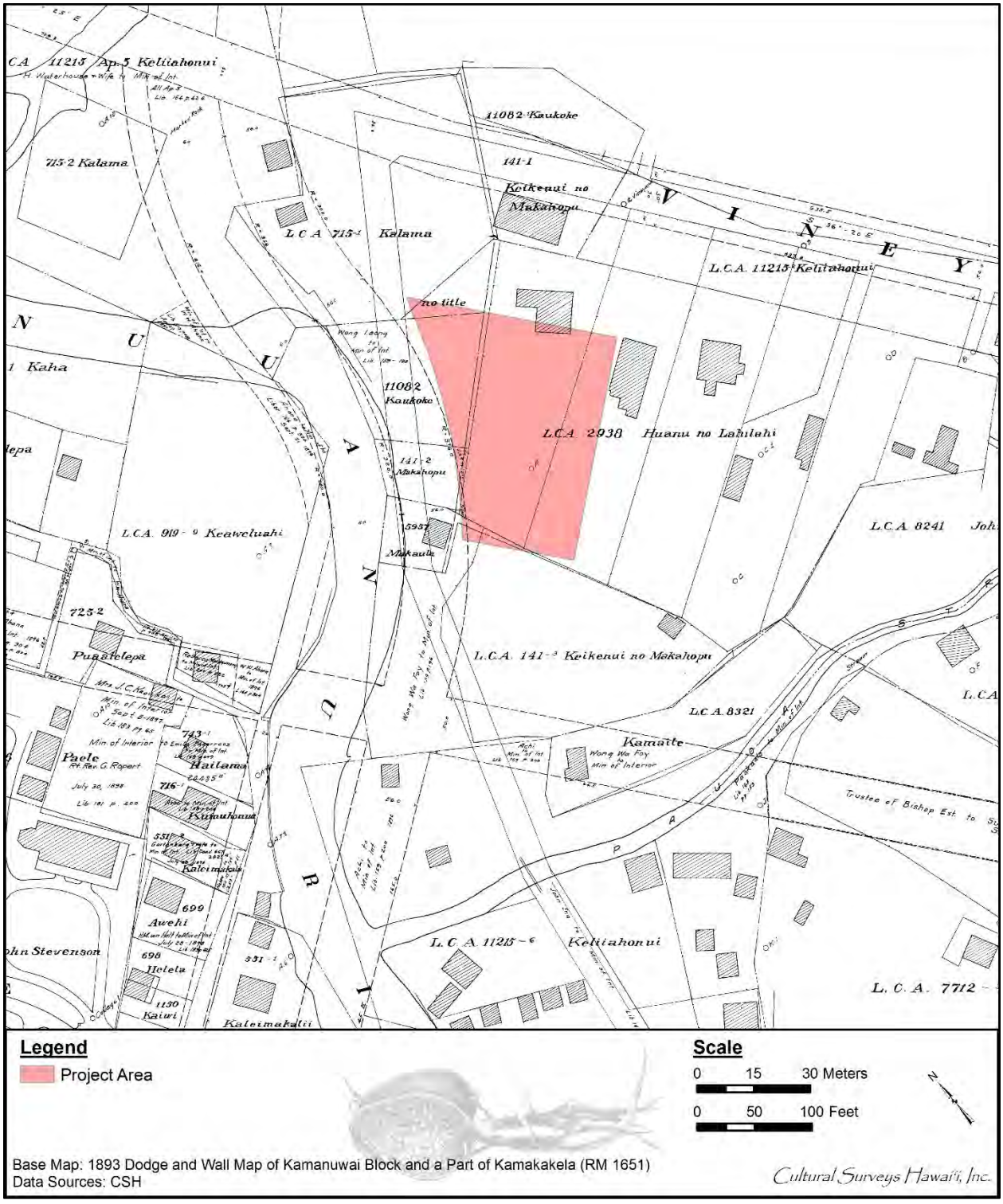

Figure 14. 1893 Dodge and Wall map showing outline of project area and surrounding LCAs

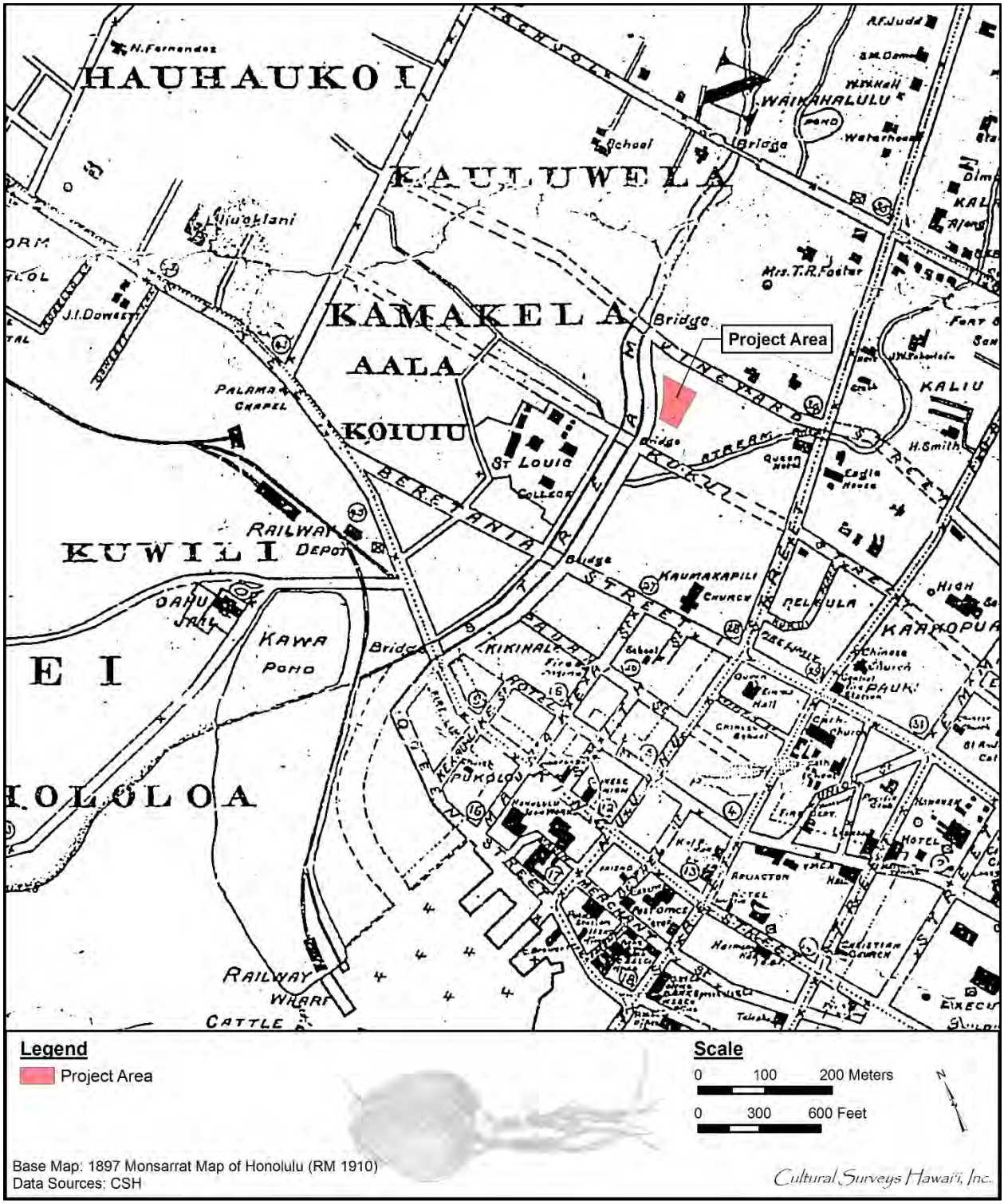

Figure 15. 1897 Monsarrat map with outline of project area

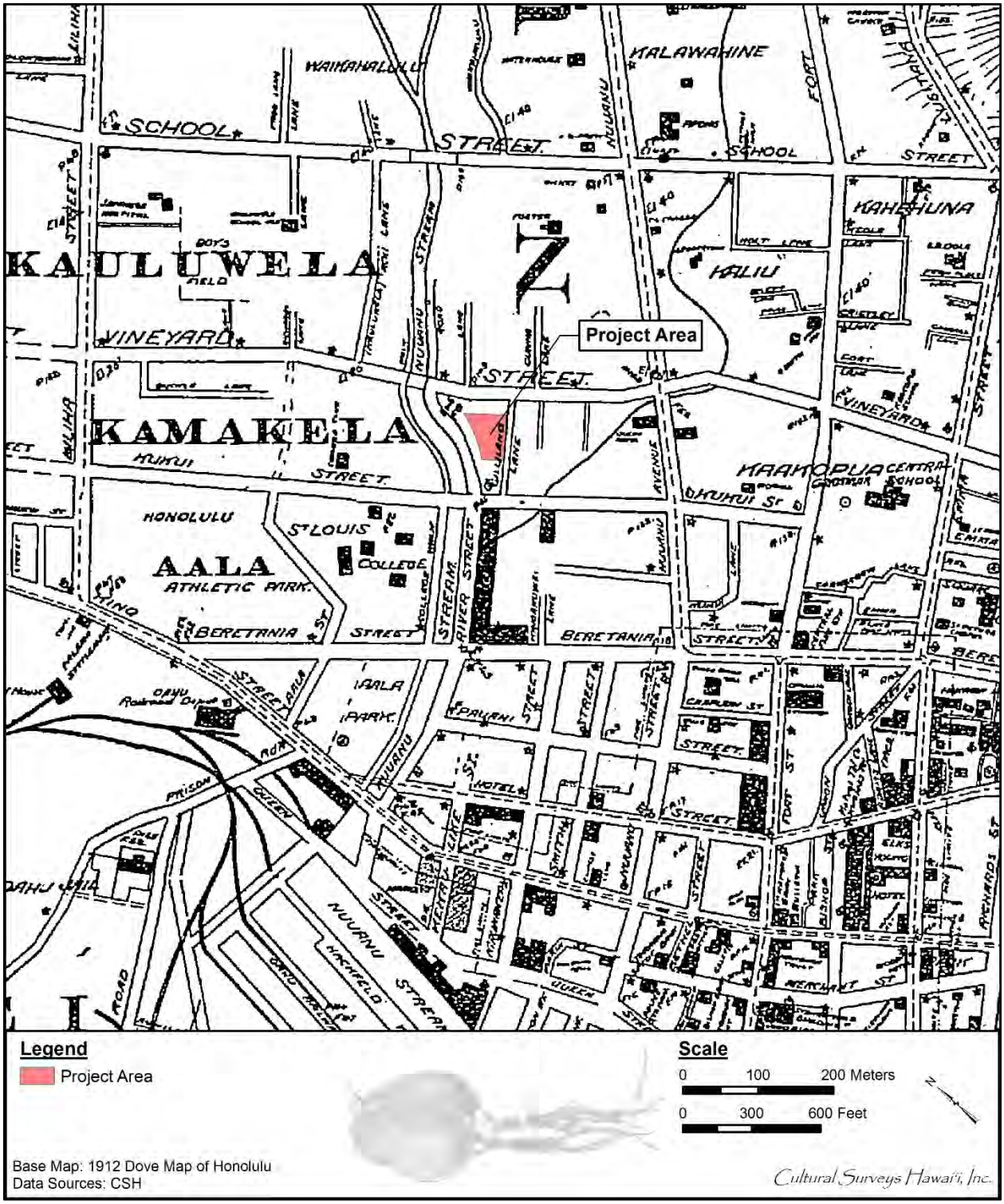

Figure 16. 1912 Dove map showing outline of project area and a well developed Honolulu

Section 5 Previous Archaeological Research

No previous archaeological studies have been conducted within or adjacent to the current project area. Below is a discussion of previous studies in the vicinity, which are depicted on Figure 17 and summarized in Table 1. Historic properties in the vicinity are depicted on Figure 18.

5.1.1 Erkelens et al. 1994; Goodwin 1997; Goodwin and Allen 2005

In 1994, International Archaeological Research Institute, Inc. (IARII) conducted an archaeological inventory survey (AIS) for the Kekaulike Revitalization project, Diamond Head Block (Goodwin 1997). The survey identified more than 100 features, designated as State Inventory of Historic Places (SIHP) # 50-80-14-4875. At least one of the features was assessed as pre-Contact, while others were determined to be from the first ca. 70 years following Western Contact. Other residential and commercial features dated to the first 50 years of Chinese immigration, along with several from the twentieth century.

The survey also identified human skeletal remains, which were part of a secondary burial containing the incomplete remains of three individuals (Erkelens et al. 1994). Represented in these remains were a male aged 24030, a female aged 15018, and a female aged 304. These individuals were likely moved from their original context during construction of a post-1900 water line; hence, the date of original internment may have occurred during the nineteenth century. Erkelens et al. (1994) hypothesize that the individuals may have been victims of the 1860 Chinatown fire.

IARII subsequently conducted data recovery from 2 August to 30 September and 7 October 1994 (Goodwin and Allen 2005). Staff archaeologists recovered artifacts and charcoal that indicated the area was in use as early as the thirteenth century, with heavy occupation occurring from the early to mid-nineteenth century. Four compounds and a blacksmith’s shop, dating partly to the early nineteenth century, were excavated. A total of 8,552 artifacts were collected, associated with a variety of ethnic origins (traditional Hawaiian, Euro-American, and Asian). Collected materials included porcelains, earthenware, stoneware, lithics, fishhooks, pendants, a *poi* pounder, metal, coins, beads, bottles, glass shards, bone, shell, and charcoal. Identified features included post molds, living floors, firepits for heating and cooking, refuse pits, and fence lines. Large amounts of faunal bone were also recovered, including from species present in the pre-Contact period (pig, dog, turtle, chicken, shark, fish, and Pacific rat), as well as post-Contact introductions (cow, horse, goat, sheep, domestic cat, and the Norway/roof rat).

In addition, fetal remains were found in a refuse deposit (Feature 338) during data recovery. Osteological analysis determined the fetus was carried into the second or beginning of the third trimester of pregnancy before a premature birth or miscarriage; there was no evidence of deliberate burial (Erkelens et al. 1994). Artifacts within Feature 338 suggest it dates to 1850-1880.

5.1.2 Kennedy et al. 1994; Riley et al. 1995

Kennedy et al. (1994) conducted an AIS for the Kekaulike Revitalization project, ‘Ewa Block, bounded by King, River, Hotel, and Kekaulike streets (Kennedy et al. 1994). Investigations consisted of nine backhoe trenches and three hand-excavated test units. Two historic properties were identified: SIHP # 50-80-14-4587, a small pond, and SIHP # 50-80-14-4588, a multi-

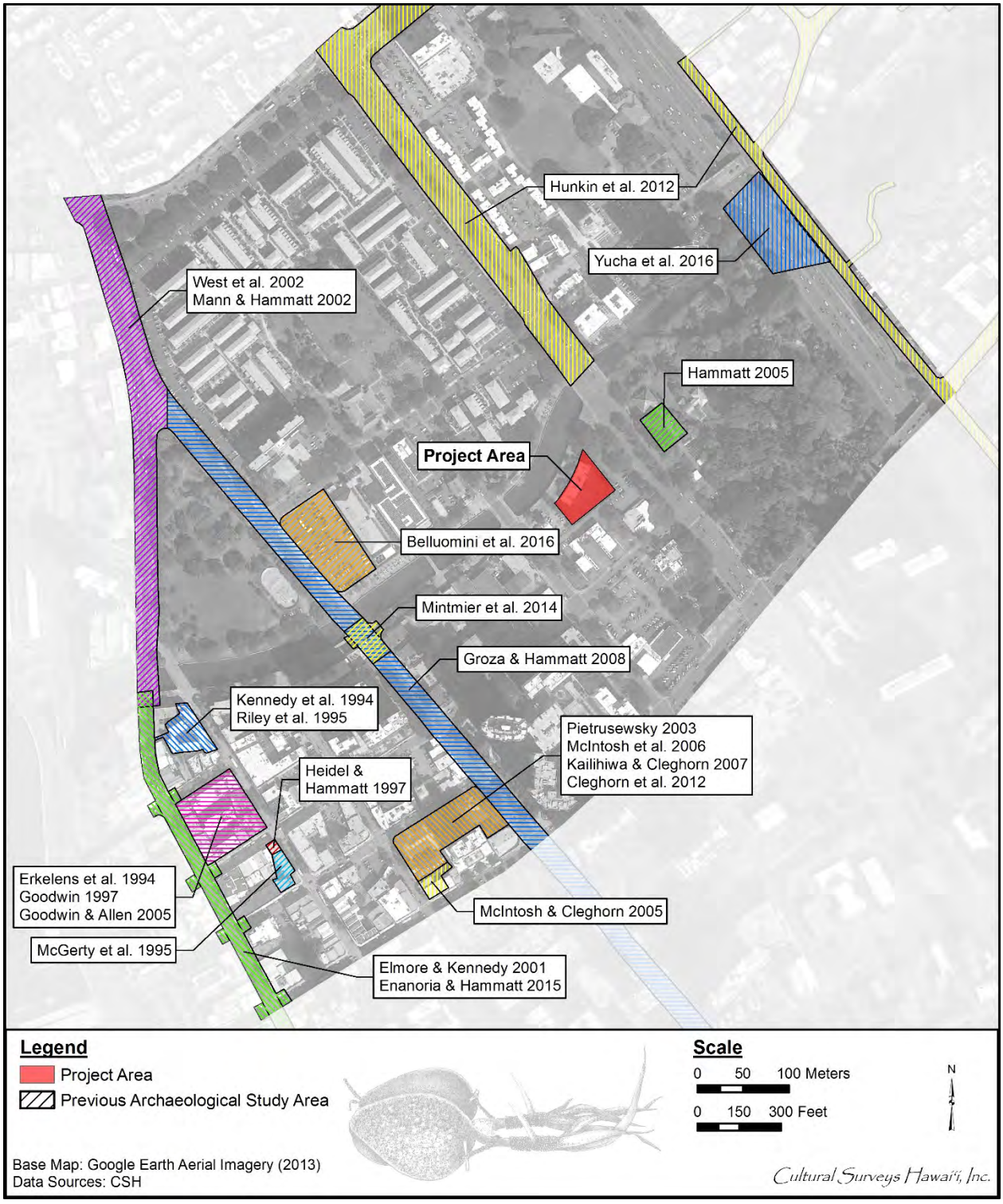

Figure 17. Previous archaeological studies within the vicinity of the Halewai‘olu Senior Residence project area (Google Earth 2013)

Table 1. Previous archaeological studies in the vicinity of the project area

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Erkelens et al. 1994	Burial report	Kekaulike revitalization project, Diamond Head block	Documented four sets of human skeletal remains associated with SIHP # -4875
Kennedy et al. 1994	Archaeological inventory survey	Kekaulike revitalization project, ‘Ewa block	Identified SIHP # -4587, a small fishpond, and SIHP # -4588, a multi-component historic property consisting of 53 features dating from pre-Contact period to twentieth century, including three human burials
McGerty et al. 1995	Archaeological assessment (no fnds AIS)	Chinatown Community Service Center, on two parcels within Chinatown district	Concluded project area had potential to contain significant pre- and post-Contact cultural deposits; AIS recommended
Riley et al. 1995	Data recovery	Kekaulike revitalization project, ‘Ewa block	Documented 55 features spanning early pre-Contact period through twentieth century; C14 dating of SIHP # -4587, fishpond, yielded an early tenth century date; dating of SIHP # -4588, coral reef stone platform yielded an eleventh century date
Goodwin 1997	Archaeological inventory survey	Kekaulike revitalization project, Diamond Head block	Identified SIHP # -4875, consisting of over 100 features and six culturally enriched strata; majority of features interpreted as Native Hawaiian from early post-Contact period, but also included historic and modern features and structural remnants; documented a single burial
Heidel and Hammatt 1997	Archaeological testing	1,700-sq-ft lot in Chinatown	No historic properties identified in four test excavations
Elmore and Kennedy 2001	Archaeological monitoring	King St, between River St and Bethel St	Identified one in situ, flexed human burial (SIHP # -5781) between Maunakea St and Smith St

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Mann and Hammatt 2002	Archaeological monitoring	King St rehabilitation	Identified one incomplete, previously disturbed, human burial (SIHP # -6317) near intersection of King St and Punchbowl St and a pit feature containing non-human skeletal remains at corner of King St and Richards St (no SIHP # assigned)
West et al. 2002	Archaeological monitoring	Installation of water mains along King St, between Liliha and River St	Identified Honolulu Rapid Transit & Land Company (HRT&L) trolley (SIHP # -5942) and associated artifacts
Pietrusewsky 2003 (in Kailihiwa and Celghorn 2007)	Osteological analysis	Smith-Beretania parking lot	Identified two children, five young adults, and 16 adults of Asian, Caucasian, and/or Polynesian descent (SIHP # 50-80-12-6672)
Goodwin and Allen 2005	Data recovery	Kekaulike revitalization project, Diamond Head block	Excavated four house compounds and a blacksmith’s shop (SIHP # -4875); C14 dating indicated area was in use as early as thirteenth century; four human burials documented
Hammatt 2005	Burial report	Foster Botanical Gardens (180 North Vineyard Blvd)	Human bone fragments recovered from backpile and reinterred on botanical garden grounds (No SIHP # assigned)
McIntosh and Cleghorn 2005	Archaeological inventory survey	Pearl St One Bldg	Identified SIHP # -6691, a four-component site composed of two disturbed sets of human remains, two historic trash pits, charred remains of a Chinatown structure destroyed in 1900 Chinatown fire, and remnant of a historic building that partially collapsed in 2001
McIntosh et al. 2006	Archaeological inventory survey	Smith-Beretainia parking lot	Identified SIHP #50-80-12-6672, which includes trash pits, a cooking feature, building structural foundations, traditional and historic artifacts, and abundant midden deposits
Kailihiwa and Cleghorn 2007	Archaeological monitoring	Smith-Beretania parking lot	Identified SIHP # -6672, including 23 sets of human remains

Reference	Type of Study	Location	Results (SIHP # 50-80-14-****)
Groza and Hammatt 2008	Archaeological monitoring	Beretania St between King St and Alapa‘i St	No historic properties identified, likely due to previous disturbance
Cleghorn et al. 2012	Data recovery	Smith-Beretania parking lot	Documented SIHP # -6772, consisting of numerous pits, privies, and miscellaneous features with traditional Hawaiian artifacts and two human burials
Hunkin et al. 2012	Archaeological monitoring	Kalihi/Nu‘uanu sewer project	Identified isolated human bone fragment in fill material (no SIHP # assigned)
Mintmier et al. 2014	Archaeological monitoring	Intersection of Beretania St and River St	No historic properties identified
Enanoria and Hammmatt 2015	Archaeological monitoring	King St Reconstruction between Bethel and River St	No historic properties identified
Belluomini et al. 2016	Archaeological inventory survey	American Savings Bank Campus (300 N Beretania St)	Identified SIHP # -7933, human remains and associated features; SIHP # -7934, LCA boundary wall remnants; and SIHP # -7935, building foundation remnants
Yucha et al. 2016	Archaeological monitoring	H-1 from Middle St to Ward Ave	No historic properties identified

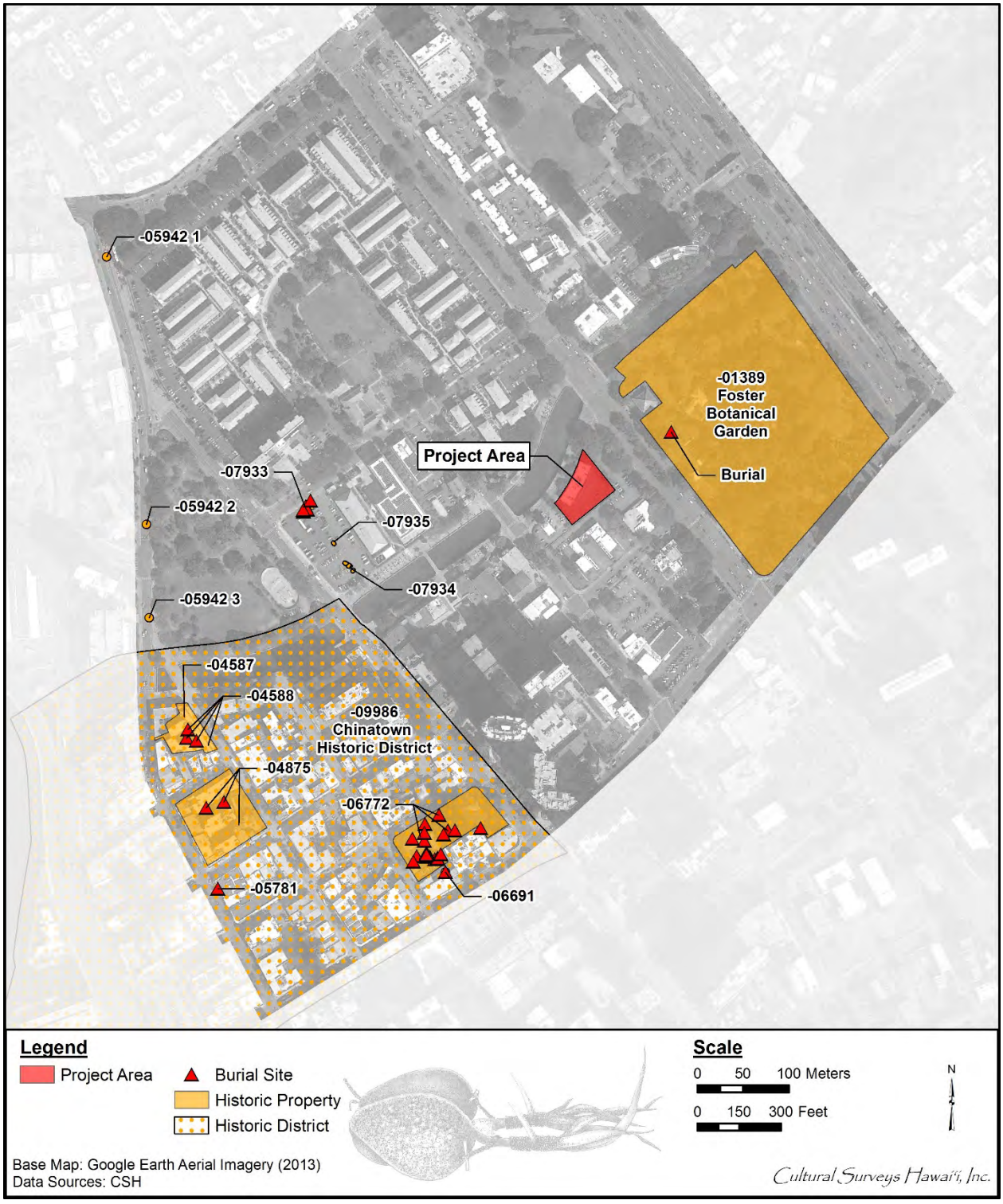

Figure 18. Aerial photograph showing the locations of documented historic properties and burials within the vicinity of the Halewai‘olu Senior Residence project area

component historic property consisting of 53 features of various functions spanning the pre- to post-Contact periods. The features included 20 postholes, three pits of indeterminate function, three fire pits, three cut stone walls, seven crushed coral foundations, a burn layer (possibly from the 1900 or 1902 Chinatown fires), historic trash pits, and three human burials (two likely historic and one likely traditional Hawaiian) (Kennedy et al. 1994).

Subsequently, Riley et al. (1995) conducted data recovery for SIHP #s 50-80-14-4587 and -4588 (Riley et al. 1995). Sixty-four test units were excavated, and 55 features were documented, including three additional human burials. Radiocarbon dating of charcoal from SIHP # -4587 yielded a much earlier date than expected, within the tenth century. As the dated charcoal was obtained from behind the pond wall, the radiocarbon date was believed to represent the construction or renovation of the pond. Investigations indicated use of the pond continued up to the 1860s, when it was in-filled.

Analysis of the documented features of SIHP # -4588 indicated an extensive timeline of occupation of the study area. Features ranged from the tenth and eleventh centuries (as evidenced by the pond and a coral reef stone platform with the remnants of a possible human burial), to the seventeenth and eighteenth centuries (as evidenced by a hard-packed living surface with associated traditional Hawaiian artifacts), through the nineteenth century (as evidenced by a latrine pit, a Kaua‘i *poi* pounder, and traditional style fishhooks made from copper), and up to the twentieth century.

Osteological analysis of the three human burials identified during data recovery and the three burials documented during the AIS identified five of the six individuals as being of Chinese descent. The other individual was in a “pre-Western contact” context and was determined to be Native Hawaiian.

5.1.3 McGerty et al. 1995

In 1995, Scientific Consultant Services, Inc. (SCS) conducted an archaeological assessment (no finds AIS) for the Chinatown Community Service Center project, on two parcels of land in the Chinatown district (TMKs: [1] 1-7-003:014 and 015), on the *mauka* side of the block bordered by Hotel, Maunakea, King, and Smith streets (McGerty et al. 1995). After conducting thorough research into previous archaeological work in the area, myths and legends, archival documents, and previous land use, SCS concluded the project area had the potential to contain significant pre- and post-Contact cultural deposits and recommended that the project area be subject to an AIS.

5.1.4 Heidl and Hammatt 1997

In 1997, CSH conducted archeological testing at a 1,700-sq-ft parcel (TMK: [1] 1-7-003:014) in Chinatown (Heidel and Hammatt 1997). Four test trenches yielded no cultural deposits or materials, with the exception of a historic basement filled with modern debris and sediment. The report does not present a possible association or date of occupation for the basement, and no SIHP number was assigned (Heidel and Hammatt 1997).

5.1.5 Elmore and Kennedy 2001

Elmore and Kennedy (2001) conducted archaeological monitoring for miscellaneous sidewalk improvements on King Street between River Street and Bethel Street. One in situ human burial, designated as SHIP # 50-80-14-5781, was identified between Maunakea Street and Smith Street,

beneath the *mauka* lane of King Street. Based on the burial's flexed position and lack of post-Contact artifacts, the burial was determined to be Native Hawaiian. Artifacts recovered from the backdirt pile included ceramic fragments, glass, a shark tooth, possible drilled shell fragments, a possible shark tooth tool, and one fishhook; however, none could be positively associated with the burial.

5.1.6 Mann and Hammatt 2002

In 2002, CSH conducted archaeological monitoring for the King Street Rehabilitation project on sections of King Street between Dillingham Boulevard and South Street (Mann and Hammatt 2002). One human burial, designated as SIHP # 50-80-14-6371, was identified near the intersection of South King Street and Punchbowl Street, *makai* of Honolulu Hale. The skeletal remains were incomplete and poorly preserved due to previous disturbance by construction activities; the SHPD took custody of the remains. In addition, a pit feature containing a substantial quantity of non-human skeletal remains was documented at the corner of South King Street and Richards Street; however, no SIHP number was assigned.

5.1.7 West et al. 2002

In 2002, Garcia and Associates (GANDA) conducted archaeological monitoring for the installation of water mains along King Street between Liliha Street and River Street (West et al. 2002). One previously recorded historic property, structural remnants of the Honolulu Rapid Transit & Land Company Trolley (SIHP # 50-80-14-5942), was documented in multiple locations. Documented remnants include railroad ties, metal hardware, and bricks. Small sections of the trolley track (not in situ) were exposed atop fill material, which overlay coral bedrock. Identified artifacts included glass bottles and jars, handmade leather shoes, ceramics, faunal bone (pig, cow and chicken), shell, wood, charcoal, Belgian Block cobblestones, and metal hardware.

5.1.8 Pietrusewsky 2003; McIntosh et al. 2006; Kailihiwa and Celghorn 2007; Cleghorn et al. 2012

In 2001, Pacific Legacy conducted an AIS for Block 10: Smith-Beretania Parking Lot in Chinatown (McIntosh et al. 2006). Six backhoe excavations yielded abundant post-Contact structural materials and artifacts with 68 associated subsurface features, designated as SIHP # 50-80-14-6672. The features included trash pits, cooking features, and building structural foundations with associated European, American, and Asian artifacts; traditional Hawaiian artifacts; and abundant midden deposits. Most of the structural remnants dated between 1850 and 1900 and were likely associated with the buildings destroyed in the 1900 Chinatown fire. Post-Contact artifacts consisted of glass, metal, ceramic, and bone, indicating a wide variety of functions. Fewer Native Hawaiian artifacts were recovered; these included *poi* pounder fragments, an *‘ulu maika*, cowrie shell lures, a complete stone adze, and a complete conch shell trumpet.

Subsequently in 2001, Pacific Legacy conducted data recovery for Block 10: Smith-Beretania Parking Lot to mitigate the impacts to SIHP # -6672 (Cleghorn et al. 2012). Data recovery excavations identified numerous pits, privies, and miscellaneous features with traditional Hawaiian and post-Contact artifacts. Two human burials, one adult and one child, were also documented.

In 2002, Pacific Legacy conducted archaeological monitoring for Block 10: Smith-Beretania Parking Lot (Kailihiwa and Cleghorn 2007). Additional features, deposits, and human remains

associated with SIHP # -6672 were identified; these consisted of six non-burial features and 22 human burials. In addition, 20 “find spots” (locations where artifacts were collected but not associated with a cultural layer or deposit) were documented. The human remains were primarily identified near the south wall of the Smith-Beretania apartment structure.

Dr. Michael Pietrusewsky analyzed the human remains in 2003 and determined they could represent individuals of Asian, Caucasian, and/or Polynesian descent. The analysis revealed the remains included two children, five young adults, and 16 adults, and Dr. Pietrusewsky (2003) suggests a portion of the study area may have served as a family cemetery. All burials were inventoried, excavated, mapped, and reburied on the property.

5.1.9 Hammatt 2005

In 2004, CSH received a call from Terry Hildebrand of the City and County of Honolulu Department of Design and Construction reporting a discovery of human remains during trenching activities at Foster Botanical Gardens (SIHP # 50-80-14-1389) (Hammatt 2005). Dr. Sara Collins of the SHPD noted that the remains, which included a maxilla fragment and portion of a long bone, were found in a previously disturbed context. CSH archaeologists screened the backdirt in which the maxilla fragment was found and recovered additional remains, including a long bone, clavicle, fragments of a mandible, loose teeth, and rib fragments. The remains were reinterred on the grounds of the botanical garden near the western side of the Kuan Yin Temple.

5.1.10 McIntosh and Cleghorn 2005

In 2005, Pacific Legacy conducted an AIS at the corner of Nu‘uanu Avenue and Pauahi Street (McIntosh and Cleghorn 2005). A multi-component historic property was identified: SIHP # 50-80-14-6691, composed of the incomplete remains of two disturbed human burials within two historic trash pits; the charred remains of a structure destroyed in the 1900 Chinatown fire; and structural remnants of a historic building that partially collapsed in 2001. The burials had been previously disturbed and incorporated into later trash pits, likely during the early 1900s.

5.1.11 Groza and Hammatt 2008

In 2008, CSH conducted archaeological monitoring for the Rehabilitation of Streets project on an approximately 1,800-m (5,900-ft) segment of Beretania Street between North King Street and Alapa‘i Street (Groza and Hammatt 2008). No historic properties were identified, and extensive fill deposits were encountered. In the eastern portion of the study area, the natural sediment consisted of volcanic cinder from the Sugar Loaf/Tantalus series. In the western portion, the natural sediment was silty clay loam with clay inclusions, likely due to the close proximity of Nu‘uanu Stream.

5.1.12 Hunkin et al. 2012

In 2011, CSH conducted archaeological monitoring for the Kalihi/Nu‘uanu Sewer Rehabilitation project, which extended from Middle Street in Kalihi west toward Pi‘ikoi Street near the eastern boundary of Punchbowl Crater (Hunkin et al. 2012). No historic properties were identified. The study area’s subsurface deposits appeared to have been disturbed by past land use, including extensive earthmoving activity and importation of fill sediments. However, a single isolated human bone fragment was discovered in fill material. The custody of this skeletal fragment

was transferred to the SHPD on 4 August 2008, and treatment of the fragment was carried out under the SHPD's authority. No SIHP number was assigned.

5.1.13 Mintmier et al. 2014

Pacific Consulting Services, Inc. (PCSI) conducted archaeological monitoring for traffic infrastructure improvements at the intersection of Beretania and River streets, partially within the Chinatown Historical District, SIHP # 50-80-14-9986. However, no contributing features/components of SIHP # -9986 nor any new historic properties were documented during monitoring. Eighteen glass and ceramic artifacts were collected and dated to the late nineteenth to mid-twentieth century.

5.1.14 Enanoria and Hammatt 2015

In 2013, CSH conducted archaeological monitoring for rehabilitation and replacement of water, gas, sewer, and drain lines along King Street and at each of the cross-street intersections between River and Bethel streets (Enanoria and Hammatt 2015). In general, the documented stratigraphy consisted of a series of fill sediments associated with the construction of the existing asphalt surface and the construction of subsurface utilities, overlying disturbed natural alluvium, natural volcanic cinder, and the coral shelf. No historic properties were identified.

5.1.15 Belluomini et al. 2016

In 2016, CSH conducted an AIS for the American Savings Bank Campus at 300 North Beretania Street. Subsurface testing identified three historic properties: SIHP #s 50-80-14-7933, -7934, and -7935. SIHP # -7933 consists of seven human burials, designated as Burials 1–7, and six associated features, designated as Features 8–13. SIHP # -7933 was identified in the northwest portion of the study area, within LCA 731. SIHP # -7934 consists of structural remnants interpreted as LCA boundary walls and designated as Features 1–3. SIHP # -7934 was identified in the southeast portion of the study area. SIHP # -7935 consists of the structural remnants of a building foundation, identified in the central portion of the study area.

5.1.16 Yucha et al. 2016

Between 2013 and 2014, CSH conducted archaeological monitoring for the H-1 Resurfacing project from Middle Street to Ward Avenue. As archaeological monitoring was conducted only for excavations conducted deeper than the overlying asphalt/concrete surfaces, monitoring was limited to the area of the Nu‘uanu Stream Bridge widening and lighting replacement activities, identified as Project Area 3. The archaeologists documented a series of highly disturbed fill deposits that averaged more than 100 cm in depth. No historic properties were identified

Section 6 Community Consultation

6.1 Introduction

Throughout the course of this assessment, an effort was made to contact and consult with NHOs, agencies, and community members including descendants of the area, in order to identify individuals with cultural expertise and/or knowledge of the *ahupua‘a* where the project area is located. CSH initiated its outreach effort in July 2019 through letters, emails, telephone calls, and in person contact.

6.2 Community Contact Letter

Letters (Figure 19 and Figure 20) along with a map and aerial photograph of the project were mailed with the following text:

> At the request of Halewai‘olu Senior Development, LLC (HSD) on behalf of the City and County of Honolulu (City), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Halewai‘olu Senior Residence Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu Island, Tax Map Key (TMK): [1] 1-7-006:012. The project area, located at 1331 River Street, consists of approximately 27,000 square feet (0.62 acres) encompassing the entirety of the existing building and its surrounding parking lot. The project area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle and a 2013 aerial photograph.
>
> The proposed project involves the construction of an affordable housing facility for seniors aged 62 and over at 80% Area Median Income (AMI) and below, with the vast majority of units (139 units) available to seniors with incomes at 60% AMI and below. To facilitate construction, the John R. Gilliland Building and its surrounding parking lot is planned for demolition where it will be replaced by the proposed housing facility. The housing facility will consist of 155 units (plus 1 resident manager units), a community room with warming kitchen, restrooms and storage, computer room, social services activity rooms, social services office, property management offices, mail and package boxes and elevator lobby on the ground level. A courtyard, retail space and parking access, along with trash compactor room and loading area are also on the ground level. Vehicle and bicycle parking are on the next two levels with a recreation area, laundry room and equipment rooms on the fourth level. Residential units are on the fifth through seventeenth levels. Please refer to [attachment] for a site development plan.
>
> The City purchased the project area in 1992 utilizing funding from U.S. Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG). Project construction is funded with equity through the Low Income Housing Tax Credit program and Hawai‘i State funds. With the use of HUD CDGB funding for initial land purchase, the project is subject to HUD’s CDBG environmental/historic preservation review regulations (24 CFR Part 58), which includes compliance with the National Environmental Policy Act (NEPA) and

Section 106 of the National Historic Preservation Act (NHPA). Following 24 CFR Part 58, the City is the responsible entity to carry out this federal environmental and historic preservation review compliance. As a City project on City-owned land, the City is also responsible for the project's State of Hawai‘i environmental (Hawai‘i Revised Statutes [HRS] §343) and historic preservation (HRS §6E) review. While this CIA is specifically carried out to comply with Hawai‘i State environmental review under HRS §343, the CIA consultation effort and outreach will generally dovetail with the project's federal and state environmental and historic preservation review consultation.

At the time of Western Contact at the end of the eighteenth century, the project area would have been on the outskirts of the settlement of Kou, the traditional Native Hawaiian community that developed into Honolulu. Native Hawaiians and increasingly non-Native Hawaiians continued to inhabit and use the project area and its vicinity in the nineteenth and twentieth centuries as Honolulu developed and expanded. The project area is generally considered part of Honolulu's Chinatown, although it is outside the designated Chinatown National Historic District boundary. In studies to support the Honolulu Authority for Rapid Transit's Honolulu Rapid Transportation Project, Chinatown was identified as a potential traditional cultural property eligible for listing on the National Register of Historic Places. Nu‘uanu Stream and the Lum Sai Ho Tong building are immediately adjacent to the project area.

As outlined in the implementation guidelines for HRS §343, the purpose of this CIA is to gather information about the project area and its surroundings through research and interviews with individuals knowledgeable about this area in order to assess potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:

- **General history as well as present and past land use of the project area**
- **Knowledge of cultural sites that may be impacted by future development of the project area—for example, historic and archaeological sites, as well as burials**
- **Knowledge of traditional gathering practices in the project area, both past and ongoing**
- **Cultural associations of the project area, such as *mo‘olelo* and traditional uses**
- **Any cultural significance of the project area in relation to the Chinatown community**
- **Referrals of *kūpuna* or elders and *kama‘āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua‘a* lands**
- **Any other cultural concerns related to Hawaiian, or the Chinatown community's, cultural practices within or in the vicinity of the project area**

Cultural Surveys Hawai‘i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

399 Hualani Street, Suite 124 Hilo, Hawai‘i 96720 Ph: (808) 965-6478 Fax: (808) 965-6582
Job code: HONOLULU 88 cspencer@culturalsurveys.com www.culturalsurveys.com

July 2019

Aloha,

At the request of Halewai‘olu Senior Development, LLC (HSD) on behalf of the City and County of Honolulu (City), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Halewai‘olu Senior Residence Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu Island, Tax Map Key (TMK): [1] 1-7-006:012. The project area, located at 1331 River Street, consists of approximately 27,000 square feet (0.62 acres) encompassing the entirety of the John R. Gilliland Building and its surrounding parking lot. The project area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1) and a 2013 aerial photograph (Figure 2).

The proposed project involves the construction of an affordable housing facility for seniors aged 62 and over at 80% Area Median Income (AMI) and below, with the vast majority of units (139 units) available to seniors with incomes at 60% AMI and below. To facilitate construction, the John R. Gilliland Building and its surrounding parking lot is planned for demolition where it will be replaced by the proposed housing facility. The housing facility will consist of 155 units (plus 1 resident manager units), a community room with warming kitchen, restrooms and storage, computer room, social services activity rooms, social services office, property management offices, mail and package boxes and elevator lobby on the ground level. A courtyard, retail space and parking access, along with trash compactor room and loading area are also on the ground level. Vehicle and bicycle parking are on the next two levels with a recreation area, laundry room and equipment rooms on the fourth level. Residential units are on the fifth through seventeenth levels. Please refer to Figure 3 for a site development plan.

The City purchased the project area in 1972 utilizing funding from U.S. Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG). Project construction is funded with equity through the Low Income Housing Tax Credit program and Hawai‘i State funds. With the use of HUD CDGB funding for initial land purchase, the project is subject to HUD's CDBG environmental/historic preservation review regulations (24 CFR Part 58), which includes compliance with the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). Following 24 CFR Part 58, the City is the responsible entity to carry out this federal environmental and historic preservation review compliance. As a City project on City-owned land, the City is also responsible for the project's State of Hawai‘i environmental (Hawai‘i Revised Statutes [HRS] §343) and historic preservation (HRS §6E) review. While this CIA is specifically carried out to comply with Hawai‘i State environmental review under HRS §343, the CIA consultation effort and outreach will generally dovetail with the project's federal and state environmental and historic preservation review consultation.

At the time of Western Contact at the end of the eighteenth century, the project area would have been on the outskirts of the settlement of Kou, the traditional Native Hawaiian community that

Figure 19. Community consultation letter, page one

developed into Honolulu. Native Hawaiians and increasingly non-Native Hawaiians continued to inhabit and use the project area and its vicinity in the nineteenth and twentieth centuries as Honolulu developed and expanded. The project area is generally considered part of Honolulu's Chinatown, although it is outside the designated Chinatown National Historic District boundary. In studies to support the Honolulu Authority for Rapid Transit's Honolulu Rapid Transportation Project, Chinatown was identified as a potential traditional cultural property eligible for listing on the National Register of Historic Places. Nu‘uanu Stream and the Lum Sai Ho Tong building are immediately adjacent to the project area.

As outlined in the implementation guidelines for HRS §343, the purpose of this CIA is to gather information about the project area and its surroundings through research and interviews with individuals knowledgeable about this area in order to assess potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your *kōkua* and guidance regarding the following aspects of our study:

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- **Referrals of *kūpuna* or elders and *kama‘āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua‘a* lands**
- **Any other cultural concerns related to Hawaiian, or the Chinatown community's, cultural practices within or in the vicinity of the project area**

In advance, we appreciate your assistance in our research effort. If you are interested in participating in this study, please contact Chantellee Spencer at cspencer@culturalsurveys.com. We are also available by phone at (808) 965-6478.

Me ka ha‘aha‘a,

Chantellee K. Spencer
Cultural Researcher

Figure 20. Community consultation letter, page two

6.3 **Community Contact Table**

Below in Table 2 are names, affiliations, dates of contact, and comments from NHOs, individuals, organizations, and agencies contacted for this project. Results are presented below in alphabetical order.

Table 2. Community contact table

Name	Affiliation	Comments
Anulao, Ennilaee	Borthwick Mortuary	Letter and figures sent via email 12 July 2019
Au, Alvin	Chair, Downtown NB 13	Letter and figures sent via email 12 July 2019
Au Hoy, Cathy	Aala Dog Park Association	Letter and figures sent via email 12 July 2019
Au, Gordon	Member of Chinatown Community Center Association	Mr. Au was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Baldauf, Natalie	*Kama'āina*	Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
Benn, Liana	Chinatown Community Center Association	Letter and figures sent via email 12 July 2019 Ms. Benn was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Bolan, Ruth	Hawaii Theatre	Letter and figures sent via email 12 July 2019 Immediate response, Ruth Bolan is no longer employed at the Hawaii Theatre. Please forward all inquiries to the Director of Programming.
Borthwick Mortuary		Letter and figures sent via USPS 12 July 2019
Caceres, Mana	Caceres ‘Ohana; cultural descendant; O‘ahu Island Burial Council (OIBC) ‘Ewa Moku Rep;	Letter and figures sent via email 12 July 2019
Caravalho, Ernest	Downtown NB #13	Letter and figures sent via email 12 July 2019
Chan, Henry	See Yup Benevolent Society	Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
Chang, Anthony	Neighborhood Board, #13 – Member	Letter and figures sent via email 12 July 2019
Chang, Gifford	Chinatown Business Association	Letter and figures sent via email 12 July 2019
Chang, John	CCH, Dept of Community Services	Letter and figures sent via email 12 July 2019
Chang, Walter	Chinatown Community Center Association	Letter and figures sent via email 12 July 2019 Mr. Chang was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Chinatown Business and Community Association (CBCA)		Letter and figures sent via USPS 12 July 2019
Chinatown Community Center		Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
Association (CCCA)		
Chinese Chamber of Commerce of Hawai‘i		Letter and figures sent via USPS 12 July 2019
Chinese Physical Culture Association		Letter and figures sent via USPS 12 July 2019 Returned to sender 17 July 2019
Ching, Kin	Mun Lun School	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file
Chong, Luther	Lum Sai Ho Tong	Letter and figures sent via USPS 12 July 2019
Chong, Merle	Kuan Yin Temple	Letter and figures sent via email 12 July 2019
Chow, Joseph	Sing Tao Newspaper, LTD	Letter and figures sent via USPS 12 July 2019 Returned to sender 29 July 2019
Choy-Beddow, Mona	Chinese Chamber of Commerce	Letter and figures sent via email 12 July 2019
Chun, Denton	Chinatown Merchants Association	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file
City and County of Honolulu, Department of Planning and Permitting	Per the 2016 Chinatown Action Plan, City Department of Planning and Permitting was to be lead in revitalization of Nu‘uanu Stream Corridor	Letter and figures sent via USPS 12 July 2019 Letter received 15 August 2019 See Appendix A
DaMate, Leimana	Executive Director, DLNR-Aha Moku	Letter and figures sent via email 12 July 2019
Esquef Quon, Kristi	Lung Kong Kung Shaw	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file
Farden, Hailama	Vice-President, Association of Hawaiian Civic Clubs	Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
Faulkner, Kiersten	Executive Director, Historic Hawai‘i Foundation	Letter and figures sent via email 12 July 2019
Filipino Community Center	Jose Rizal Memorial	Letter and figures sent via USPS 12 July 2019
Flores Jr., Eddie	Chinese Chamber of Commerce	Letter and figures sent via email 12 July 2019
Fong, Wesley	Chinatown Community Center Association	Letter and figures sent via USPS 12 July 2019 Mr. Fong reached out to CSH via email on 15 July 2019 with the following message: *The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* The following people were cc‘d in his email: Allen Stack, Calvin Say, Gordon Au, Howard Lum, Kehaulani Lum, Lawrence Siu, Liana Benn, Milton Hee, Richard Miyao, Robert Wu, Roland Louie, Standford Yuen, Victor Lim, Vina Quick, Walter Chang. CSH replied to Mr. Fong and all cc’d in the email on 16 July 2019 with the following: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone’s comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.* Mr. Fong replied same day:

Name	Affiliation	Comments
		Small meeting is OK. There should be at least three from CCCA and I think 3 from LSHT since the members may overlap. When and where? Please give us several dates to chose. CSH replied same day: *I will be flying in from Hilo to conduct this meeting and working on a location for us to meet. I will be in touch with you regarding the dates.* Mr. Fong replied: *Thanks* CSH reached out to Mr. Fong on 5 August 2019 proposing other options to meet: *Aloha Mr. Fong, In exploring all options to get feedback from you and other community members, will submitting individual testimony suffice? Or do you all prefer a meeting in person?* *Looking forward to hearing from you.* Mr. Fong replied same day: *In person. So we can know what is everyone else's concerns. Tx, WES.* CSH sent Mr. Fong a follow up email on 18 September 2019: *I hope this email finds you all well and in good spirits. I tried reaching out to you all last week Monday regarding the next Section 106 meeting. I have not received a reply and the meeting is scheduled to take place tomorrow night, 5:30pm in the Maui Room of the Blaisdell Center. Immediately following the Section 106 meeting, there will be time available for you all to meet with me to speak or submit testimony for the consultation portion of the CIA. Please respond to this email if you will be attending either the Section 106 meeting or if you will be available to meet after.* Mr. Fong responded the same day: *I will attend representing Chinatown Community Center Association.* Following the Section 106 meeting on 19 September 2019 Mr. Fong contacted the Board of Directors of the Chinatown Community Center Association and forwarded an open-ended questionnaire provided by CSH. Two members of the Board filled out the questionnaires and were forwarded an authorization form asking permission for CSH to use their answers

Name	Affiliation	Comments
		in this CIA. CSH did not receive authorization from the board members therefore their responses are excluded from this CIA.
Foster Botanical Gardens		Letter and figures sent via USPS 12 July 2019
Friends of ‘Iolani Palace		Letter and figures sent via USPS 12 July 2019
Fukunaga, Carol	City and County of Honolulu Council	Letter and figures sent via email 12 July 2019 Immediate response: *Thank you for your follow-up to the informational meeting several weeks ago. I am cc’ing members of the Lum Sai Ho Tong society and Chinatown Community Center Association who have more specific knowledge of the historical/cultural impacts associated with the Haleiwai‘olu project site.* *I’m also cc'ing Kiersten Faulkner of Historic Hawaii Foundation since HHF, Lum Sai Ho Tong society and the Chinatown Community Center Association sought consultation status during earlier discussions of the project. Their guidance/feedback will be very critical to the overall success of this project.* The email was forwarded to the following people: Kiersten Faulkner, Howard Lum, Kehaulani Lum, Wesley Fong, Roland Louie, Liana Benn, Sandra Pfund, and Kimberly Ribellia CSH replied via email: *Aloha and mahalo for your assistance in forwarding this email on!*
Hawai‘i Chinese Association of Hawai‘i		Letter and figures sent via USPS 12 July 2019
Hawai‘i Chinese Buddhist Society	Tan Wah Gee Temple	Letter and figures sent via email 12 July 2019
Hawai‘i Chinese History Center		Letter and figures sent via USPS 12 July 2019
Hawaiian Chinese Multicultural Museum and Archives		Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
Hawaiian Civic Club of Honolulu		Letter and figures sent via USPS 12 July 2019
Hee, Milton	Lum Sai Ho Tong	Letter and figures sent via email 12 July 2019 Mr. Hee was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Hilo, Regina	Burial Sites Specialist (O‘ahu)	Letter and figures sent via email 12 July 2019
Holt, Daniel	State of Hawaii, House of Representatives, District 29	Letter and figures sent via email 12 July 2019
Hussey, Sylvia	Ka Pouhana, Office of Hawaiian Affairs	Letter and figures sent via USPS 12 July 2019
Japanese Cultural Center of Hawai‘i		Letter and figures sent via USPS 12 July 2019
Kaleikini, Ali‘ikaua	Cultural descendant	Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
Kaleikini, Hāloa	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Kaleikini, Kala	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Kaleikini, Mahiaimoku	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Kaleikini, Moehonua	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Kaleikini, No‘eau	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Kaleikini, Paulette Ka‘anohi	Cultural descendant	Letter and figures sent via email 12 July 2019
Kaleikini, Tuahine	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Kao, Karl	World Journal	Letter and figures sent via email 12 July 2019
Keana‘āina, Betty	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keana‘āina, Kīhei	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keana‘āina, Luther	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keana‘āina, Noelani	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keana‘āina, Regina	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keana‘āina, Vicky	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keana‘āina, Wilsam	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keaulani, Bruce	*Kama‘āina*;	Letter and figures sent via USPS 12 July 2019 Mr. Keaulani replied to CSH via email on 23 July 2019: *Aloha Chantellee, Kehaulani Lum and I are interested in participating in the study provided by CSH for the purpose of this CIA. As Cultural practitioners we hope to work with you to ensure historical knowledge of the Chinatown area is secured in generations to come. Please feel free to call or write with further questions. Mahalo nui* CSH replied same day: *Aloha Mr. Keaulani and mahalo for reaching out to me. I would love to speak with the both of you. I have other community members that I'm coordinating with (I'll be flying in from Hilo to do interviews) and we are still working on dates. Nothing has been confirmed. Since I am flying in from off-island, I'm having a hard time finding a place where we can meet so I'm open to suggestions. Are you available to meet*

Name	Affiliation	Comments
		on weekdays or only on the weekend? Looking forward to hearing from you. CSH reached out to Mr. Keaulani on 5 August 2019 with alternative options to meet: *Aloha Mr. Keaulani,* *In exploring all options to get feedback from you and Kehaulani, will submitting individual testimony suffice? Or do you prefer a meeting in person?* *Looking forward to hearing from you.* Mr. Keaulani did not reply to the email. CSH emailed Mr. Keaulani on 9 September 2019 with information on the next Section 106 meeting. Mr. Keaulani did not reply to the email. CSH emailed Mr. Keaulani on 18 September 2019 with additional information on the next Section 106 meeting. Mr. Keaulani did not respond, however, he did accompany Kehaulani Lum to the CSH office when she delivered her supplemental documents.
Keli‘inoi, Kalahikiola	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Keli‘inoi, Kilinahe	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Kobayashi, Ann	City and County of Honolulu Council	Letter and figures sent via email 12 July 2019
Kuan Yin Temple		Letter and figures sent via USPS 12 July 2019
Lam, Gerald	Lam ‘Ohana; cultural descendant	Letter and figures sent via USPS 12 July 2019
Lapilio, Lani	President of Aukahi Cultural Consulting	Letter and figures sent via email 12 July 2019
Lee, Michael	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Lee, Buck Yong	Lung Doo Benevolent Society	Letter and figures sent via USPS 12 July 2019
Letoto, Leon	Chinese Medical Clinic, Oriental Medical School, Reiki Master, Qigong Instructor, Kalihi Farm	Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
	Knight of the Royal Order of Kamehameha I, Helu Ekahi, Heiau of Hawai‘i	
Li, Ted	United Chinese Society	Letter and figures sent via email 12 July 2019
Lim, Keith	Tsung Tin Association	Letter and figures sent via USPS 12 July 2019
Lim, Victor	United Chinese Society; Fort Street Mall BID Association	Letter and figures sent via email 12 July 2019 Mr. Lim was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Loo, Ernest	Community Association; Lung Kona Physical Culture Club	Letter and figures sent via email 12 July 2019

Name	Affiliation	Comments
Louie, Roland	Center Association; Kalihi-Palama NB 15/Mun Lun School	Letter and figures sent via email 12 July 2019 Mr. Louie was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Luka, Alika	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Lum, Howard	President, Lum Sai Ho Tong	Letter and figures sent via USPS 12 July 2019 Mr. Lum replied to CSH via email 13 July 2019: *My name is Howard Lum. Kehaulani Lum and I are officers with Lum Sai Ho Tong and we are a cultural consultant on the project and would like to be involved with the cultural survey.* Kehaulani Lum was cc'd in that email. CSH replied via email 15 July 2019: *Aloha and mahalo for your reply. I believe I mailed you a hard copy consultation letter and I had a different email on file for Kehaulani so mahalo for getting back to me!*

Name	Affiliation	Comments
		I can meet you in person or we could talk over the phone, whatever you feel comfortable with. We will just need to sync up our schedules. *Looking forward to hearing from you both.* Mr. Lum was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.* Mr. Lum contacted CSH separately on 17 July 2019: *Aloha Chantelle, Kehau and I are with Lum Sai Ho Tong and we would like to meet with you. Although LSHT is part of CCCA, I think we may want to have a separate meeting to address our concerns. Please le me know when would be best for you. Thank you very much.* CSH replied 23 July 2019: *Aloha Mr. Lum, Mahalo for reaching out to me, sorry for the delayed response. I'm still working on dates but will coordinate separately for the two groups*

Name	Affiliation	Comments
		(LSHT and CCCA). Would it be possible to meet with you folks during the week or only on the weekend?" Mr. Lum replied same day: "*Aloha Chantelle, Thank you very much* CSH reached out to Mr. Lum on 5 August 2019 with other options to meet: *Aloha Mr. Lum,* *In exploring all options to get feedback from you and other members of Lum Sai Ho Tong, will submitting individual testimony suffice? Or do you prefer a meeting in person?* *Looking forward to hearing from you.* Following a Section 106 meeting on 19 September 2019 which was attended by. Howard Lum, CSH was in contact with both Howard and Kehaulani Lum who submitted testimony on behalf of Lum Sai Ho Tong.
Lum, Kehaulani	Ali‘i Pauahi Hawaiian Civic Club/Lum Sai Ho Tong	Letter and figures sent via email 12 July 2019 Ms. Lum was cc’d in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone’s comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.*

Name	Affiliation	Comments
		I am open to suggestions and I appreciate you reaching out to me. Ms. Lum was cc'd in an email from Mr. Howard Lum on 17 July 2019. Mr. Lum sent the following message: *Aloha Chantelle, Kehau and I are with Lum Sai Ho Tong and we would like to meet with you. Although LSHT is part of CCCA, I think we may want to have a separate meeting to address our concerns. Please let me know when would be best for you. Thank you very much.* Ms. Lum was cc'd in an email from Mr. Bruce Keaulani on 23 July 2019. His message read: *Aloha Chantellee, Kehaulani Lum and I are interested in participating in the study provided by CSH for the purpose of this CIA. As Cultural practitioners we hope to work with you to ensure historical knowledge of the Chinatown area is secured in generations to come. Please feel free to call or write with further questions. Mahalo nui* Following a Section 106 meeting on 19 September 2019 which was attended by. Howard Lum, CSH was in contact with both Howard and Kehaulani Lum who submitted testimony on behalf of Lum Sai Ho Tong. In addition, she also visited the CSH office with Mr. Bruce Keaulani to drop off documents to be included in the CIA.
Lum, Lita	Lum Sai Ho Tong	Letter and figures sent via USPS 12 July 2019 Returned to sender 17 July 2019
Lum Sai Ho Tong		Letter and figures sent via USPS 12 July 2019
MacPherson, Christy	Executive Director, Pacific Gateway Center	Letter and figures sent via email 12 July 2019
Makaiwi, Donna	Cultural descendant	Letter and figures sent via email 12 July 2019
Manahan, Joey	City and County of Honolulu Council	Letter and figures sent via email 12 July 2019
Mancos, Jasmine	Neighborhood Board #13 Member	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file
Miyao, Richard	Izumo Taishayko Mission of Hawaii	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file

Name	Affiliation	Comments
		Mr. Miyao was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Mollring, Dolores	Chinatown Community Center Association, Downtown NB #13	Letter and figures sent via email 12 July 2019
Morford, Jay	Funeral Services – Borthwick Mortuary	Letter and figures sent via email 12 July 2019
Mun Lun School	Cultural/language school	Letter and figures sent via email 12 July 2019
Ng, Johnny	Friends of Chinatown	Letter and figures sent via email 12 July 2019
Norman, Carolyn	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Norman, Eileen	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Norman, Kaleo	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Norman, Keli‘inui	Cultural descendant	Letter and figures sent via USPS 12 July 2019

Name	Affiliation	Comments
Norman, Theodore	Cultural descendant	Letter and figures sent via USPS 12 July 2019
Ou, Henry	President, United Chinese Society	Letter and figures sent via email 12 July 2019
Ozaki, Alvin	Chinatown Community Center Association	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file
Paik, Kaleo	Cultural practitioner	Letter and figures sent via email 12 July 2019
Pang, Sharon L.	Hawaiian Chinese Civic Association	Letter and figures sent via email 12 July 2019
Peterson, Anni	Director, Better Tomorros	Letter and figures sent via email 12 July 2019
Pohl, Sandra	Louis Pohl Gallery	Letter and figures sent via email 12 July 2019
Purnell, Nanette Napoleon	Trustee of O‘ahu Cemetery; author and researcher	Letter and figures sent via USPS 12 July 2019
Quick, Vina	Corporation dba Chinatown Cultural Plaza	Letter and figures sent via email 12 July 2019 Ms. Quick was cc’d in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone’s comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.*

Name	Affiliation	Comments
		I am open to suggestions and I appreciate you reaching out to me.
Rhoads, Karl	State of Hawaii – Senate District 13	Letter and figures sent via email 12 July 2019
Say, Calvin	Member of Chinatown Community Center Association	Mr. Say was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
See Dai Doo Society	Original meeting house on River Street	Letter and figures sent via email 12 July 2019
Shim, Pono	Enterprise Honolulu	Letter and figures sent via email 12 July 2019
Shubert-Kwock, Chu Lan	Community Association, Downtown NB #13	Letter and figures sent via email 12 July 2019
Siu, Larry and Sandra	UCS and Chinatown Community Center Association	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file Mr. Siu was cc'd in an email from Mr. Wesley Fong on 15 July 2019.

Name	Affiliation	Comments
		Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Smyth, Tom	Downtown NB 13	Letter and figures sent via email 12 July 2019
Solis, Ka‘ahiki	Cultural Historian (O‘ahu, Kaua‘i, and Ni‘ihau)	Letter and figures sent via email 12 July 2019
Stack Jr., Allen	Chinatown Community Center Association	Letter and figures sent via email 12 July 2019 Mr. Stack was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.*

Name	Affiliation	Comments
		I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions. *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Stack, Lee	President, Chinatown Improvement District	Letter and figures sent via email 12 July 2019
Stroud, Soulee LKO	Association of Hawaiian Civic Clubs	Letter and figures sent via email 12 July 2019
Sui Wah School	Cultural/language school	Letter and figures sent via email 12 July 2019
Sun Yat Sen School	Cultural/language school	Letter and figures sent via USPS 12 July 2019 Returned to sender 17 July 2019
Tom, Robert	Neighborhood Board #13 Member	Letter and figures sent via email 12 July 2019 Immediate response, email could not be delivered to address on file
Tran, Kim	Friends of Chinatown	Letter and figures sent via email 12 July 2019
Woltag, Adam	WRNS Studio	Letter and figures sent via email 12 July 2019
Wong, Eric	Friends of Chinatown	Letter and figures sent via email 12 July 2019
Wong, Kimo	Wong Kong Har Tong Society	Letter and figures sent via USPS 12 July 2019 Returned to sender 17 July 2019
Wong-Kalu, Hinaleimoana	OIBC Chair and Kona Moku Representative	Letter and figures sent via USPS 12 July 2019
Wu, Robert	Chinatown Improvement District	Letter and figures sent via email 12 July 2019 Mr. Wu was cc'd in an email from Mr. Wesley Fong on 15 July 2019.

Name	Affiliation	Comments
		Mr. Fong sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019: *Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me.* *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*
Yon, Stanley	Community Association; US - China People's Friend	Letter and figures sent via email 12 July 2019
Young, Joseph	Honorary Mayor of Chinatown; DDS Retired	Letter and figures sent via USPS 12 July 2019
Yuen, Stanford	Community Leader; Chung Wah Chung Kung Hui	Letter and figures sent via email 12 July 2019 Mr. Stack was cc'd in an email from Mr. Wesley Fong on 15 July 2019. Mr. Yuen sent the following message: *Chantelle: The Chinatown Community Center Association would like to continue participating in this topic affecting Halewaiolu.* CSH replied with the following message on 16 July 2019:

Name	Affiliation	Comments
		Aloha Mr. Fong and members of the Chinatown Community Center Association, mahalo for reaching out to me. *I am thinking of a way to meet with you all but not sure how to go about syncing our schedules so I am open to suggestions.* *The most efficient way I can think of is to have a group meeting with 4-6 people. This would be more manageable in terms of recording everyone's comments and testimony.* *If more than six people would like to participate, we could consider holding meetings at two different times or on two different days.* *If I can get a headcount of who will be participating maybe then we can determine if this will take one or two days and maybe then we can set a date.* *I am open to suggestions and I appreciate you reaching out to me.*

Section 7 Previous Oral History Research

The following section draws from previous oral history research conducted by the University of Hawai‘i’s Center for Oral History (UHCOH) to highlight the voices of several people who have or have had deep knowledge of the culture and history of the project areas. Indigenous cultures have used oral history to preserve a record of their past in the absence of written records.

In 1976, the Center for Oral History (COH) was established by the Hawai‘i State Legislature with the intent to preserve the memories of Hawai‘i’s people through oral interviews for the purpose of disseminating transcripts to researchers, students, and the general community. To date, 12 communities have been recorded by the COH, two of which are in the project area, Kaka‘ako and Waikīkī. Below are summaries and excerpts from this vast collection of oral histories. Please note that diacritical marks for Hawaiian words are presented as they appeared in the actual UHCOH study, unless otherwise summarized.

7.1 Honolulu

The oral history from the *ahupua‘a* of Honolulu has not been recorded to date. Historical documentation, scholarly endeavors, and oral histories from the peripheral localities of Kaka‘ako have been included as they reference the place Ka‘ākaukukui, an *‘ili* just west of the project area.

7.2 Remembering Kaka‘ako

In 1978, the UHCOH produced a two-volume report called Remembering Kaka‘ako, which covered the vibrant residents of the area during the early to mid-nineteenth century (UHCOH 1978). The Kaka‘ako area was home to a diverse ethnic mix of Hawaiians, Chinese, Japanese, Filipinos, Portuguese, and others. Bachelors lived in rented rooms while families lived in small homes clustered together with others of the same ethnic background. Although each ethnic group lived in their own clusters, diverse residents congregated at church, school, and during community activities and events. Their *mo‘olelo* color the cultural and historical background with nuanced recollections and add depth to the information provided by *kūpuna* and *kama‘āina* interviewed for this CIA. Summaries and excerpts from this collection of oral histories are presented below.

7.2.1 Eleanor Nahiapo Wilson Heavy

Mrs. Eleanor Nahiapo Wilson Heavy, a Hawaiian-English-Chinese woman, was born in Kaka‘ako in 1912 and lived there until 1938 (UHCOH 1978:340–405). Her home was on Pohukaina and South streets and she attended Muriel Kindergarten in Kaka‘ako. She used to help her mother collect herbs such as *pōpolo* (black nightshade; *Solanum nigrum*) for cold and congested chest, and the *‘uhaloa* (American weed; *Waltheria indica var. americana*) root for colds. The people in Kaka‘ako at this time still went to the medicinal *kahuna*; the hospital was a place where you would go when no hope remained.

Her mother traveled to the Squattersville area (Ka‘ākaukukui) to gather *limu* (seaweed), *wana* or *‘ina* (sea urchins), squid, and *‘ōpae* (shrimp) for the family’s meals. Mrs. Heavy also remembered that they used Hawaiian salt to embalm bodies. They would stuff the *‘ōkole* (buttocks) with salt, working it in with *ti* leaves. They also put salt in cuts under the armpit, and within the mouth, nose and ears. The body then could be viewed by relatives at the undertakers for several

days. The body was later put into a coffin for burial at the Catholic Cemetery or at the Kawaiaha‘o Church cemetery, both on King Street.

7.2.2 Mary Ka‘uhane Naito

Mary Ka‘uhane Naito, Hawaiian-Caucasian, was born in Kaka‘ako in 1920 (UHCOH 1978:877–912). Her father worked at the Hawaiian Electric powerhouse. Their family lived for a time in Squattersville, and they were one of the families evicted when the houses were torn down. Although she remembered that Kaka‘ako was mainly a district of poor people, she still talked of her birthplace with pride:

> I going tell I’m proud because I come from Kakaako because we had good people. We get along with one another. You know? And if there’s a Palama team going, and Kakaako team go, we still stick together. You know. Regardless of what, we still stick. And we all born and raise in Kakaako. . . That’s why I’m not ashamed to say that I came from Kakaako because all the people in Kakaako was good. [UHCOH 1978:911]

Section 8 *Kama‘āina* Interviews

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their *mana‘o* and *‘ike* with CSH whether in interviews or brief consultations. We request that if these interviews are used in future documents, the words of contributors are reproduced accurately and in no way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s. *Consultation efforts are still ongoing for this project.*

8.1 Gerald Lam

Mr. Gerald Lam attended a public meeting in compliance with the National Historic Preservation Act (NHPA) Section 106 and HRS Chapter 6E Consultation for the proposed project. Following the meeting, CSH sent Mr. Lam a set of open-ended interview questions to assist with a personal statement on his knowledge of Honolulu, its history, and his personal connection to places nearest the project area. To maintain the integrity of Mr. Lam's personal statement and to honor the names of *kūpuna* mentioned, the questions and Mr. Lam's answers are presented below in its entirety as it was submitted to CSH. The questions with no responses were purposely left unanswered.

1. Name

Gerald
Nalikolauokalanikea`alohilanikīkaupe`aokalanikapuhupineakaleikoakeopuhiwa-a-Pākī Yun Chin Lam

2. Where were you born?

Honolulu, Hawai`i

3. Where did you grow up?

I grew up and was culturally trained personally by my family practitioners, at the time each publicly acclaimed, specifically in Papakōlea, Pauoa, Makiki, Honolulu Chinatown, Nu`uanu, Kaka`ako, Ala Moana, Waikīkī, Kaimuki, Hanalei and Hā`ena on Kauai Island, Honokahua on Maui Island. As a child, my home mailing addresses included Tantalus Drive, Victoria Street, Kukui Street, Alohea Lane, Prince Edward Street, Hanalei P.O., and Honokahua homestead.

4. When were you born?

August 11, 1951

5. Parents. Mother. Father.

Father: Clarence Wing Hoon Lam (10-12-1917 – 09-14-2018)

Mother: Ella Pākī Fong Lam (11-29-1921 – 10-07-2017)

6. Occupation/Affiliation

Attorney at Law

7. Area of residence

1979 – present: Ko`olaupoko Moku, O`ahu Island

8. How long have you lived or been associated with the area?

1951 – 1979: See question 3, supra.

1979 – present: See question 7, supra.

9. Personal and/or family connection to ahupua`a

Nā Ahupua`a o Nu`uanu a me Pauoa, Pu`umawaena i Auwaiolimu Kewalo, Kalawahine:

Native

Pākī cultural kuleana birthright acknowledged by Kamehameha V Kapuāiwa in 1871 to my G-grandmother Princess Kapuhupineakaleikoakeopuhiwa Pākī

Palile royal kahuna resident burials located at ‘A‘ala and Beretania Streets since desecrated by the 2017 American Savings Bank Building constructed over top of Palile Pākī clan’s kahuna iwi kapu in disregard of the oral and written objections of Pākī kūpuna in attendance during 2016 public hearings.

Immigrant

Lam Bow (Lum) of the Lum Sai Ho Tong Tin Hau Taoist Temple, River and Kukui streets;

Mun Lun School, A’ala Street, Kukui Street

Lung Doo Benevolent Society, Hotel Street;

Chung Hwa Chung Kung Hui Association, King Street;

On Tong Benevolent Society, Vineyard Boulevard;

Chee Kung Tong Society, A’ala to Liliha to Vineyard to Kukui streets, Nu`uanu and School streets, Maunakea and Beretania streets.

Lum Dai Yung, renown Tao-Gar master of Lum Sai Ho Tong-Tin Hau Taoist Temple, and co-founder of Honolulu Chinatown’s Jing Mu and Gee Yung Societies.

Lam Bow of the Lung Doo Benevolent Society of Honolulu Chinatown

10. Referrals

Ms. Lahela Hekekia, Esq., Native Hawaiian Organization Charity

Mr. Curtis Kekoa, Jr., Esq,, attending delegate, 2016 Na’i Aupuni Constitutional Aha

Mr. Oswald Stender, former Bishop Estate Trustee, former trustee Office of Hawaiian Affairs

Ms. Jolene Lono, Executive Director, Ke Ola Mamo Native Hawaiian Health Care System O`ahu

Mr. Howard Lum, President, Lum Sai Ho Tong Society

Mr. Ted Li, President, United Chinese of Hawai`i Association

Mr. Keith Lim, Past President, Tsung Tsin Association; Director, Chee Kung Tong Society

Part II: Historical information

11. Is there anything you would like to say about the general history of the area, or past and present land use?

Generally, the settlement homesteads of the native citizenry extended makai beginning from about where King Street runs today to the coastline. However, agriculture continued mauka into the upper valleys. Marshlands (such as Waikīkī and Ala Moana) and areas mauka of the concentration of the general citizenry were especially residences of kāhuna. A mauka example of kāhuna residence is seen along Nu`uanu river at today's `A`ala and Beretania streets where Palile kahuna representative of Ka`opulupulu and Lanikaula persuasions were buried in and adjacent to the royal patent land named "Palile." "Palile" is not to be confused with "palili" (taro shoot) or "palila" (native bird). "Palile" is exclusively a royal kapu name without other meaning. These kahuna burials are where lies the shark cave dedicated to Kamohoali`i specifically, whose cavern tubes extend mauka to Pu`u Mawaena (Puowaina) at Auwaiolimu and Kalawahine. Queen Lili`uokalani placed her Royal Garden there among the sacred springs, which feed 'ama'ama (fish of the ali`i) and other fish spawn makai. Palile kāhuna presided over this life of the land (`Āina i hane). Lo'i were fed above ground and fish spawn fed underground. Thus, resident kāhuna burials in perpendicular pairs had further comprised over time a broadly patterned Makali`i constellation. The traditional significance of this is universal throughout the Hawaiian archipelago. Notably explained, whereby the chain of islands extending from Kuaihelani in the West to the Big Island of Hawai`i to the East were received in divine birthright by the Kūki`i genealogical clan via its fasting high priests, who had voyaged from the West into the rising sun through Mokupuni o Ke`alohilanipe`aokalani (Kauai Island) to finally arrive at Lapawai on O'ahu Island. Their iwi kūpuna were then followed by three clan migrations from the East into Hawai`i, following the rising sun which sets in Hawai`i.

The arriving Ke`alohilani high priests of Kūki`i clan were Nanaulu descendants (aka Paumakua, Ohua, Maweke, Kākuhihewa, Pi`ilani, and Pākī). Ulu descendants arrived later circa 12th century C.E. (aka Pa`ao, Pilikaeaea, Hewahewa). Nanaulu kāhuna arrived at Lapawai on O`ahu Island, set the food bearing Makali`i Tree in Kawainui, and traveled over the Ko`olau at Konahuanui which was then split forming Lanihuli to the West and Nu`uanu Valley between. The living waters of IO then spread Ko'olaupoko from Kailua and Kona from Nu`uanu. Konahuanui and Lanihuli feed the sacred springs of Ko'olaupoko to the north and Kalawahine and Auwaiolimu to the south. Priestly supervision of sacred springs and life of the

land resides at Ke`alohilani (Mount Olomana) and extends over the Ko`olau to Pu`u Mawaena (Punchbowl Mountain). Annual fish runs and spawning circling O`ahu's coastline extend from these sacred springs of IO that extend north and south from Konahuanui and Lanihuli. As the gateway residence of the first arriving high priests of birthright, Ko`olaupoko is the kino lau of the archipelago, which its `uhane is Ke`alohilani (Mount Olomana), piko is circa Ulupau Head (in Mokapu), and `unihipili is Mokoli`i (in Ke`alohiwai at Kualoa). Notably, King Kahekili II resided in Kani`ohe (Kāne`ohe) and presided from Waikīkī. Major battles consistently finalized throughout Nu`uanu having originated from other ahupua`a. War iwi abound throughout Nu`uanu. Also, see Western accounts of King Kahekili's conquering of O`ahu circa 1782 and King Kamehameha's subsequent conquering in 1795. Kapu kaua pau rituals took place in Nu`uanu, Pauoa, Auwaiolimu, Kalawahine, Waikīkī, and Kailua ahupua`a.

Notably, my G-grandmother Kapahupineakaleikoakeōpūhiwa-a-Pākī acquiesced her kuleana birthright lands to be set aside as a reservation for native Hawaiian homesteads today known as Papakōlea Homestead. It was G-grandmother that confirmed the name "Pākī" upon Queen Lili`uokalani. Accordingly, G-grandmother is buried at the very center front of the Queen's Garden Uluhaimālama located on Auwaiolimu Street. During childhood, from Tantalus Drive a mile above Puowaina Drive, I would walk daily down to Chinatown for training and back home again through the homestead. When older, my walk extended to Victoria Street and Ala Moana Park and back.

12. Do you have any memories of what existed in that area or cultural events that were practiced?

Beginning in 1954, I began training in Tao-Gar (aka "Lin-Gar") in the Lum Sai Ho Tong's Tin Hau Temple located at Kukui and River Streets, under renowned kung-fu spiritualist Lum Dai Yung. At the time, the area was not considered Chinatown proper. The Tong served Chinese residences abutting Chinatown proper, i.e. `A`ala, Kukui, Vineyard, and Nu`uanu. I helped minister to elders residing in `A`ala Street cottages, and in On Tong Society and Buck Toy Society buildings at 544 and 578 N. Vineyard Blvd, respectively. These were Chinese immigrant laborer families living outside of Chinatown, far from the supplies of gambling and opium found south of Pauahi Street.

In Territorial Hawai`i at the time were renowned kung-fu masters Lum Dai Yung and Wong Cook Fat who had migrated to Honolulu in the early 1900s desiring political asylum from China in the aftermath of the "Boxer Rebellion," which had been waged against foreign occupation by the Ching Dynasty's use of the underground Hung Mun kung-fu fighters. Thousands of these fighters gained earlier fame during the Opium Wars of 1839 and 1856 against Westerners and the Sino-Japanese War of 1894. The "Hung Mun" are individuals of a rebel underground existing since circa 1680 that had spread throughout China dedicated to the overthrow of the Ching Dynasty (Manchurian rule). The invincible kung-fu fighters that popular history identifies as "Shaolin monk warriors" gave birth to the

Hung Mun Brotherhood. The famed Shaolin Monastery burned to the ground by the Ching royal armies was the temple located in Fujian Province. Five surviving Shaolin Buddhist monks escaped south into Guangdong (Canton). Most all of today's kung-fu originate from them as animal styles. However, Fujian Province was more renown for China's prolific Lum Clan ("Lam, Lin, Lim, Lem") and its Taoist saint, Lin Moniang (born 960 CE) aka Tin Hau Sung Mu ("Ku Po" or Great Aunt). Possessing divine qualities of prophecy, revelation, and healing, Ku Po was revered throughout the empire. There in Fujian Province on Mei Chou Island, she ascended to the top of the Tao mountain (Shan Tao) and into Heaven. She evolved as the patron saint of seafarers often guiding voyagers to destinations and safety. The power of China was its navy, funded and established by powerful merchants. Fujian was the province of the Lum clan and China's primary base of seafaring abroad. Circa 1000 CE, Chinese voyaging fleets arrived into O`ahu (re Maweke clan) and later circa 1500 into the Big Island (re Umiokalani clan). Notably, the migration of the Samoan priest Pa`ao with Tahitian war chief Pilikaeaea to Big Island occurred about 1200 CE. While Shao Lin Fist (aka Sil Lum Pai) had long converted into Buddhism, Lin Moniang Fist (aka Tao or Lin-Gar) remained native Taoist. Notably, the elements of Nature comprise the tao-gar, which contains no animal forms. Fujian Province's indomitable "Shaolin Temple laymen warriors" in history were actually the nearby Taoist Lin-Gar warriors from the Tin Hau Sung Mu quarters. On O`ahu since 1000 CE and Big island since 1500 CE, this tao-gar is known as "ke ao i ka pō." Through the 1950s and 1960s, I learned tao-gar in Honolulu Chinatown, and its related to ke ao i ka pō in Makiki.

In 1889, China's Lum clan immigrants from Chung Shan in Guangdong (Canton) Province established the Lum Sai Ho Tong in Hawaii. Its Lum, Lam, Lin, Lim, and Lem membership met in rented quarters located on Smith Street between Pauahi and Hotel Streets to pay respects to their clan's patron saint, Tin Hau Sung Mu ("Ku Po"). In 1899, Mr. Say Yip Lam donated land at 1315 River Street for a new clubhouse. Later, masters Lum Dai Yung and Wong Cook Fat migrated to Honolulu. By 1900 in China, a cultural renaissance of Chinese pride reached crescendo via kung-fu fighters such as Wong Fei Hung against Western and Japanese professional fighters, which led to the organization of the Jing Mu Physical Culture Association in Shanghai in 1903. In 1930, a Jing Mu kung-fu gym was developed in Honolulu Chinatown that today is known as The Chinese Physical Culture Association. Originally, Master Lum taught and managed the Jing Mu gym teaching Buddhist kung-fu Fat-Gar. He left to organize the Gee Yung Society in 1937. In 1953, the Lum Sai Ho Tong erected a new building standing today as the Lum Sai Ho Tong Tin Hau Taoist Temple. I began training there in 1953 in the tao-gar art of fighting ghosts, or spirits. Teaching elsewhere in Chinatown at the time, was the father of my aunt Thelma Wong, the renowned mystic Wong Cook Fat known as "Old Man Wong of Kalihi." My aunt Thelma Wong was the wife of my mother's brother, Clarence Fong.

Over 3,000 years ago, the surviving son of China's Prime Minister-Lieutenant General, Bi Gan, received Emperor Wu's honorary designation of "Lin" aka

"Lum." Bi Gan was the 30th odd generation descendant of China's first emperor Huang Ti (the Yellow Emperor). Therefore, the first "Lum" was a Huang, or Wong. In Honolulu, after the death of master Lum Dai Yung in the late 1950s, I was directed to my aunt's father, master Wong Cook Fat. Every day after elementary school at Kamehameha Prep School on Kapālama Heights, I walked to master Wong's place near North School and Kalihi Streets to train in Lin-Gar. At 4:30 pm we would ride to the Eddie Lam Service Station on Smith Street at Nimitz where Hung-Gar was taught during evenings. My father would fetch me around 5:00 pm after picking up my mother who worked on Bethel Street at Nimitz. Eddie Lam was one of the primary financiers and donors constructing the Lum Sai Ho Tong building in 1953. I often ate across Smith Street at Tasty Broiler with the "uncles" upon their return from beating on troublesome U.S. Navy sailors in Hotel Street bars. Often, the uncles would chase away outside individuals spying on our kung-fu practices.

Concurrently, there were incorporated Hung Mun Brotherhood organizations, i.e. the Chee Kung Tong Societies on O`ahu, Maui, and Big Island. While seeking the overthrow of the Ching Emperor, the revolutionary Dr. Sun Yat Sen needed a military of his own. He was educated in political science when attending school on O`ahu, which became central to his global financing effort. He was advised to become a Hung Mun and join the Chee Kung Tong network through Honolulu. During his revolution, Dr. Sun had support and quarters just off Maunakea Street on King Street and in Ha‘iku on Maui. The powerful Hung Mun warlords became the backbone of his military force that defeated the Ching royal army. The overthrow of "the last emperor of China" occurred in 1912, and China became a democratic Republic. The Hung Mun continued to be supported by Lum clan participation in the 1960s through 1980s. My father Clarence Wing Hoon Lam and uncle Sun Hung Wong ("mayor of Chinatown" under the mayoral administrations of Frank Fasi and Jeremy Harris) established China's classical Shaolin Wushu in Honolulu Chinatown with a healing center at Chee Wo Tong Herb Store on Maunakea Street and a kung-fu gym featuring the Flying White Crane, Hop Gar, Tibetan Lama, and Choi-Li-Fat styles on Nu`uanu Street at School Street. Clarence and Sun Hung were principles behind the partnership of the Chee Kung Tong Society, Mun Lun School, Kuomintang Society, and Lung Doo Society that constructed Honolulu's Chinatown Cultural Plaza in in 1972. In 1974, we moved the Chee Kung Tong Temple and its Hung Mun altars from Nu`uanu and School Streets to the 3rd floor of the Chinatown Cultural Plaza at 100 North Beretania Street. The Republic of China (ROC aka Free China) eventually bought the Cultural Plaza. For decades, the Lum Sai Ho Tong Society has continued conducting ceremonies, service feasts, and parades for giving thanks and blessing the Chinatown environs and ancestors, related societies such as Chee Kung Tong, Lung Doo, On Tong, Buck Toy, and Chung Wah Chung Kung Hui, and specially, Native Hawaiian burials (known and unknown) throughout Chinatown and Nu`uanu.

13. How about personal and/or family history in the area?

Also see answers to Questions 11 and 12, above.

In 2016, sacred burials of my Palile clan kahuna were discovered on the Palile Royal Patent land as conveyed by the 1845 Land Commission. Palile is my family's genealogical name given to our O`ahu kahuna that on Moloka`i are known as Lanikaula kahuna. Palile is also the kapu name given to my royal Hawaiian 2G-grandfather, High Chief Palile Naliko Lanihuli Lanikaula Keōpūhiwa a Pākī, who was commonly called Keōpūhiwa. Those burials are clearly marked kahuna burials due to their configuration in the shape of the Makali'i constellation, and their placement directly above a shark cave of Kamohoali'i. Kamohoali'i is the Shark God and my genealogical personal aumakua dictated to me in 1958 by Aunty Luka Kinolau, Aunty Lillian Kahoali'i, and Aunty Alice Namakelua. I had been then forbidden to ever again eat shark meat, including shark fin soup at Chinese banquets. It would be a strict desecration to build anything near or above the Palile kahuna burials there at A'ala and Beretania Streets. My request to have the burials moved mauka to the opposite end of the shark cave at the Queen Lili`uokalani Royal Gardens, Uluhaimālama, on Auwaiolimu Street at the foot of Punchbowl where my G-grandmother is buried had been ignored. Consequently, the O`ahu Burial Council allowed the construction of the American Savings Bank Office Building over the graves reasoning it should be okay because no bones would be touched. This is incompetent of course because in Hawaiian culture, "`Āina" means the land, the ocean, and the sky. With respect to kahuna burials, it is a desecration to cutoff the `Āina. It is just as repugnant as constructing an office building over the graves in Punchbowl National Cemetery reasoning to not touch any bones. Prior to the commencement of construction, I orally warned the developer's consultants that they will certainly run into more kahuna burials to the East. Months later, more burials were discovered. That site now containing the American Savings Bank Office Building at A'ala, Beretania, and River Streets has since been cast under my genealogical kapu lele by my cultural authority, which authority is further certified pursuant to Hawai`i State Act 153 of 2005. In the Native Hawaiian traditional culture, the disturbed ``unihipili of Palile kahuna are now free to roam about the premises while lacking their manamana until I or another Palile authority intervenes.

Just one block mauka of the American Savings Bank Office Building along the shark lava tube over which River Street Mall runs sits my Chinese family headquarters, the Lum Sai Ho Tong Tin Hau Temple at Kukui Street. That organization is the legacy of my deceased father Clarence W.H. Lam and where I had trained as a child. Across Kukui Street is the Sun Yat Sen Gymnasium where I regularly taught kung-fu and lā`au lapa`au before moving adjacent to the courtyard of the Chinatpwn Cultural Plaza, which is opposite of the recently constructed American Savings Bank Office Building that sits on top of my Hawaiian family's kahuna burials..

14. Past land use? Past agricultural, fisheries or other uses of the area?

See above.

Part III: Cultural and historic sites

15. Are there any cultural, archeological, historic, and/or burial sites in or around the proposed project area (e.g., heiau, hale, kū‘ula, ilina)?

There are Palile kahuna burials of the royal Pākī genealogy located under the newly constructed American Savings Bank Office Building bordered by ‘A`ala Street, Beretania Street and River Street Mall. That location at about ‘A`ala and Beretania Streets is the underground sacred Kamohoali‘i shark cave of sacred spring waters whose lava tubes run mauka through Auwaiolimu into Kekapuwai past Roosevelt High School. ‘Ama’ama fish spawned in this and similar underground caves nearby, past Pearl River and into ‘Ewa District. The annual ‘ama’ama runs circling O‘ahu Island commenced in these sacred underground aquifers. These mineralized aquifers comprising one of Earth’s leylines are molecularly charged having thereby supernatural energy. It had been these healing waters known by kahuna to ably provide the sustainability of surplus fish supply for all of O‘ahu’s moku and ahupua`a. This environmental capacity and natural blessing have since been critically damaged by military construction and the later construction of the gargantuan First Hawaiian Bank Building. The incoming Rail construction from Kapolei past Middle Street will likely be the final nail of the irrevocably permanent crucifixion of the healing waters, coastal fish, and traditional structure of O‘ahu’s ancient underground aquifer.

Part IV: Gathering/hunting/fishing/etc. practices

16. Are you, or is anyone you know, involved in any cultural practices in the project area – for example plant gathering, fishing, hunting, surfing, etc.?

The Lum Sai Ho Tong Society and its Tin Hau Temple have for many decades customarily held annual ceremonies to honor the native Hawaiian host people and culture of the area and ancient burials. There has been no other organization known to me to have been so maintaining the life of the land. I continue to teach the tao-gar and lin-gar arts as well as the Shaolin kung-fu at and near the Lum Sai Ho Tong Temple and the Chinatown Cultural Plaza.

Furthermore, since the construction of the recent American Savings Bank Office Building, I am personally responsible to maintain the Native Hawaii traditional kapu lele thereupon that land site as my native lineage’s appointed priestly authority. My activities concerning that property are perpetual and follow specific traditional months and moon phases.

17. If you are, how did you learn the activity/ies and how long have you engaged in _____?

In the 1950s, I was trained by Master Lum Dai Yung at the corner park that is now Safeway supermarket at Bishop/Fort and Kukui Streets, and at the newly rebuilt Lum Sai Ho Tong Tin Hau Temple at River and Kukui Streets. I continued in 1971 as a Hung Mun enforcer at the Buddhist Temple on Nu`uanu Avenue across from the Chun Hoon Supermarket at School Street; and, later moved the altars and training to the Chinatown Cultural Plaza bordered by Kukui, Maunakea, Beretania, and River Streets. I continue my Chinese cultural practices there.

Furthermore, I had been also been trained by the renowned Territorial Hawai`i kahuna Aunty Luka Kinolau, the Pākī royal genealogist Aunty Lillian Kahoali'i, and renowned culturalist Aunty Alice Namakelua acting under my grandmother, Princess Alina Elizabeth Pākī (aka Grandma Alina Fong) throughout the 1950s and 1960s. I received my Pākī birthright in 1958 inclusive of the Lanikaula priestly authority. I was later formally trained in the practices of the Pai kahuna lapa`au by Papa Henry Auwae from February 2, 1995 through December 31, 2000. I was given ‘uniki as Maoli Kahuna Lā`au Lapa`au by Papa Henry Auwae in November 2000 before public witnesses at Lapakahi State Park that included elected State representatives, Office of Hawaiian Affairs staff, Federal agents, Queen's Hospital executives, Queen Emma Foundation representatives, and State Parks staff. I am individually recognized as a Native Hawaiian master practitioner under State Act 153 of 2005 and Hawai`i Revised Statutes 453-2(c). In 2006, my aunt Elizabeth Fong Lim, who was the eldest daughter and one of 16 children born of my grandmother, conveyed the custody of the royal Pākī genealogical scrolls and records to me at the Bishop Museum. Consequently, I exercise my traditional Native Hawaiian cultural obligations in the immediate area with respect to the American Savings Bank Office Building disgracefully constructed over my genealogical burials.

18. Can you tell me about any cultural practices from the past?

19. Knowledge of past or present cultural protocols observed

The seventh month of the lunar calendar is the Ghost Month According to Taoist belief, on the last day of the sixth lunar month, the gates of Hell opens up and the ghosts and restless spirits (to include those of deceased ancestors) are free to roam the human world. It is said that these ghosts are looking for food and entertainment and if not appeased, will resort to mischief. Therefore on the 15th day of the seventh lunar month a Hungry Ghost Festival is held by my family's organization, the Lum Sai Ho Tong Society located at Kukui and River Streets. It is commonly celebrated by leaving out food for the hungry ghosts and the burning of joss paper (faux money) and other offerings for their use in the afterlife. Unlike Ching Ming which one would pay respects to ones ancestors, the Hungry Ghost Festival is for all those who are deceased. At the end of the month it is traditional to light a paper lotus and float it down a river or in the ocean so the spirits can find its way back to the underworld. Our Lum Sai Ho Tong Tin Hau Temple annually celebrates the Hungry Ghost Festival with a Taoist priest that performs the rituals to placate the restless ghosts, feeding them and sending them money (Siu Yee). Similar ghost festivals are held throughout Asia. The Japanese call its celebration the Bon Festival, or Obon. The Lum Sai Ho Tong Society in Honolulu Chinatown prepares Hawaiian food in honor of the many Hawaiians who had for centuries lived on the land where Lum Sai Ho Tong building sits and throughout Chinatown, Nu`uanu, Palama, and Downtown. Individual food plates are placed along the sidewalks of Kukui and River Streets accompanied by incense sticks burning on the sides. Siu Yee is then burned within the temple grounds. After the ceremony the plates of food are given to the homeless.

Part V: Legends, stories and place, and sense of place

20. Is there anything you would like to say about legends, or stories about the project area?

21. Are there any names, traditions, or practices associated with the area and features of the landscape? Origin stories…?

Concerning the area beginning about mauka of King Street and up to School Street as the priestly kuleana of Palile kahuna for the life of the land and resident citizens.

Palile is a name of royal kapu kuleana significant in history, at least up to the early 1800s. “Palila” was name for makers of royal capes and kahili, and “Palile” was carelessly recorded as “Palila” from time to time. “Palili” was a household name and “Palile” was as well carelessly recorded as “Palili” at times. Western alphabet is problematical.

Please take particular notice that LCA 731 at ‘A`ala and Beretania Streets occurs during the evolution of an emigrant Land Commission in Hawaii when foreign missionary were seeking influence over the King and his lands. Therefore, this LCA is especially significant. Migrant Reverend William Richards had influenced and drafted the 1839 Declaration of Human Rights for the King’s signature and decree. Co-ruler Kina’u was naïve to the fact that this was merely the first step to remove the lands from Na Akua ownership into man’s ownership. Naïvely influenced to believe that these “inalienable divine rights” of man constituted the Kingdom’s same government under God’s law, newly baptized Christian Kina’u convinced Kauikeaouli to adopt this Western declaration by royal decree as if securing his power and governance under God. However, the social and legal realities were really the opposite.

Competent constitutional scholars understand that a declaration of inalienable human rights, exemplified in U.S. history, is the foundation upon which makes way for a constitutional government under man’s law. Under the Gods (“God”), there are no land titles or military. God owns the land and personally protects His people from His enemies. Nevertheless, man is born with divinely innate inalienable rights, i.e. life, liberty, and the pursuit of happiness.

Declaring those “inalienable rights” allows man to leave God’s dominion and strike out on his own. The U.S. Declaration of Independence advised Great Britain of having violated man’s inalienable rights. The resulting U.S. Constitution founded a new nation under laws of man distinguished from laws of God. Accordingly, the U.S. Constitution separated God’s administration, or Church, from government rule. Governance under God’s law is by scripture whereby God controls land (honua and wai), ocean (kai), and skies (lani), altogether comprising the ‘aina. The administrators are merely priestly agents of the God, the Ruler.

In comparison, governance under man’s law is by constitution whereby man creates land titles exercising control over the ‘āina, which control is subject to man’s constitutional authority, not God’s authority. God’s laws are reduced to mere admonitions. Administrators in the U.S., for example, are not agents of God, but

instead, of the people. They are elected officials, bureaucrats, and judges. While a the Hawaiian Kingdom's naïve struggle away from Gods' rule toward men's rule had clearly been responsible for the tragic separation of native Hawaiians from aboriginal sustainability, this foreign transition simultaneously elevated modernization entirely above sacred native traditions, kapu, and practices – even with impunity. Historically, as Western construction modernized Hawaii, iwi kŭpuna were disregarded. Commonly now, creative legal and economic proposals remove or relocate iwi and kapu in favor of further construction. Whereas Gods' laws are immutable and never change, men's laws are relative and can always change. While construction is incidental, in comparison, a spiritual hewa can never be undone. Even after ho'oponopono healing scars the `āina.

Consequently, from Kamehameha III (Kauikeaouli) came Rev. William Richard's 1839 Declaration of Human Rights promptly followed by a Constitution in 1841 based upon the proposition that individual land grants were necessary to assure divine fairness and conduct commerce. The Land Commission of 1845 formed to divide lands and convey titles. Palile LCA 731 upon testimony of Palile in 1847 is compelling to my family interests. At about that time, King Kauikeaouli's portion was conveyed to him. It would not be until the August 6, 1850 Kuleana Act when Commoners would generally be granted titles. LCA 731 is based upon testimony in 1847 of royal class significance. Palile is a name naturally associated with the rare royal name Pinea, aka Paina. "Pinea" has no translation otherwise than as strictly a royal name.

The site burial map distinctly shows the configuration of kahuna burials which is not odd considering the location at a Kamohoali'i shark cave. Palile is a significant name of my direct lineage that includes both the Maweke kahuna clans of Lanikaula (Maui Precinct) and Ka'opulupulu (O'ahu). In 1778, Ka'opulupulu advised O'ahu's King Kahahana that Captain Cook was not a god, but instead, a foreigner from Moku iā Ke'oke'o iā Uliuli iā Melemele destined to take over dominion of Hawaii's lands. This was also the identical advisory by Lanikaula-a-Pākī on Maui to Prince Kalaniulumoku and King Kahekili-Kalaninui‘ahumanu. Shortly thereafter, O‘ahu King Kahahana terminated a kahuna clan by ordering the deaths of Ka'opulupulu and his only son, Kahulupue. Palile in Lanikaula continued in the child Kalanikauiokikilo-Kalaniwaiakua-Kekumanomanookekapu, the incarnate name of the kapu of Maui Precinct, who was the kapu ali'i wahine who with her pi'o son Prince Kalaniulumoku bore Ali'i Pākī (Kalanihelemaiiluna Pākī).

Meanwhile on the Big Island, King Liloa's consort was chiefess Pinea of my same O'ahu lineal kapu kuleana handed down to my 3G-grandmother of the same namesake, i.e. Kapahu-Pinea-Kaleikoa Pākī, the chiefess sister of Ali'i Pākī who, in turn, is my 5G-grandfather. My great-grandmother is the only child of Kapahu-Pinea-Kaleikoa Pākī with her grandnephew Palile-Lanihuli-Naliko-Keōpūhiwa Pākī, the grandson of Ali'i Pākī. Accordingly, my great-grandmother is named for both her Pākī mother and Pākī father, i.e. Kapahupinea-Kaleikoa-Keopuhiwa Pākī. Through Palile comes my family kapa ‘ia authority given through my mother Ella and aunt Elizabeth by my grandmother, Alina Kapahupineakaleikoakeopuhiwa-a-

Pākī Say, as the hiapo of her mother, commonly called “Kapahu”. This kapu kuleana is that exclusive lineal authority held by the only child born between King Kamehamehanui ‘Ailu’au of Maui and his sister Kalola-Pupuka-Kalaninuiokamoku, namely, Kalanikauiokikilo-Kalaniwaiakua-Kekumanomanookekapu who is my direct 6G-grandmother. I was sequestered and trained in tradition and skills beginning in 1955, given mo‘okū‘auhau authorities in 1959, and deposited with kapa ‘ia kuleana and royal records in 2006. This kapu includes responsibility for iwi of the Maweke lineage as well as its unclaimed subjects, i.e. the location under the American Savings Bank Office Building at ‘A`ala and Beretania Streets.

Shortly before his death, Lot Kapuāiwa (Kamehameha V) recognized the kuleana in this royal Pākī female child born in early 1871 over lands on O‘ahu for Hawaiian settlements extending from Kapālama to Nu‘uanu to Pauoa to Makiki. There were no konohiki in wealth existing at that time. Hawaiians were poor, without the historical natural wealth to hanahanai residents. Accordingly, my great-grandmother with the industry of my Chinese merchant great-grandfather governed konohiki and became renowned in old Papakōlea for caring over native families. Our families extended through Pauoa and Nu’uanu. As the hiapo, my grandmother, also through the industry of my grandfather, continued this kuleana and became widely celebrated for her caring over moku residents throughout her life, and as well, being their ho’ohānau (midwife). In 2006, my aunt Elizabeth as the eldest daughter, passed the mo‘okū‘auhau to me at her 90th birthday at the Bishop Museum. I decided not to deposit our ancient charts and written records at the museum and instead kept them private. Among a large family of over 200 surviving, I individually conduct the Palile Pākī discretions and lineage responsibilities.

22. Trails ancient or contemporary in the area? Who used/uses them?

23. Mauka-makai relationships?

Part VI: What else?

24. Do you have any, or do you know of any concerns the community might have related to Hawaiian or other cultural practices within or in the vicinity of the project area?

My kūpuna had strictly warned against recognizing cultural authority and kuleana in any claimant showing only indirect relevant lineage, i.e. claimed birthright through his/her mother does not remain matriarchal back to the origin of the kuleana. Furthermore, the claimant’s father must be the blood brother, father, uncle, nephew, grandnephew, grandfather or granduncle of the claimant’s mother who must possess the claimed kuleana, or, the husband via Hawaii’s rarest ancient ali’i nui wahine privilege. Further, the claimant must show the specific training received, and identify the chain of custody and chain of authority as unbroken since ancient origin to the claimant’s ordination. My kūpuna were especially negative over vague name-dropping and liberally assigning false qualifications to grandparents, deceased relatives, or “teachers.”

25. Do you have any recommendations regarding site management or protection, and development in the proposed project area?

26. Did CSH miss anything? Is there anything else you would like to add?

27. Is there anyone else we should talk to about this cultural study?

28. If so, may I say that you referred CSH to him/her?

8.2 Howard Lum and Kehaulani Lum of Lum Sai Ho Tong

As with Mr. Lam, to maintain the integrity and to respect the information submitted to CSH, the questionnaire given to the representatives of Lum Sai Ho Tong is presented below as it was submitted to CSH. In addition to the questionnaire, Kehaulani Lum submitted documents to CSH that she wished to include in the CIA. These documents are presented in Appendix B.

Part I: Contact information

Name: Lum Sai Ho Tong (Howard Lum, President)

Where were you born? Kalāwahine (Chinatown)

Where did you grow up? Kalāwahine/Kamanuwai (Chinatown)

When were you born? 1889

Parents. Mother. Father. Founders: Lum Duck Sun, Lum Duck Yew, Lum Gee Wah, Lam Lup Sai (Lam Toi), Lum Gee Hoon. River Street Land Donors: Lam Say Yip, Lam Lau See

Occupation/Affiliation: Lum Sai Ho Tong (Lum Family Society and Tin Hau Temple)

Area of residence: 1315 River Street, Honolulu, Hawai`i 96817

How long have you lived or been associated with the area? 130 years

Personal and/or family connection to *ahupua'a:* Same

Referrals: www.lumsaihotonghawaii.com; Lum Sai Ho Tong 130th Anniversary Booklet; Tin Hau Temple Schedule of Celebrations

Part II: Historical information

Is there anything you would like to say about the general history of the area, or past and present land use?

Lum Sai Ho Tong, which neighbors the subject property, was established in 1889, before the "Great Chinatown Fire" of 1900. This is a sacred land. Until the overthrow of Queen Lili`uokalani, the area extended into and was fed by the flowing Nu`uanu and Pauoa Streams. It carries the ancient name of "Kalāwahine," and has figured prominently, from the time of Papa and Wakea, down through O`ahu's Heroic, Settlement and Dynastic Periods, over 70 generations later, as `āina Momona, rich, abundant, precious and sweet lands. Kalo, hala, kou, tamarind and many species of trees, plants and animals, once flourished, in its embrace. Giant monkeypods, kou, sacred poinciena and various introduced flowering plants,

continue to dig their roots deep into the soil. Here is the high water shoreline, where ocean tides bring sea creatures and salt water (kai) to mix with the fresh mountain water (wai), as it descends from the heights of Nu`uanu Valley. Here, too, is the place where native and introduced winged animals, including Honolulu's beloved Manu o Kū and the `auku`u, rest, live, hunt and soar in the prevailing winds, reflecting a treasured `ili name of "Kawaimakaokamanu." Native and introduced trees once forested the land, with some still providing shade and delicious bounty to residents, neighbors and friends. The fragrant scent of past and present sandalwood incense lingers in the breeze, and the sound of bells, drums, sacred music, chants and prayers from the area's spiritual practitioners are daily gifts. Fishing and gathering of spiritual resources continue to be practiced in the area. Many individuals who sense nature's energy gather here.

Do you have any memories of what existed in that area or cultural events that were practiced?

In ancient times, native practices attached to farming, fishing and sacred living prevailed. Mo`ōlelo of a visit by Hi`iakaikapoliopele and Lohiau, and a game of kilu which was played with a resident named, Pele`ula, is well documented. Makahiki and chiefly events were held. Plants and trees were cultivated for the ali`i's spiritual and secular needs. The great leader, Kamehameha, after winning the Battle of Nu`uanu, settled his cherished friends and family members here. His beloved wife, Ka`ahumanu, reserved harvests from trees planted on the land, and chosen Konohiki gathered traditional foods, ocean, river and land resources here. Lum Sai Ho Tong, established in 1889, 130 years ago, honors and preserves the practices of familial connections. Our ancestral home stands, in unbroken practice, as a cultural and spiritual center and sanctuary for our members and the general public. We nurture, preserve and protect ancestral worship practices, dating back to our great Ancestor, Pi Kan, in the time of the Shang Dynasty in China (1766-1100s BC), Tin Hau Sung Mu (960-1126 AD), our patron ancestor, who is revered as the "Goddess of the Seas," and all ancestors, alive and deceased. Our 130th Anniversary program booklet and temple calendar, which are attached, identify the numerous cultural events and rituals that continue to be held on our site (neighboring the Halewai`olu Residences site) daily, weekly and monthly. Of note are: 1) Chinese New Year celebrations, which span over a 2 to 3 week period and include day and night-long traditional ceremonies and festivities; 2) Our patron Saint Tin Hau's birthday celebrations, which span over a 1 week period, with celebrations, a banquet and, sometimes, a community-wide parade; 3) Ching Ming, a Spring event, when LSHT members journey to Mānoa Chinese Cemetery and clean the graves of our ancestors and perform the sacred ceremony of paisan, offering them food, drink and prayers; 4) Siu Yee, or Hungry Ghost Festival, when LSHT holds 2 ceremonies, one in Tin Hau Temple and the other on the land, to honor and and invite all of the deceased and wandering spirits, as well as our ancestors, to partake of food and drink. On this day, plates of traditional native Hawaiian food are laid around the property, along with candles and incense, while our priest chants and burns a cage full of paper money offerings and firecrackers,

inviting and honoring the area's deceased native Hawaiian ancestors, to eat with us; and 5) Numerous feast days, in honor of significant deities. The moon calendar regulates the practices of Lum Sai Ho Tong.

How about personal and/or family history in the area?

Many members of Lum Sai Ho Tong, who, by Constitution, carry the surname Lum, Lim, Lam or Lin, in their genealogy, have close and deep generational family ties to the area. Historical archives document the area as a place where businessmen, farmers and fishermen would seek important sanctuary and support here. Their descendants continue to worship, fellowship, and gather spiritual, physical and other important supplies here. Lum Sai Ho Tong is also a repository for the genealogy of the Lum Family, which dates back to Huang Di, China's first Emperor. In addition, some of our members descend from native inhabitants of the area.

Past land use? Past agricultural, fisheries or other uses of the area?

In addition to the above answers, the land serves as a place for making traditional offerings. As Tin Hau carries, among other titles, that of the "Goddess of the Sea," 1000s of practitioners make pilgrimages here, 365 days a year, on the auspicious shore of the Nu`uanu, where seawater reaches its highest point on land. Prayers for abundance of the fisheries, safety in the ocean, and overall well being are offered with ho`okupu or offerings of the bounty of the land and sea. In past times, sacred ceremonies were held in the river proper. Our temple faces and spiritually touches the water, the sky, the mountains and the land, connecting us to the area's natural essence, historically and presently, as a treasured cultural and spiritual place. It is common to find fishermen, farmers, and diverse practitioners making offerings and requesting guidance, assistance and good fortune here. The crew of a famous sailing vessel, the Princess Tai Ping, attributes their survival from a disaster at sea, to the protection of Tin Hau and their pilgrimage to Tin Hau Temple in 2009. (See story in attached booklet.)

Part III: Cultural and historic sites

Are there any cultural, archeological, historic, and/or burial sites in or around the proposed project area (e.g., *heiau, hale, kū‘ula, ilina*)?

We are aware that several burial sites have been found around the area, in the Stream, and throughout Chinatown. The area has a history of human habitation, battles, and spiritual and physical sites, including hale, lo`i, heiau, imu and `ulu maika fields. In addition, the legend of Kahuoi, a pearl fish hook of great value, and Kamanuwai, the bird which cared for it, is believed to have been grounded in this area. Kamanuwai is also the name of an ancient chiefly lo`i., said to have been reserved for Kamehameha's sacred wife, Ke`opūolani The water which flows through the area descends from the sacred hills of Nu`uanu and Pauoa, and is said to have been the home of the sacred mo`o wahine, Kalāwahine.

Part IV: Gathering/hunting/fishing/etc. practices

Are you, or is anyone you know, involved in any cultural practices in the project area – for example plant gathering, fishing, hunting, surfing, etc.?

LSHT is devoted to the continuation of spiritual practices which honor the ocean, stream, sky and land practices, through our temple activities. We also tend a sacred fruit tree planted on our land by our ancestors and used for ritual offerings. From time to time, we have witnessed people fishing in Nu`uanu Stream.

If you are, how did you learn the activity/ies and how long have you engaged in spiritual practices of Tin Hau, the Goddess of the Sea. This is a traditional practice handed down through the generations, from over 1,000 years of practice. Our ancestors brought this to Hawai`i in the 1800s, and we have continuously practiced it, without break.

Can you tell me about any cultural practices from the past?

Besides ceremonies conducted to honor Tin Hau, the Goddess of the Sea, and other important deities, blessed ceremonial food (jai, roast pork, sweet buns, rice, etc.) is prepared and served to congregants. Forest trees were harvested and prepared for culinary and ornamental use. Sacred trees were planted to ensure protection. The building was constructed, in alignment with the stream and ocean tides, as well as the winds of the area. Prayers, incense and flowers continue to be offered every day. Caring for ancient stones and statues from Taoist temples which have been closed and/or from observants who bring them to us for safe keeping.

Knowledge of past or present cultural protocols observed:

Same as 18, plus, numerous ritual days. (See calendar of events.) Street parade, led by Native Hawaiian chanter. Floating lanterns on Nu`uanu Stream. Martial arts teaching. Families gather in fellowship, ritual and honor of the ancestors. Ceremonial objects and materials are created and made available here.

Part V: Legends, stories and place, and sense of place

Is there anything you would like to say about legends, or stories about the project area?

This area has long served as a sacred sanctuary. Our great stories call forth our patron Saint, Tin Hau, who, as a young woman, miraculously saved the lives of people who were in danger on the Sea, through her dreams. She continues to protect fishermen and ocean voyagers, today, as well as those who inhabit the land. We seek guidance from her on all matters, through oracle readings and prayers, everyday. Our Great Ancestor, Pi Kan, is the father of the first Lum man. He was born 3,111 years ago and is a direct descendent of Huang Di, the Yellow Emperor. Confucius called him the “most ethical man of his generation,” because he defended the well being of the people, against a cruel emperor, even though it cost him his life. We honor his spiritual presence, and the manifestation of Tin Hau, and all of the ancestors, in this area. In addition, some members speak of witnessing ancestral spirits in the area and in ceremonies. Members have witnessed and experienced many miracles taking place (lives saved, families reunited, employment, happiness,

etc.). Our practice of honoring our ancestors and all beings, nurtures the essence of this land, which is grounded in the spirit of the ancient people who followed the phases the moon and honored their kupuna,`aumakua, akua and celestial deities, in chant, ho`okupu, and rituals which are similar, in nature, to our practices.

Are there any names, traditions, or practices associated with the area and features of the landscape? Origin stories…?

See above.

Trails ancient or contemporary in the area? Who used/uses them?

During the battle of Nu`uanu, Kamehameha's warriors forced Kalanikupule's warriors to retreat to `Ewa, from an area that is only two blocks away, near Pali Highway and Vineyard/Kukui. They may have passed on the trails leading to the stream and their canoes. Nu`uanu Stream is an ancient passageway for warriors, gatherers, and inhabitants of Nu`uanu. We have also used for lantern ceremonies, in the past. There is always talk of restoring it, for recreational uses. We have been involved in the building of a crosswalk at Vineyard and River Street, which restores mauka-makai pedestrian access to River Street and the corridor leading to Honolulu Harbor. Traditionally, residents along the stream would have depended on the Stream for their physical and spiritual well being. The trails leading to it have been cut, with the building of the walls.

***Mauka-makai* relationships?**

Before the building of the freeway, the area populated by Chinese residents extended above Foster Gardens and into Liliha. From our land, we currently enjoy view planes from River Street to the peaks of Nu`uanu Valley.

Part VI: What else?

Do you have any, or do you know of any concerns the community might have related to Hawaiian or other cultural practices within or in the vicinity of the project area?

Yes. Concerns have been expressed about the finding of `iwi kupuna and their appropriate care. We are also aware of Lum family members whose lineage flows from priestly lines related to the area. Our concerns regarding the health and well being of the residents of the area, as well as the condition of air flow in the area have been noted by the City Council.

Do you have any recommendations regarding site management or protection, and development in the proposed project area?

Yes. Given the historic nature of our building and practice, we recommend pre-construction consultation, with the developer (ie engineering) and remediation, to ensure that the project does not adversely impact our health, structure and practice.

Did CSH miss anything? Is there anything else you would like to add?

Nuisances: Safety and security issues of existing and proposed project, as well as impact on access and parking.

Is there anyone else we should talk to about this cultural study?

If so, may I say that you referred CSH to him/her?

8.3 **Wesley Fong**

Mr. Fong did not submit a written testimony to CSH. In his effort to provide a statement on behalf of the Chinatown Community Center Association (CCCA), he forwarded an open-ended questionnaire provided by CSH to the Board of Directors and other Officers of the CCCA. CSH received replies from two members but did not receive authorization to use their responses in this CIA. To honor their privacy and CSH procedures, their responses will not be included without their authorization. However, a commentary submitted by Wesley Fong to the Honolulu Advertiser is presented in Appendix C.

Section 9 Traditional Cultural Practices

Timothy R. Pauketat succinctly describes the importance of traditions, especially in regards tothe active manifestation of one's culture or aspects thereof. According to Pauketat,

> People have always had traditions, practiced traditions, resisted traditions, or created traditions […] Power, plurality, and human agency are all a part of how traditions come about. Traditions do not simply exist without people and their struggles involved every step of the way. [Pauketat 2001:1]

It is understood that traditional practices are developed within the group, in this case, within the Hawaiian culture. These traditions are meant to mark or represent aspects of Hawaiian culture that have been practiced since ancient times. As with most human constructs, traditions are evolving and prone to change, resulting from multiple influences including modernization as well as other cultures. It is well known that within Hawai‘i, a "broader 'local' multicultural perspective exists" (Kawelu 2015:3). While this "local" multicultural mix is deservedly celebrated, it must be noted that it often comes into contact with "traditional Hawaiian culture." This contact among cultures and traditions has undoubtedly resulted in numerous cultural entanglements. These cultural entanglements have prompted questions regarding the legitimacy of newly evolved traditional practices. The influences of "local" culture are well noted throughout this section and understood to represent survival or "the active sense of presence, the continuance of native stories, not a mere reaction, or a survivable name. Native survivance stories are renunciations of dominance, tragedy and victimry" (Vizenor 1999:vii). Acknowledgement of these "local" influences helps to inform nuanced understandings of entanglement and of a "living [Hawaiian] contemporary culture" (Kawelu 2015:3). This section strives to articulate traditional Hawaiian cultural practices practiced within the *ahupua‘a* in ancient times, and the aspects of these traditional practices that continue to be practiced today; however, this section also challenges "tropes of authenticity" (Cipolla 2013) and acknowledges the multicultural influences and entanglements that may "change" or "create" a tradition.

This section integrates information from Sections 3–5 in examining cultural resources and practices identified within or in proximity of the project area in the broader context of the encompassing Honolulu landscape.

9.1 Habitation and Settlement

Kamehameha defeated Kalanikūpule at the battle of Nu‘uanu in 1795, and in 1809, moved his court, government, and residence from Waikīkī to Honolulu. Kamehameha was known to have taken a special interest in farming and would work in the fields alongside the commoners to demonstrate the importance of agriculture. Crops such as yams were developed under Kamehameha and were often sold to the captains of foreign ships in need of provisions at Honolulu Harbor (‘Ī‘ī 1959:69).

In historic maps, the project area is near Nu‘uanu Stream in the *‘ili* of Kalawahine, situated below Waikahalulu. Other *‘ili* present on older maps are Kamakela, Leleo, Kikihale, Kaakaukukui, Ka‘akopua, and Pāmo‘o. Māhele records show that Pehu submitted testimony to the Land Commissioner to claim ownership of property in the area of Ka‘akaukukui.

The history of the Gillilands in Hawai‘i begins first with Francisco Paulo de Marin who was a confidant of Kamehameha I. He had atleast three wives of Hawaiian blood and many children.

The following Māhele document lists the heirs of Marin (also called Manini) and the heirs of Lahilahi, one of Francisco’s daughters, in their testimony for property in Honolulu. Their property was named Huanu o Lahilahi:

> P. Manini formerly held this land from Kamehameha I, having received it from him. On death of Manini it came to his daughter, Lahilahi and on her death to her children, Francis, John, & Rosalia. Francis is dead. The lot is fenced round & has been cultivated & never disputed. I have lived on this lot ever since time of Kamehameha I.
>
> Kaoani, sworn, I saw the survey made by Mr. Turner & it is according to the wall of the lot. I have lived there since Kamehameha I and there is no dispute to the Title. [Waihona ‘Aina 2000]

Interviewee Gerald Lam shared his personal knowledge of the history of Honolulu:

> Generally, the settlement homesteads of the native citizenry extended makai beginning from about where King Street runs today to the coastline. However, agriculture continued mauka into the upper valleys. Marshlands (such as Waikīkī and Ala Moana) and areas mauka of the concentration of the general citizenry were especially residences of kāhuna. A mauka example of kāhuna residence is seen along Nu`uanu river at today’s `A`ala and Beretania streets where Palile kahuna representative of Ka`opulupulu and Lanikaula persuasions were buried in and adjacent to the royal patent land named “Palile.” “Palile” is not to be confused with “palili” (taro shoot) or “palila” (native bird). “Palile” is exclusively a royal kapu name without other meaning. These kahuna burials are where lies the shark cave dedicated to Kamohoali`i specifically, whose cavern tubes extend mauka to Pu`u Mawaena (Puowaina) at Auwaiolimu and Kalawahine. Queen Lili`uokalani placed her Royal Garden there among the sacred springs, which feed ‘ama’ama (fish of the ali`i) and other fish spawn makai. Palile kāhuna presided over this life of the land (`Āina i hane).
>
> Notably, my G-grandmother Kapahupineakaleikoakeōpūhiwa-a-Pākī acquiesced her kuleana birthright lands to be set aside as a reservation for native Hawaiian homesteads today known as Papakōlea Homestead. It was G-grandmother that confirmed the name “Pākī” upon Queen Lili`uokalani. Accordingly, G-grandmother is buried at the very center front of the Queen’s Garden Uluhaimālama located on Auwaiolimu Street. During childhood, from Tantalus Drive a mile above Puowaina Drive, I would walk daily down to Chinatown for training and back home again through the homestead. When older, my walk extended to Victoria Street and Ala Moana Park and back.

9.2 ***Wahi Pana***

Near the current alignment of Richards and Queens streets was Hono-kau-pu—a noted field for *‘ulu maika,* an ancient Hawaiian game similar to bowling (Westervelt 1915:16). Kou was the

popular *‘ulu maika* field amongst chiefs. The track at Hono-kau-pu was approximately 12 ft wide and extended from the current location of Merchant and Fort streets, traveling ‘Ewa to the intersection of Merchant Street and Nu‘uanu Avenue. It is said that Kamehameha I used this *maika* track (Westervelt 1915:16).

Pākākā was the name of a coastal point, a canoe landing, and wharf built off the point in 1827, and the name of a *heiau* built on that same point. The name literally means “to skim, as stones over the water” (Pukui et al. 1974:175). In 1816, a fort named Kekuanohu was constructed in this area, roughly *mauka* of Pākākā Heiau; the adjacent street was called Fort Street. Liholiho, Kamehameha II, built a palace complex in this area in 1821, possibly on the former Pākākā Heiau platform.

Interviewee Gerald Lam explains notable *wahi pana* and their significance as was taught to him by his *kūpuna:*

> As the gateway residence of the first arriving high priests of birthright, Ko`olaupoko is the kino lau of the archipelago, which its `uhane is Ke`alohilani (Mount Olomana), piko is circa Ulupau Head (in Mokapu), and `unihipili is Mokoli`i (in Ke`alohiwai at Kualoa). Notably, King Kahekili II resided in Kani`ohe (Kāne`ohe) and presided from Waikīkī. Major battles consistently finalized throughout Nu`uanu having originated from other ahupua`a. War iwi abound throughout Nu`uanu. Also, see Western accounts of King Kahekili’s conquering of O`ahu circa 1782 and King Kamehameha’s subsequent conquering in 1795. Kapu kaua pau rituals took place in Nu`uanu, Pauoa, Auwaiolimu, Kalawahine, Waikīkī, and Kailua ahupua`a.

Representatives of Lum Sai Ho Tong provided CSH with the following information relating to their knowledge of the general history of the area:

> Lum Sai Ho Tong, which neighbors the subject property, was established in 1889, before the “Great Chinatown Fire” of 1900. This is a sacred land. Until the overthrow of Queen Lili`uokalani, the area extended into and was fed by the flowing Nu`uanu and Pauoa Streams. It carries the ancient name of “Kalāwahine,” and has figured prominently, from the time of Papa and Wakea, down through O`ahu’s Heroic, Settlement and Dynastic Periods, over 70 generations later, as `āina Momona, rich, abundant, precious and sweet lands. Kalo, hala, kou, tamarind and many species of trees, plants and animals, once flourished, in its embrace. Giant monkeypods, kou, sacred poinciena and various introduced flowering plants, continue to dig their roots deep into the soil. Here is the high water shoreline, where ocean tides bring sea creatures and salt water (kai) to mix with the fresh mountain water (wai), as it descends from the heights of Nu`uanu Valley. Here, too, is the place where native and introduced winged animals, including Honolulu’s beloved Manu o Kū and the `auku`u, rest, live, hunt and soar in the prevailing winds, reflecting a treasured `ili name of “Kawaimakaokamanu.” Native and introduced trees once forested the land, with some still providing shade and delicious bounty to residents, neighbors and friends. The fragrant scent of past and present sandalwood incense lingers in the breeze, and the sound of bells, drums, sacred music, chants and prayers from the area’s spiritual practitioners are daily gifts.

> Fishing and gathering of spiritual resources continue to be practiced in the area. Many individuals who sense nature's energy gather here.

9.3 **Religious Practice and Burials**

Land records associated with Mataio Kekuanaoa's LCA 170 at Kapukolo (also known as Kapu‘ukolo) indicate traditional Hawaiian land use on the property. However, the immediate area was also part of a rich Chinese cultural landscape. This particular parcel is within the area today known as Chinatown and is bound between North King Street (*mauka*) and North Nimitz Highway (*makai*). For nearly a century, the common practice was for Chinese patriots to disinter their fellow countrymen's bones and prepare them for shipment back to their homeland of China. In a general sense, it is logical to assume that many of these bones most likely passed through Honolulu's Chinatown, but the details are not well-known.

Previous oral history research conducted by the University of Hawai‘i's Center for Oral History (UHCOH) highlights Mrs. Eleanor Nahiapo Wilson Heavy. Mrs. Heavy remembered that they used Hawaiian salt to embalm bodies. They would stuff the *‘ōkole* (buttocks) with salt, working it in with *ti* leaves. They also put salt in cuts under the armpit, and within the mouth, nose and ears. The body then could be viewed by relatives at the undertakers for several days. The body was later put into a coffin for burial at the Catholic Cemetery or at the Kawaiaha‘o Church cemetery, both on King Street.

Interviewee Gerald Lam explains special times observed by those of the Taoist belief and how a festival is held by Lum Sai Ho Tong in celebration:

> The seventh month of the lunar calendar is the Ghost Month According to Taoist belief, on the last day of the sixth lunar month, the gates of Hell opens up and the ghosts and restless spirits (to include those of deceased ancestors) are free to roam the human world. It is said that these ghosts are looking for food and entertainment and if not appeased, will resort to mischief. Therefore on the 15th day of the seventh lunar month a Hungry Ghost Festival is held by my family's organization, the Lum Sai Ho Tong Society located at Kukui and River Streets. It is commonly celebrated by leaving out food for the hungry ghosts and the burning of joss paper (faux money) and other offerings for their use in the afterlife.

In addition, Mr. Lam mentions *kahuna* burials:

> In 2016, sacred burials of my Palile clan kahuna were discovered on the Palile Royal Patent land as conveyed by the 1845 Land Commission. Palile is my family's genealogical name given to our O`ahu kahuna that on Moloka`i are known as Lanikaula kahuna. Palile is also the kapu name given to my royal Hawaiian 2G-grandfather, High Chief Palile Naliko Lanihuli Lanikaula Keōpūhiwa a Pākī, who was commonly called Keōpūhiwa. Those burials are clearly marked kahuna burials due to their configuration in the shape of the Makali'i constellation, and their placement directly above a shark cave of Kamohoali'i. Kamohoali'i is the Shark God and my genealogical personal aumakua dictated to me in 1958 by Aunty Luka Kinolau, Aunty Lillian Kahoali'i, and Aunty Alice Namakelua. I had been then forbidden to ever again eat shark meat, including shark fin soup at Chinese banquets.

> There are Palile kahuna burials of the royal Pākī genealogy located under the newly constructed American Savings Bank Office Building bordered by ‘A`ala Street, Beretania Street and River Street Mall. That location at about ‘A`ala and Beretania Streets is the underground sacred Kamohoali‘i shark cave of sacred spring waters whose lava tubes run mauka through Auwaiolimu into Kekapuwai past Roosevelt High School. ‘Ama’ama fish spawned in this and similar underground caves nearby, past Pearl River and into ‘Ewa District.

Lum Sai Ho Tong shared their religious customs observed and celebrated on their grounds:

> Our ancestral home stands, in unbroken practice, as a cultural and spiritual center and sanctuary for our members and the general public. We nurture, preserve and protect ancestral worship practices, dating back to our great Ancestor, Pi Kan, in the time of the Shang Dynasty in China (1766-1100s BC), Tin Hau Sung Mu (960-1126 AD), our patron ancestor, who is revered as the “Goddess of the Seas,” and all ancestors, alive and deceased. Our 130th Anniversary program booklet and temple calendar, which are attached, identify the numerous cultural events and rituals that continue to be held on our site (neighboring the Halewai`olu Residences site) daily, weekly and monthly. Of note are: 1) Chinese New Year celebrations, which span over a 2 to 3 week period and include day and night-long traditional ceremonies and festivities; 2) Our patron Saint Tin Hau’s birthday celebrations, which span over a 1 week period, with celebrations, a banquet and, sometimes, a community-wide parade; 3) Ching Ming, a Spring event, when LSHT members journey to Mānoa Chinese Cemetery and clean the graves of our ancestors and perform the sacred ceremony of paisan, offering them food, drink and prayers; 4) Siu Yee, or Hungry Ghost Festival, when LSHT holds 2 ceremonies, one in Tin Hau Temple and the other on the land, to honor and and invite all of the deceased and wandering spirits, as well as our ancestors, to partake of food and drink. On this day, plates of traditional native Hawaiian food are laid around the property, along with candles and incense, while our priest chants and burns a cage full of paper money offerings and firecrackers, inviting and honoring the area’s deceased native Hawaiian ancestors, to eat with us; and 5) Numerous feast days, in honor of significant deities. The moon calendar regulates the practices of Lum Sai Ho Tong.

9.4 **Recreation**

Interviewee Gerald Lam began training in Tao-Gar in the Lum Sai Ho Tong‘s Tin Hau Temple under renowned kung-fu spiritualist Lum Dai Yung. His recollection of kung-fu in Territorial Hawai‘i is presented below:

> In Territorial Hawai`i at the time were renowned kung-fu masters Lum Dai Yung and Wong Cook Fat who had migrated to Honolulu in the early 1900s desiring political asylum from China in the aftermath of the “Boxer Rebellion,” which had been waged against foreign occupation by the Ching Dynasty’s use of the underground Hung Mun kung-fu fighters.
>
> In 1889, China’s Lum clan immigrants from Chung Shan in Guangdong (Canton) Province established the Lum Sai Ho Tong in Hawaii. Its Lum, Lam, Lin, Lim, and

> Lem membership met in rented quarters located on Smith Street between Pauahi and Hotel Streets to pay respects to their clan's patron saint, Tin Hau Sung Mu ("Ku Po"). In 1899, Mr. Say Yip Lam donated land at 1315 River Street for a new clubhouse. Later, masters Lum Dai Yung and Wong Cook Fat migrated to Honolulu. By 1900 in China, a cultural renaissance of Chinese pride reached crescendo via kung-fu fighters such as Wong Fei Hung against Western and Japanese professional fighters, which led to the organization of the Jing Mu Physical Culture Association in Shanghai in 1903. In 1930, a Jing Mu kung-fu gym was developed in Honolulu Chinatown that today is known as The Chinese Physical Culture Association. Originally, Master Lum taught and managed the Jing Mu gym teaching Buddhist kung-fu Fat-Gar. He left to organize the Gee Yung Society in 1937. In 1953, the Lum Sai Ho Tong erected a new building standing today as the Lum Sai Ho Tong Tin Hau Taoist Temple. I began training there in 1953 in the tao-gar art of fighting ghosts, or spirits. Teaching elsewhere in Chinatown at the time, was the father of my aunt Thelma Wong, the renowned mystic Wong Cook Fat known as "Old Man Wong of Kalihi." My aunt Thelma Wong was the wife of my mother's brother, Clarence Fong.

9.5 **Gathering of Plant and Food Resources**

UHCOH recorded Mrs. Eleanor Nahiapo Wilson Heavy and her recollection of her mother traveling to the Squattersville area (Ka‘ākaukukui) to gather *limu*, *wana* or *‘ina*, squid, and *‘ōpae* for the family's meals.

Representatives of Lum Sai Ho Tong provided the following statement regarding plants for cultivation and harvest.

> Plants and trees were cultivated for the ali`i's spiritual and secular needs. The great leader, Kamehameha, after winning the Battle of Nu`uanu, settled his cherished friends and family members here. His beloved wife, Ka`ahumanu, reserved harvests from trees planted on the land, and chosen Konohiki gathered traditional foods, ocean, river and land resources here.

Interviewee Gerald Lam shared his knowledge of spawning cycles:

> Queen Lili`uokalani placed her Royal Garden there among the sacred springs, which feed ‘ama'ama (fish of the ali`i) and other fish spawn makai. Palile kāhuna presided over this life of the land (`Āina i hane). Lo'i were fed above ground and fish spawn fed underground.
>
> […] at about ‘A`ala and Beretania Streets is the underground sacred Kamohoali‘i shark cave of sacred spring waters whose lava tubes run mauka through Auwaiolimu into Kekapuwai past Roosevelt High School. ‘Ama'ama fish spawned in this and similar underground caves nearby, past Pearl River and into ‘Ewa District. The annual ‘ama'ama runs circling O‘ahu Island commenced in these sacred underground aquifers. These mineralized aquifers comprising one of Earth's leylines are molecularly charged having thereby supernatural energy. It had been these healing waters known by kahuna to ably provide the sustainability of surplus fish supply for all of O‘ahu's moku and ahupua`a.

Section 10 Summary and Recommendations

CSH undertook this CIA at the request of Halewai‘olu Senior Development LLC. The research broadly covered the Honolulu Ahupua‘a.

10.1 Results of Background Research

Background research for this project yielded the following information (presented in approximate chronological order):

1. Pukui et al. (1974:49–50) literally translates Honolulu as “protected bay,” which refers to the protection of Honolulu Harbor. Older names for the harbor are Kou and Māmala.
2. Traditionally known as Kou, Honolulu had a long tradition as a royal center where the *ali‘i* would meet and entertain. Kou stretched from “Nu‘uanu to Alakea Streets and from Hotel Street to the sea” (McAllister 1933:80).
3. The *ahupua‘a* of Kou was subdivided into several smaller land divisions, known as *‘ili.* The area between Maunakea Street and Nu‘uanu Stream and *makai* of King Street was known as Kapu‘ukolo. The area between Maunakea and Nu‘uanu Stream *mauka* of King Street to Beretania Street was called Kīkīhale.
4. Near the current alignment of Richards and Queens streets was Hono-kau-pu—a noted field for *‘ulu maika,* an ancient Hawaiian game similar to bowling (Westervelt 1915:16). Kou was the popular *‘ulu maika* field amongst chiefs. The track at Hono-kau-pu was approximately 12 ft wide and extended from the current location of Merchant and Fort streets, traveling ‘Ewa to the intersection of Merchant Street and Nu‘uanu Avenue. It is said that Kamehameha I used this *maika* track (Westervelt 1915:16).
5. Pākākā was the name of a coastal point, a canoe landing, and wharf built off the point in 1827, and the name of a *heiau* built on that same. The name literally means “to skim, as stones over the water” (Pukui et al. 1974:175). Thrum (1906) generated several lists and surveys of *heiau* and noted that Peter Corney, a visitor to the island in 1819, saw several *heiau* along the Honolulu shore.
6. Following the Māhele in 1845, an 1871 map shows the original property owners of the land which sits under the current building. This included individuals named Kaukoke and Makahopu, and Lahilahi Marin, daughter of Francisco Paulo de Marin, confidant of Kamehameha I.
7. In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the Islands.
8. In 1899, the first case of bubonic plague was identified in Hawai‘i, in a Chinese bookkeeper named You Chong. After an examination by Dr. G.H. Herbert, who noted a high temperature and swelling in the groin, the patient died the next night. After an autopsy, the diagnosis of bubonic plague was determined.
9. From 12 December 1899 to 31 March 1900, 71 cases of bubonic plague were reported, with 61 deaths, 41 of whom lived within the established Chinatown quarantine area. The Board of Health concluded they could not contain the plague and decided the best remedy was to set “sanitary fires” to infected wooden buildings. A total of 41 controlled fires were set between 31 December 1899 and 13 August 1900.

10.2 **Impacts and Recommendations**

Based on information gathered from the cultural and historical background and the community consultation, CSH identified potential impacts and makes the following recommendations based on approved community consultations.

1. Project construction workers and all other personnel involved in the construction and related activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. In the event that any potential historic properties are identified during construction activities, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the event that *iwi kūpuna* are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300- 40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended.
2. In the event that *iwi kūpuna* and/or cultural finds are encountered during construction, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.

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Appendix A

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

KIRK CALDWELL
MAYOR

KATHY K. SOKUGAWA
ACTING DIRECTOR

TIMOTHY F. T. HIU
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI
DEPUTY DIRECTOR

2019/ELOG-1390 (nc)
1737991

August 9, 2019

Hallet H. Hammatt, President
Cultural Surveys Hawai'i, Inc.
ATTN: Chantellee K. Spencer
399 Hualani Street, Suite 124
Hilo, Hawaii 96720

Dear Ms. Spencer:

SUBJECT: Project Inquiry for the Halewai'olu Senior Residence Project
Tax Map Key 1-7-006: 012

Thank you for your letter received on July 15, 2019, regarding your request for general information on the subject area. The Department of Planning and Permitting (DPP) offers the following comments:

1. The guiding planning documents for the project area are the County General Plan (GP) and the Primary Urban Center Development Plan (PUC DP). Both the GP and the PUC DP are currently being updated. For more information on these projects, please visit the DPP website: www.honoluludpp.org, and the PUC DP website: www.pucdp.com.

2. The project site is not within a Special District, however, it is in close proximity to both the Punchbowl Special District (leading mauka from N. Vineyard Street) and the Chinatown Special District (leading makai from N. Beretania Street). Information on these Special Districts is below:

   a. Section 21-9.60 (a) of the Land Use Ordinance (LUO) regarding the Chinatown Special District states: "Chinatown is the oldest section of downtown Honolulu. In addition to its historic role in the growth of the city, and its architectural significance as reflected in its placement on the National Register of Historic Places, it reflects a dynamic ethnic population and business community". A reproduction of the LUO can be found here: http://www.honoluludpp.org/ApplicationsForms/ZoningandLandUsePermits.aspx

Ms. Chantellee K. Spencer
August 9, 2019
Page 2

b. Section 21-9.50 (a) of the Land Use Ordinance (LUO) regarding the Punchbowl Special District states: "The significance of the National Memorial Cemetery of the Pacific as a national monument and as one of Hawaii's important landmarks has long been recognized. Over the years, however, land development and land use changes in the area have posed a serious threat to the views of its slopes and diminished the serenity of the natural appearance and sanctity of the national cemetery and its environs." A reproduction of the LUO can be found here: http://www.honoluludpp.org/ApplicationsForms/ZoningandLandUsePermits.aspx

3. The subject site falls within the defined area of the Downtown Neighborhood TOD Plan (adopted in 2017). This plan involved market research and extensive public outreach to help identify needs and envision the potential character of the area within a half-mile of the Downtown cluster of planned rail stations: Iwilei Station, Chinatown Station, and Downtown Station. http://www.honolulu.gov/rep/site/dpptod/downtown_docs/Downtown_TOD_Plan_adopted_9-17.pdf

4. In 2016 the City produced a Chinatown Action Plan meant to present a set of strategies and actions informed by the community to improve the historic neighborhood (this strategic report is not only limited to the Special District). The Chinatown Action Plan can be viewed here: https://www.honolulu.gov/rep/site/dpptod/chinatown_docs/ChinatownActionPlan-Final_3-16.pdf

Should you have any questions regarding these comments, please contact Noelle Cole, of our staff, at 768-8055.

Very truly yours,

Kathy K. Sokugawa
Acting Director

KKS:lw

Appendix B

The following documents were hand delivered by Kehaulani Lum to CSH to include in the CIA. The first is a calendar of events of temple celebrations at the Tin Hau Temple and second is a pamphlet with the history of Lum Sai Ho Tong.



天后宮

TIN HAU TEMPLE

Phone: 536-6590

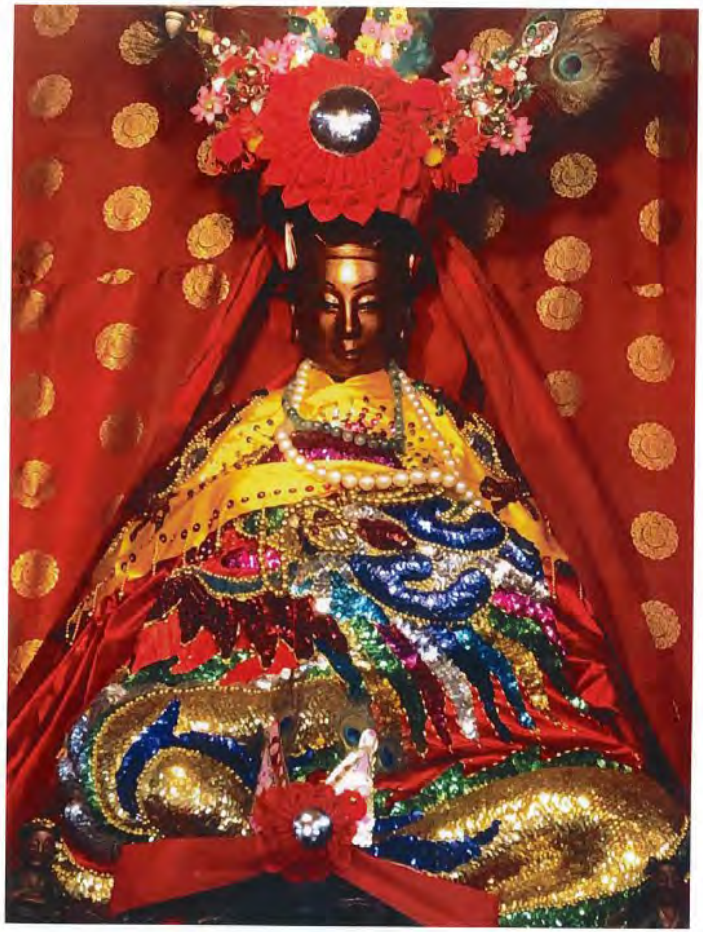
SCHEDULE OF TEMPLE CELEBRATIONS FOR 2019

農歷己亥年公歷 2019/2020 年神誕表

	DAY	DATE	LUNAR DATE	農歷	EVENT		OFFICIATING
2019	FRI	JAN - 18	*戊戌十二月十三	12/13	CHOW TAI PING HOOK	酬太平福	Rev Wen Hao Li
	MON	FEB - 04	戊戌十二月卅	12/30 -	Temple open:	Chinese New Year's Eve	
	TUE	FEB - 05	己亥正月初一	01/01		New Year Day 徐夕晚上通宵開門	
	FRI	FEB - 15	*己亥正月初十一	01/11	ON TAI PING FOOK	安太平福	Rev Wen Hao Li
	WED	MAR - 06	己亥正月三十	01/30	Ghung Jak	驚蟄	
	FRI	MAR - 08	己亥二月初二	02/02	Tu Di Dahn Mun Cheong Dahn	土地公旦 文昌旦	
	MON	MAR - 25	己亥二月十九	02/19	Koon Yum Dahn	觀音旦	
	SAT	APR - 06	己亥三月初二	02/02	Ching Ming Memorial	清明節	
	SAT	APR - 27	*己亥三月廿三	03/23	TIN HAU DAHN	天后誕	Rev Duane PANG
	SUN	APR - 28	己亥三月廿四	03/24	LSHT Spring Banquet Jade Dynasty Seafood Restaurant Begins 6:00 pm	宴會	
	THUR	MAY - 16	己亥四月十二	04/12	Li-Ju Dahn Kam-Fah Dahn Gi-Mee Dahn Wah-Tou Dahn	呂祖旦 金花旦 紫微旦 華陀旦	
	SAT	JUN - 08	己亥五月初六	05/06	PI-KAN "Tai-Kung" Dahn	比干太公旦	
	MON	JUN - 10	*己亥五月初八	05/08	LUNG-MU DAHN	龍母寶旦	Rev Duane PANG
	SUN	JUL - 21	己亥六月十九 己亥六月廿四	06/19 06/24	Koon-Yum Dahn Kuan-Ti Dahn	觀音旦 關帝旦 (Celebrate Jointly with Koon-Yum Dahn)	
	THUR	AUG - 15	己亥七月十五	07/15	CHUNG-MUN DAHN (Siu Yee)	燒衣	Rev Wen Hao Li
	THUR	SEPT - 05	*己亥八月初七	08/07	HOW-WONG DAHN LUNG-MU DAHN	候王寶旦 龍母寶旦	Rev Duane PANG
	MON	OCT - 07	己亥九月初九	09/09	Li_Ju Kuan-Ti Tin Hau Chung-Young	呂祖飛昇 關帝飛昇 天后飛昇 重陽帝昇	
	THUR	OCT - 17	己亥九月十九	09/19	Koon-Yum Dahn	觀音旦	
	THUR	NOV - 14	*己亥十月十八	10/18	DEE-MU DAHN	地母寶旦	Rev Duane PANG
	SAT	DEC - 14	己亥十一月十九	11/19	Koon Yum Dahn	觀音坐蓮	
2020	SUN	JAN - 05	*己亥十二月十一	12/11	CHOW TAI PING HOOK	酬太平福	Rev Wen Hao Li

* Jai lunch served on dates marked with "*"


檀香山林西河堂
壹百三十週年纪念特刊
LUM SAI HO TONG
TIN HAU TEMPLE
LUM SAI HO TONG
1889 堂河西林 2019
天后宮
LUM SAI HO TONG HAWAII
130th ANNIVERSARY
1889 - 2019



HONORING THE 1,059 BIRTHDAY
OF TIN HAU SING MU, OUR GREAT GRAND AUNT

檀香山林西河堂
壹百三十週年纪念特刊

LUM SAI HO TONG
1889 HAWAII 2019

LUM SAI HO TONG
130th ANNIVERSARY
1889 - 2019

1315 River Street
Honolulu, Hawaii 96817
Phone: (808) 536-6590

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Lum Sai Ho Tong Building

INTRODUCTION

2019 marks the 130th Anniversary of Lum Sai Ho Tong. Our first building was completed in 1899, and it also happens to be about 60-plus years ago that our present building was finished. And, so, like in 1989, our 100th Anniversary, we feel that it is very important to update and document the Lum Sai Ho Tong history for the future generations, today. We are able to do this, because of our benevolent and broadminded benefactors, elders and friends who came before us.

However times may have changed, we, at Lum Sai Ho Tong, are thankful, and we strive to fulfill the wishes and the missions outlined for us, by our elders, in our Constitution. So, for the Lum`s, we hope that with this updated book, you will remember who we are, where we come from, and to continue to do your best to honor the positive legacy of our great ancestor Pi Kan and our patron saint Tin Hau Sung Mu, and in doing so, also honor your parents and ancestors and prosper.

To our friends, we wish all you here, tonight, great happiness, health and prosperity. And, to the Lum's, our wish is that you will remember your legacy and pass this on to your descendants, so that in thirty years from now, they may again update this book with greater good than we, and our forefathers, have given.

In Recognition of

130th Anniversary of Lum Sai Ho Tong

WHEREAS, in 1889, a group of immigrants who had made Hawai'i their home established a society clubhouse for men with the surname Lum (including Lin, Lam or Lim); and

WHEREAS, Lum Sai Ho Tong was named after the ancestral homelands of the Lum families which lay west of the Yellow River in China; and

WHEREAS, Lum families trace their roots back to Bi Gan, a noble advisor during the Shang Dynasty (1766-1121 BC) in China and Lum Gu Po, a selfless young woman from the Song Dynasty (960-1126 AD) who was deified as Tin Hau Sung Mu; and

WHEREAS, through the substantial support and commitment of its founders, the society was chartered in 1918 in Honolulu under the Territory of Hawai'i; and

WHEREAS, the mission of the organization is to encourage fellowship, benevolence and assistance among the members and families in Hawai'i; and

WHEREAS, the clubhouse building features a Tin Hau shrine, living quarters, shops, and a meeting room where members could meet, receive and send letters home, worship and ask for assistance; and

WHEREAS, in 1931, Lum Sai Ho Tong became the first Chinese society in Hawai'i to grant membership to women; and

WHEREAS, each year members of Lum Sai Ho Tong celebrate the birthday of Gu Po, Ching Ming Festival, spring and summer activities and more;

THEREFORE I, DAVID Y. IGE, Governor, and **I, JOSHUA B. GREEN, Lieutenant Governor** of the **State of Hawai'i,** do hereby congratulate Lum Sai Ho Tong on its 130th anniversary and recognize its longstanding commitment to their members and the community, preservation of culture, and promotion of respect, tolerance and understanding.

Done at the State Capitol, in Executive Chambers, Honolulu, State of Hawai'i, this fifteenth day of April 2019.

JOSHUA B. GREEN
Lieutenant Governor, State of Hawai'i

DAVID Y. IGE
Governor, State of Hawai'i

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MESSAGE FROM MAYOR KIRK CALDWELL



Aloha! It gives me great pleasure to extend my hearty congratulations and warm aloha to the members of Lum Sai Ho Tong Society of Hawai'i on this auspicious occasion. Over the years, Lum Sai Ho Tong has been an integral part of the development of the island of O'ahu. Originally founded to provide shelter, medical care and other assistance, as well as a place for members to meet who had immigrated to Hawai'i from China in 1889, the society began from humble headquarters on Smith Street.

In 1899, Lum Say Yip donated a parcel of land at 1315 River Street and the Lums erected their first building in 1900. In 1953, a second building replaced the original building. Today, the Lums continue to meet there for their business, cultural and social gatherings.

Over the years, Lum Sai Ho Tong has always been a leader in the Chinatown community, setting many precedents, such as having the first woman president and starting and participating in many cultural events. It has also been an ardent leader and advocate for a cleaner and safer River Street in the mauka area, which also happens to be the cultural center of Chinatown with its many historical temples, shrines, schools and monuments.

Additionally, on the second floor of the building, the Society sponsors and manages the Tin Hau Temple for the Chinatown community, as well as its members. In fact, Tin Hau Temple is open to the public 365 days a year. The principal deity there is Tin Hau Sung Mu, or Gu Po, who also happens to be the Patron Saint of the Lum Family.

On behalf of the people of the city and county of Honolulu, I extend my congratulations and best wishes to the members of Lum Sai Ho Tong for a memorable 130th anniversary celebration and many more prosperous years.

Kirk Caldwell

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CONGRATULATIONS AND BEST WISHES
IN HONOR OF LUM SAI HO TONG'S 130TH ANNIVERSARY
AND TIN HAU SUNG MU'S 1,059TH BIRTHDAY

~~~~~~

A SPECIAL MESSAGE

FROM THE DESCENDANTS OF LSHT FOUNDING MEMBER

LAM TOI (LUM LOP SAI)

~~~~~~

Two years ago, I began to research my Lam family history. (I am 72 yrs old and live in Minnesota.) I followed up on a lead buried in the family papers that said my grandfather, Lam Toi (Lum Lop Sai) helped found a benevolent society in 1889 and was president for 16 years.

It was a long shot, but out of curiosity I Googled: Lum Sai Ho Tong. To my astonishment, a website appeared with photos, directions, and a phone number! Howard Lum, your president and most enthusiastic ambassador took my call. He not only filled me in on all things Lum, but also graciously invited me and my Hawaii cousins to visit when I came to Honolulu.

It was a thrill and highlight of our trip to meet with Howard and staff in January 2018 and to visit in the building and temple on River St. that is such a historic treasure in Honolulu's Chinatown.

My grandfather, Lam Toi, would be so proud to know that the organization that he helped found in 1889, would be valued enough by succeeding generations that it would still be alive over 100 years later. Keeping our family's heritage and traditions alive is not easy to do in this modern age, but it is even more important than ever. I am so grateful to all of you at LSHT that work so hard and contribute so much time and effort to do this.

My family's heartfelt congratulations to you on your 130th anniversary. It is indeed a cause for celebration.

And on behalf of all of Lam Toi's descendants, a sincere THANK YOU!

Pat Katsura-Lam Rollins
April, 2019

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美國夏威夷林西河堂一百三十週年華誕誌慶

西河水秀千秋渡
天后庇蔭萬世昌

美國紐約林西河堂全體宗親敬賀
二零一九年四月八日

Congratulatory message from
New York Lum Sai Ho Tong

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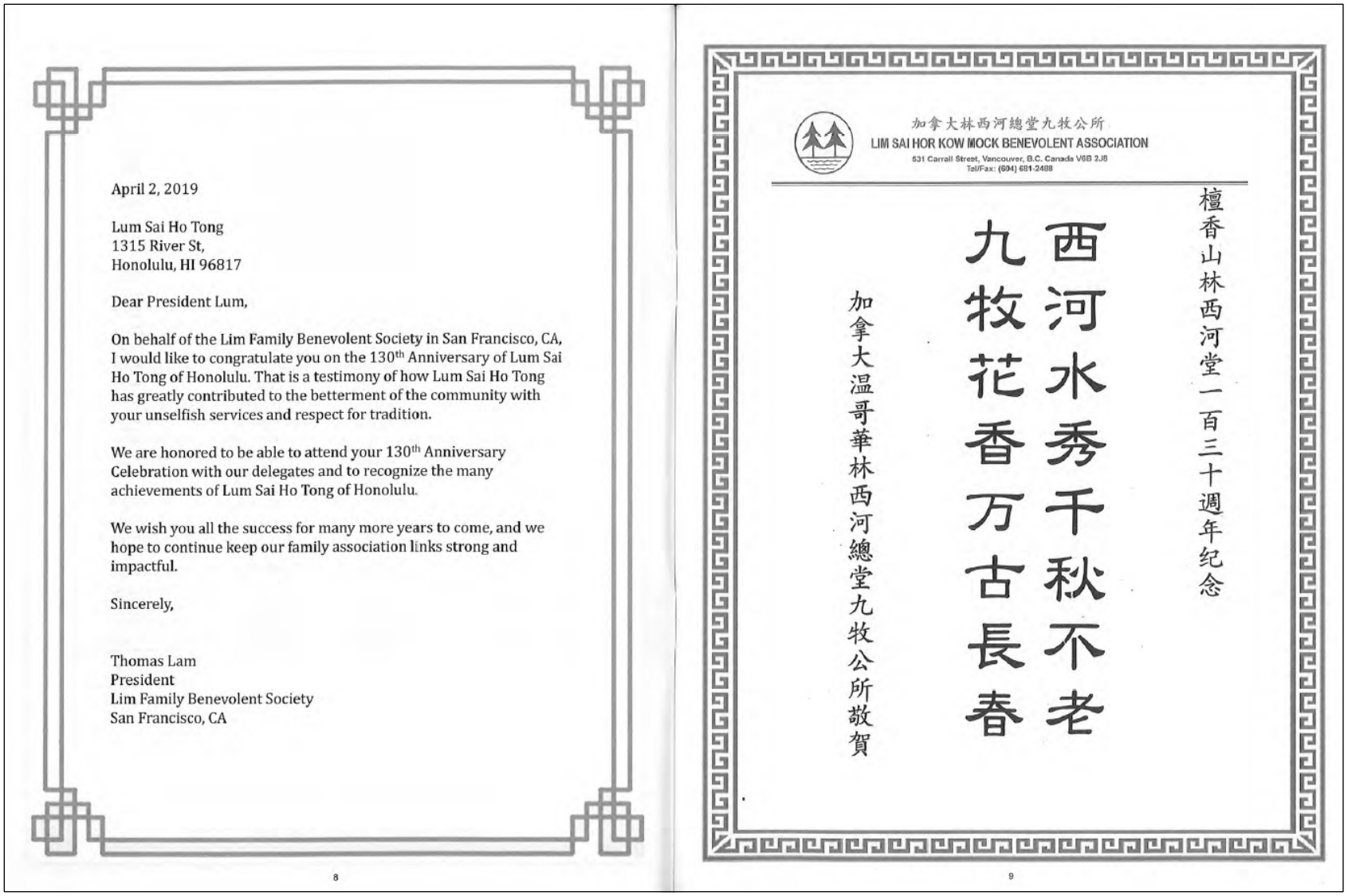

April 2, 2019

Lum Sai Ho Tong
1315 River St,
Honolulu, HI 96817

Dear President Lum,

On behalf of the Lim Family Benevolent Society in San Francisco, CA, I would like to congratulate you on the 130th Anniversary of Lum Sai Ho Tong of Honolulu. That is a testimony of how Lum Sai Ho Tong has greatly contributed to the betterment of the community with your unselfish services and respect for tradition.

We are honored to be able to attend your 130th Anniversary Celebration with our delegates and to recognize the many achievements of Lum Sai Ho Tong of Honolulu.

We wish you all the success for many more years to come, and we hope to continue keep our family association links strong and impactful.

Sincerely,

Thomas Lam
President
Lim Family Benevolent Society
San Francisco, CA

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加拿大林西河總堂九牧公所
LIM SAI HOR KOW MOCK BENEVOLENT ASSOCIATION
531 Carrall Street, Vancouver, B.C. Canada V6B 2J8
Tel/Fax: (604) 681-2488

檀香山林西河堂一百三十週年紀念

西河水秀千秋不老
九牧花香万古長春

加拿大温哥華林西河總堂九牧公所敬賀

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LUM SAI HO TONG PRESIDENT'S MESSAGE
APRIL 28, 2019

Aloha, Good evening and welcome to all.

I would like to thank all of our friends, members and families for joining us at our 130th Lum Sai Ho Tong Spring Banquet and Birthday Celebration in honor of Tin Hau Sung Mu. I hope that all of you have a great time tonight!

Now, this is my 7th term that I have had the honor of serving as president of Lum Sai Ho Tong. And, I especially would like to thank the officers, directors and members of LSHT for the amazing support and hard work they have rendered on behalf of LSHT and the community. To the very best team, the biggest MAHALO!!

On this auspicious occasion, I would once again like to share an observation. Today, I reflect on my 19 years, since I have become an active member in our society and the community. And, I am so thankful that I have had the opportunity to serve LSHT, our members and the community, as our esteemed ancestors, Pi Kan, Tin Hau Sung Mu and many others have done before me. Pi Kan and Tin Hau Sung Mu are the greatest examples of "goodness," and how we should strive to live. So today, I would like to reiterate what I said in 2014, and my picture of the "Circle of Life":

- Always honor your parents – Because of them, we are here today...
- Always honor your family – Because your family is your foundation...
- Always be thankful – Because gratitude is the source of all that is goodness...
- Always give back to your community – Because with your community, you can reaffirm your humanity...

So, tonight, I would like to encourage everyone here to reflect on the "Circle of Life" and do your best to work to fulfill your own " Circle of Life". Strive to be positive, thankful, and happy.... In closing, I would like to wish you all health, happiness and good fortune!

Yours very truly,

Howard C. O. Lum, President

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LUM SAI HO TONG
OFFICERS & DIRECTORS – 2019

President	Howard Chee On Lum
Vice Presidents	Kehaulani Sai Sin Fah Lum Keith Wing Fook Lim Daren G.D. Lum
Chinese Secretary	Yew Fong Lum
Assistant Chinese Secretary	Eva Yip
English Secretary	Phoebe G. Lum
Assistant English Secretary	Betsy Kam Sai Yuen Lum
Treasurer	Kenneth C. K. Lam
Assistant Treasurer	Mona Lam
Auditor	William Hon Kwong Lum
Assistant Auditor	Emil Lim
Directors	Anna Chan Patrick Lam Victor W. D. Lim Bernard Lum Edwina Lum Lita Lum Mabel Lum Richard M. C. Lum (In Memoriam) Richard W. K. Lum (In Memoriam) Colleen Lum Takenouchi
Honorary Director	Lin Shiu Fong

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COMMITTEE PAGE

130th Anniversary Committee

Co Chairs: Keith Lim, Mona Lam, William and Betsy Lum

Banquet & Parade_____ Mona Lam and Keith Lim

Decorations & Flowers___ Daren Lum
Eva Yip

Entertainment _____ Keith Lim

Finance _____ Victor Lim
Kenneth Lam
Eddie Flores

Hospitality_____ Howard Lum
Debbie Fikac
Daren Lum

Program _____ Kehaulani Lum

Temple Rites_____ Rev. Duane Pang

Advisors_____ Gifford Chang
Kelfred K.C. Chang
Leonard Kam
Donna Chang

Editors _____ Kehaulani Lum
Douglas Hom

Advisors ____ Emil Lim, Judy Lam Maxwell
Victor Lim, Eddie Flores

TIN HAU SUNG MU

(KU PO or MATSU)

Tin Hau, also referred to as Tin Hau Sung Mu (or, affectionately referred to by the Lum's as "Ku Po" or "Great Grand Aunt"), was born during the Sung Dynasty (960 - 1126 A.D.), on the 23rd day of the third month of the lunar calendar. The exact year is unknown. She was born a Lum maiden, the sixth daughter of Lum Yuen, an official of Poo Tin County, Fukien Province. Tin Hau was noted for her unselfishness and for her remarkable intelligence. She was hailed as a young lady who was always willing to help others in need.



Legend tells us that, once, during a severe storm, she dived, without hesitation, into deep waters at sea to rescue her father from drowning and tried valiantly to locate the body of her older brother. Her devotion to family and her bravery were known and admired throughout the village.

Tin Hau, however, died at a young age, in her early twenties. Legend goes on to say that even after her death, on numerous occasions, Tin Hau appeared to seafarers during heavy storms, guiding them to safety and saving many from drowning; Hence, she was, and still is, revered, as the "Goddess of the Seas."

The successive courts of the Sung Dynasty and all dynasties in China noticed Tin Hau's deeds. She was conferred the title of "Lady Ling Wai," in the Sung Dynasty, and was called the "Princess of Supernatural Favour," by Emperor Gaozong in 1155 AD. In the Yuan Dynasty, she became, "Tin Fee," and the "Protector of the Empire and the Brilliantly Outstanding Heavenly Princess." In the Ming Dynasty, she was honored as "Gee Sai Sung Fee," with the title, "Protector of the Nation," and she was bestowed the official title "Holy Mother of Heaven Above," by the Yongle Emperor, in 1417. In the Qing Dynasty, her title was raised to the most deified one of "Tin Hau," "Heavenly Queen" or "Heavenly Empress". In 1839, her last Imperial title was given, as, "Holy Mother of Heaven," by the Daoguang Emperor. In all, Tin Hau was given twenty-two official or imperial titles.

Today, at Lum Sai Ho Tong, Tin Hau's full-bodied golden statue occupies a central position, high upon the altar, in a great, golden-sculptured and well-decorated chamber, flanked on her two sides by the statues of "River-Watching God" and "Ocean-Guarding God." Three large incense burners are placed in front of the statues. On the altar table, a set of candlesticks and incense burners are all made of pewter. The table, itself, is finely inlaid with carvings depicting human activities.

Every year, thousands of members of LSHT in Honolulu and the community continue to respect and honor this patron deity at Tin Hau Temple. On the 23rd day of the third month of the lunar calendar, an annual memorial celebration is observed as Tin Hau Dahn (or Ku Po Dahn). On this occasion, individuals worship at the temple, bringing incense and joss candles, as well as silver and gold symbolic paper money, which are burned as offerings to Tin Hau. Some also bring offerings of food, fruits and preserved sweets. LSHT has, throughout the years, celebrated the occasion with a gala spring

dinner banquet, attended by many members, friends and special guests of the Society and the Temple.

During LSHT's Spring banquet in 1981. Mr. and Mrs. Wing Kit Lum donated a beautiful scroll, bearing the portrait of the Goddess "Tin Hau Sung Mu" (Ku Po or Great Grand Aunt). LSHT is very appreciative of their generous donation. The portrait of Ku Po is displayed on the stage every year during the spring banquet.



Today, it is claimed that there are more than 5,000 Tin Hau or Matsu Temples and more than 100,000,000 devotees, throughout China, Taiwan, Malaysia, Indonesia, Hong Kong, Singapore, Vietnam, Thailand, Philippines, Okinawa, South East Asia and the world.

THE MIRACLE OF THE PRINCESS TAI PING

TIN HAU SUNG MU (Ku Po or Matsu)

April 26, 2009

An incident off the coast of Taiwan, of great significance to Hawai`i's Tin Hau Temple, happened in the early morning hours of April 26, 2009. It truly rates as a miracle and is described, herein, relating to the experience of the survivors of the Princess Tai Ping disaster.

The aftermath of a trans Pacific Ocean goodwill tour round trip – Taiwan – Westcoast USA – Taiwan



Photo Courtesy of the Crew of the Princess Tai Ping

Background: The *Princess Tai Ping* was a replica of a 15th Century Ming Dynasty 53-foot wooden sailing warship. Planning for this replica started in early 2000 and construction was completed in 2006. After completion of construction, the vessel embarked on a 5,100-mile goodwill journey across the vast Pacific Ocean, to the West Coast of the United States, and stopping at several coastal cities. On its homeward voyage of another 5,100 miles, from the West Coast to Taiwan, the *Princess Tai Ping* stopped in Honolulu for nearly two months, in early 2009. Prior to their departure from Honolulu, on February 16, 2009, the crew was instructed by Skipper Nelson Liu and Assistant Angela Chao to visit Tin Hau Temple in Honolulu, to pay respect and to ask for blessings and a safe voyage. On January 1, 2009, the crew visited Tin Hau Temple and was invited back, before their final leg back to Taiwan. Three days before their departure date, the crew called and said that they could not come, because their car had broken down. LSHT members picked them up and hosted them. Six Hawai`i residents signed on as crew. Prior to departure from Honolulu, on February 16th, 2009, the crew was instructed by Skipper Nelson Liu and Assistant Angela Chao, to visit the Tin Hau Temple in Honolulu, to pay their respects to the Goddess Tin Hau Sung Mu and to ask for her blessings and a safe voyage to Taiwan. The "Heavenly Queen Mother" is widely known throughout the East Coast of China and among Southeast Asian nations as the "Savior of the Seafaring People."

A Tempest at Sea: On the final leg of its 5,100 mile westward journey across the Pacific Ocean, about thirty miles south of its homeport in Taiwan, in a raging tempest, the *Princess Tai Ping* sailed slowly, to delay entry into port until daylight. A Liberian flagged tanker was also in the vicinity, northeastward bound. Its course appeared to have it pass about two miles away. For unknown reasons, the tanker changed its course sharply and headed directly for the *Princess Tai Ping*. Skipper Nelson Liu, of the *Princess Tai Ping*, immediately called the tanker and notified them they were on a collision course, which the tanker acknowledged. It was too late, however, and the tanker collided into the *Princess Tai Ping*, shearing it in half and continued to sail off. The disaster occurred in the gloom and darkness of early morning on April 26th, 2009, 2:30 am - Taiwan time (8:30 am April 25th Hawaii Time).

Most of the crew of the *Princess Tai Ping* was gathered on the stern section of the vessel at the time. There was no way distress signals could be sent by the crew, clinging on to wreckage and debris from the vessel. However, thanks to a miracle, their beacon, acquired earlier during the voyage, floated up from the wreckage and was retrieved by a crewmember, in pitch darkness. Upon activation, the emergency beacon distress signals were transmitted across the Pacific, intercepted by the US Coast Guard in Hawai`i and West Coast, then, relayed back to the Coast Guard station in Taiwan.

Another Miracle: Unexpectedly, at dawn, floating among the debris from the severed vessel was *a bright golden yellow cape*. It was eagerly retrieved by the crew and used to attract the Taiwan Coast Guard rescue team that had arrived on the scene at first light of dawn to search for survivors. The cape was part of the garment used to adorn the statuette of the Goddess Tin Hau Sung Mu, housed in a shrine located at the stern section of the vessel.



Photo by Keith Lim

After nearly six hours at sea, still clinging to the wreckage, all of the crewmembers of the *Princess Tai Ping* were rescued and transferred by helicopter to area hospitals for observation. A senior crewmember, Professor Thomas William Cook, was detained for several weeks, for his injuries. The remaining ten crewmembers sustained only minor injuries and were released after treatment. Heeding the advice of Skipper Nelson Liu and Assistant Angela Chao, the five Hawai`i residents, including several other of their USA friends, returned to Honolulu on a pilgrimage to the Tin Hau Temple, on May 19th, 2009, to give thanks to the Goddess Tin Hau Sung Mu (Ku Po) (Matsu) for their safety and miraculous rescue. Honor, praise and tribute are given to Tin Hau Sung Mu and the brave crew of the *Princess Tai Ping*.

Mahalo to the crew of the Princess Tai Ping for sharing of a frightening, but, thrilling, experience:

Skipper Nelson Liu, Taiwan
Assistant Angela Chao, Taiwan
Tang Yu-Quan, China
Professor Thomas Cook, USA
Larz Stewart, Honolulu, Hawai`i USA
Jason Arnold, Honolulu, Hawai`i USA
Jack Durham, Honolulu, Hawai`i USA
John Hunter, Honolulu, Hawai`i USA
Liz Zeiger, Honolulu, Hawai`i USA
Kinjo, Okinawa, Japan
Mori, Okinawa, Japan







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THE ORIGINATOR OF THE LUM CLAN
PI KAN

The original ancestor of the Lum clan was Minister Pi Kan, who was born 3,111 years ago. A direct descendent of Huang Di, the Yellow Emperor, Pi Kan served in the court of King Tzou, his nephew, during the declining years of the Shang (Yin) Dynasty (1766-1122 B.C.). Pi Kan was one of the King's three closest and trusted advisors administering the affairs of the country.

King Tzou was described as a cruel and tyrannical ruler. He issued harsh punishments and committed shocking atrocities among his subjects. Instead of minding national affairs for the good of the people and country, King Tzou, it was said, indulged in degrading vices and was influenced by those who sought to please him for their own gains. There was great concern about unrest and rumors of rebellion to overthrow the Yin Empire, especially among King Tzou's closest advisors, Prince of Wei, Senior Tutor Jizi and Junior Tutor Pi Kan. They used every occasion to inform King Tzou and pressed for reform. Eventually, Prince of Wei and Senior Tutor Jizi, fearing for their lives, feigned illness and left the court.

Pi Kan was an honest statesman, known for his courage and forthrightness. He continued to see King Tzou, to persuade him to mend his ways, in order to save the empire. King Tzou was untouched by Pi Kan's devotion and loyalty to court and nation. Pi Kan pleaded and admonished King Tzou, the drunken despot, for three days. Finally, the King replied, "I have heard that while an ordinary man's heart has five apertures, a sage's heart has seven. Pi Kan must be a sage. Let us see whether his heart has seven apertures or five." And, he ordered Pi Kan killed on the spot, to have his heart examined.



King Tzou, still not satisfied, ordered the execution of all who were related to Pi Kan. At the advice of an elderly servant, Pi Kan's wife, Yu Chi Shih, who was expecting a child at the time, fled to a stone house in the forest, near a spring of water. There, a son was born. This son, later named Lin Chien, ("Lin" meaning "forest" and "Chien" meaning "a spring of water") was to become the ancestor of subsequent generations of Lum descendants.

Following the execution of Pi Kan, the empire of King Tzou was overthrown by Prince Ji-Fa, thus, ending the Shang (Yin)

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Dynasty and beginning the Chou Dynasty. The new sovereign, Prince Ji-Fa, assumed the title of "Wu Wang," translated as "Martial Emperor Wu." Soon thereafter the new sovereign, Wu Wang, proceeded to take action towards winning the confidence and respect of the people of the empire and of Yin, in particular. He also sought and released political and military prisoners of the deposed Tzou and restored the honors, which they enjoyed in the Yin court.

In order to exemplify loyalty and bravery, Wu Wang ordered Pi Kan's tomb reconstructed and erected a bronze plaque on which was engraved an elegy:

"With a forest of trees on the left, a spring of water on the right. And facing hills in the front, served by a road at the back. The Spirit of Ages, therefore would be eternally preserved."

Furthermore, Wu Wang conferred upon Pi Kan's heir a high title in his court. The name "Chien," as well as the surname of "Lin" (Lum), was conferred upon him out of respect to his birthplace in the forest. The Chinese Lum character, 林, consisting of two trees means "forest." Such royal grant of a name was of the highest honor. Thus, the Lum clan began with the only son who was heir to Pi Kan.

This is a brief history of the Lum Family which dates back about 3,110 years with the martyr, Pi Kan, as the original ancestor whose birthday falls on the sixth day of the fifth month of the old Chinese Lunar calendar. On this day, the various Lum family groups throughout the world celebrate his birthday under the auspices of their family organization.

All such family organizations throughout the world are called, Lum Sai Ho Tong. "Sai Ho," meaning "West River," was the name of Pi Kan Kung's birthplace and where he lived, until the despotic King Tzou executed him. It is located on the west side of the Yellow River in Shensi Province in Northwest China. Thus, the Lum's, to this day, consider and honor the loyal and faithful Pi Kan as their original ancestor, and his son, Lin Chien, as their forefather.

The Lum Clan spread far and wide around the world, and thousands have distinguished themselves prominently in academia, military, government, and business. Some of the most famous Lum's were: Lum Fang (551 BC-479 BC), outstanding student of Confucius. Also, Lum Li, who migrated south to Jiangsu Province (265-316 AD), where he had six sons, nicknamed the "Six Dragons," for their extraordinary strength. One of them, Lum Luk, was commissioned by Emperor Yuen to expel the insurgents of the five border tribes from the south. This took three years and became known as the Fon Chia Disturbance. During this campaign, Luk crossed the Yangtze River to Jin An, present day Fujian Province. He became governor and during the Tang Dynasty, the Lum Family was the largest in Fujian Province. Luk's descendent, Lum Pee, had nine sons who all became governors of nine different provinces, and thus became known as the family of nine Governors.

At the end of the Sung Dynasty, Tin Hau, Grand Lady Matsu, was born to the 22nd generation of Luk. She was born on Poo Tin Island, Poo Tin County, Fujian, around 960 AD. She is considered to be the patron saint of the Lum family.

Then, during the Qing Dynasty, came Lum Chek Shu, the righteous Governor of Quantung and Quangxi, who banned and destroyed the opium brought in by the British and exposed the evil of the drug.

After the Qing Dynasty was overthrown, another patriot of the Lum family, Lum Sim, was elected president of the Republic of China in 1932, and served for three consecutive terms. At the turn of the 20th century, the

Lum Family migrated in large numbers to many countries and continued to grow and prosper. Throughout the world, wherever there are groups of Lum's there are organized associations called Lum Sai Ho Tong, to enable members to appreciate their roots, help one another, and to preserve their noble traditions and culture. Today, most of these associations also contribute and support their communities via charities and community services.

Pi Kan is regarded as "The most faithful minister in history," because of his loyalty to the Shang Dynasty, even at the cost of his own life. Although Pi Kan is primarily known for his great loyalty, equally important is his reputation for great honor and compassion for all people. Thus, he is also known throughout China as the patron saint of businessmen and "The God of Civil Wealth and Culture."

PI KAN'S TEMPLE COMPLEX

After King Wu of the Chou Dynasty ascended the throne, he repaired Pi Kan's tomb and restored, posthumously, all of Pi Kan's titles. Recognition of Pi Kan was then expanded by the Xiawen Emperor, Tuo Bahong, of the Wei Dynasty, who personally paid a visit in 386 AD. By imperial decree, he ordered that a temple be built before the tomb. It is the Pi Kan Temple of Weihu today.

After the second thousand years, the Ming Emperor, Xiazong, paid a formal visit to the Pi Kan Temple in 1494 AD. He then repaired and established the scale and shape of the temple as seen today. Thereafter, it was called, "The First Temple Under Heaven."

In 1993, after 500 years, the first Weihu Pi Kan Commemoration was held to celebrate Pi Kan's birthday. In 2006, in preparation for the 3100th birthday celebration for Pi Kan, the Weihu municipal government, together with the Weihu Pi Kan Commemoration Committee, sponsored a project to expand and enlarge the complex and to call it the "Honan Weihu Pi Kan Tourism Zone." In May 2008, on Pi Kan's 3100th birthday, hundreds of thousands of visitors visited the temple to pay their respects.

Throughout the temple complex, one can find many rare and historical relics, such as, the 64 Stone Steles, which includes the only known Stele carved with a sword by Confucius, himself, and Steles written by the Xiaowen emperor and Emperor Qianlong.



HISTORICAL BACKGROUND THE FIRST CHINESE IN HAWAI'I — 230 YEARS AGO

The first Chinese visitors to set foot in Hawai'i arrived two hundred thirty years ago, in 1789, according to available information. They were probably carpenters, craftsmen and seamen traveling on their own accord or working as crewmen on American and European trading ships engaged in the sandalwood trade, between the Kingdom of Hawai'i and China.

The Chinese arriving in Hawai'i during the period 1830-1840 were merchants, businessmen, technicians and skilled craftsmen. Contrary to western stereotype, they were not laborers. The first major wave

of 200 contract laborers arrived in Hawai`i in 1852, to work on the sugar plantations. From that time until the turn of the century, about 46,000 Chinese arrived in Hawai`i. The vast majority of these people came from various villages and districts in the Kwangtung Province.

EARLY LUM IMMIGRANT

Exactly when the first person with the surname Lum arrived in Hawai`i is not known. However, prior to the period of the arrival of the first group of Chinese contract laborers in 1852, a young man by the name of Lum Ching, from Nam Kai Village, Kung Sheong Doo District, Chung Shan County, Kwangtung Province, came to Hawai`i to practice "Kum yee hok," a trade based on his knowledge and skill of an astronomy/geology-based study. He would be seen carrying two round "magic" instruments on the outskirts of Honolulu, studying the environment of various locales. These instruments were the "low poon," an astronomy-based compass, and the light-reflecting mirror. Lum Ching correlated heavenly bodies, especially stars, to geographic features on earth, such as mountains and rivers. This study of sky and earth was applied to specific sites, to forecast favorable or unfavorable characteristics of the sites concerned.

Later studies revealed that Lum Ching died and was buried in Hawai`i. This was confirmed with the finding of a tombstone at the Mānoa Chinese Cemetery, owned by Lin Yee Chung Society, in Honolulu. During the decades that followed, the resting place of Lum Ching Kung deteriorated from exposure to the weather and neglect. In May 1948, President Lum Yee Nung wrote to President Ching Chow and the Directors of Lin Yee Chung, requesting that a new tomb be provided for Lum Ching Kung and that the original tombstone be relocated to a new burial site, in order to preserve this segment of history of the Lum`s. The Lin Yee Chung Association granted Lum Sai Ho Tong's request. Thereafter, each year during Ching-Ming (Pure Brightness Festival), LSHT members visit the tomb of Lum Ching Kung, to pay their respects to this pioneer ancestor.





THE 130-YEAR HISTORY OF
LUM SAI HO TONG
1889 – 2019

FOUNDING OF (LUM) SAI HO TONG — 1889

Many years passed since the arrival of Chinese to Hawai`i, before a group of men decided it would be of mutual interest and benefit to organize an association of individuals bearing the Lum surname. In 1889, they established themselves as Sai Ho Tong.

The Society's purpose was to provide for the basic needs of its Lum members. In those days, the society was an abode for across-the-Pali travellers. Residents of the Windward area coming to Honolulu spent 10 to 12 hours riding by horse and buggy or spent hours walking across the mountain. Here, they could gather at a central place, away from their everyday work environment on the plantations, to meet with other friends; a place to receive and send letters home; a place where other clan folks could help one another to read and write letters to families and relatives still in China; and, a place where assistance could be obtained in times of illness or financial need.

In addition to providing for the worldly needs of its members, the clubhouse further provided for their religious needs as well. Ancestral worship among many families played (and still plays) a prominent role in the life of the Chinese. At the clubhouse, there was a place for worshipping Tin Hau.

Lum Sai Ho Tong was first located on Smith Street, between Hotel and Pauahi Streets. During the initial ten years, members rented a clubhouse near the Sun Yin Wo restaurant. Travelers from the country districts found food, shelter and a hearty welcome at the Lum headquarters. The aged of the Lum family found help there, and members who had no permanent homes also made it their headquarters, even having their mail sent there. The society provided medical aid and gave free advice in business matters, such as land transactions. Younger members even gave steamship tickets to older members who could no longer work and who wished to return to China. Eventually, they were even helped to find refuge in the Palolo Home.

Records indicate that among the original founders, Lum Duck Sun, Lum Duck Yew, Lum Gee Hoon, Lam Toi, and Lum Gee Wah provided substantial financial support annually towards maintenance and operation of the Society.

By the late 1890's, ten years after the founding of the Lum clan, the Society was still without its own building. The desire for a clubhouse that the Society could call its own and for a permanent base of operation kindled Lam Say Yip (prominent farmer and rice merchant and father of renown businessman Eddie Lam) to generously donate a parcel of land to the Society, in 1899. As President and one of the early benefactors of Sai Ho Tong, he came from the village of Buck Toy, Leong Doo, Chung Shan County, Kwangtung Province. This site of 2,486 square feet, located on River Street near the corner of Kukui Street, continues to be the location of the Society's headquarters, 130 years later.

Further, Lam Say Yip and his wife, Lam Lau See, each contributed money to kick off a fund drive for the new building ($500 and $200, respectively; totaling over $20,000, in today's value). The deed to the property was put into a trusteeship consisting of Lam Toi, Lum Wo Sing and Lum Kam Chen, with the understanding that they would deed it back to the society, after it

had been incorporated. Incorporation took place in 1918.

The task of planning and fundraising for construction of the new building was delegated to Lum Kum Chin, Lum Kum Fat, Lum Lup Mow, Lum Wo Sang, Lum Won and Lum Yip Kee. Eventually a two- story wooden building was built.

Along with the generous financial contributions that were needed to erect the building, members made many other significant donations. These included: A wooden arch with "Tin Hau Kung" carved on it, which was erected to face the river; Statues of the God of Door, the God of Wealth and the God of Territory; A complete set of valuable weapons; High mounted "Silence" and "Deference" notice plaques; A large bell and drum set; A large incense burner for the Heavenly God; A pair of large porcelain vases made in the Han Dynasty; One jade chop; One cedar incense burner; One bronze gong; A pair of cymbals; A pair of small gongs; and, many chairs and embroidered cushions.

Construction was completed by the end of 1899, however, the official opening of the building was delayed until June of 1900, due to a major epidemic. Authorities contended that the bubonic plague was so severe that they burned and destroyed over 38 acres of buildings in Chinatown, to stop its spread. Over 4,000 Chinatown residents were quarantined in Kalihi or displaced to Liliha, causing tremendous fear and anxiety in the community. When the ashes settled, Sai Ho Tong's new building was outside the quarantine area and, fortunately, was saved from destruction.

The new building was subsequently named Lum Sai Ho Tong (Hall of Lum Society) and Tin Hau Kung (The Temple of Tin Hau). Auspiciously, it faces west toward a river (Nu`uanu).

HISTORICAL EVENTS 1919 – 1953

In February 1919, President Lum Yum and other members of the Board of Directors convened to approve the construction of the second two-story building and the renovation of the original one. The upper story of the front building housed Tin Hau Temple and a conference hall, and the ground floor had two rooms, for rental. The upper story of the back building consisted of a large room, for living quarters; and, the ground floor housed a bedroom, a room for the elderly, and a sick room.

From 1919 to 1931, Lum Sai Ho Tong was under the leadership of Presidents Lum Yum, Lam Toi, Lum Hop, Lum Man Sook, Lum Kung and Dr. Kalfred Dip Lum.

In 1931, LSHT Directors historically voted to expand its membership. To do so, full membership status was offered to female members (Lum sisters and sisters-in law) of the Lum clan. Thus, men and women would pay equal membership fees, enjoy the same rights and privileges, and share the same responsibilities. Thereupon, Mrs. Lee Lum Mew Wing, Mrs. Lum Hop and Mrs. Lum Mow Chin were selected to handle registration of new members. The Lum Society may have been the pioneer among the Chinese societies to grant full membership to women. Indeed, even the Pacific Club was a male-only organization, at this time.

During the same year, LSHT published its regulations and bylaws in English and Chinese, for the first time. Lum Wing Kwai was the President; Lum Chun Chee, the Secretary; and Lum Jock Chin, Lum Chock Fu, Lum Gun, Lum Wo, Lum Cheong and Lum Kee Chung, the Directors.

In 1932, further changes and renovations were made to the LSHT building. The large living quarters on the upper story of the back building were converted into an open conference hall. An altar was erected to worship the Lum clan's grand ancestor, Bi Gan Kung. Thereafter, annual celebrations to observe Bi Gan's birthday were held on the sixth day of the fifth month of the lunar calendar.

In January 1935, the Lum Society membership commenced planning an elaborate celebration of Tin Hau's birthday. On this occasion, Tan Sing Dramatic Club was invited to perform. The celebration committee included Mrs. Lum Lee Kwai Sin, Mrs. Lum Lai, Mrs. Lum Kwock, Mrs. Lum Mow Chin and Aunty Ting Pai.

A year later (1936) on the 23rd day of the third month of the lunar calendar, members of LSHT celebrated Tin Hau's birthday. LSHT used this occasion to honor its elderly members. As part of this celebration, LSHT families also attended a Cantonese opera performed at the A`ala Theater. This opera played before a capacity audience of young and old, men and women.

The year 1949 was the 60th Anniversary of LSHT. Under the Presidency of Lum Yee Nung, the Society held its anniversary and Tin Hau's birthday celebrations at the Wo Fat Restaurant on April 24. Many guests were invited to this event.

In 1951, the Hawai`i Chinese community observed the 100th Anniversary of Chinese workers arriving in Hawaii. The United Chinese Society organized many events in the Chinese community to celebrate this historical event. One such activity was a beautiful parade of floats. The Lum Society was proudly represented in this parade by sponsoring five lovely floats. Lum Quon Chock loaned the vehicles. Also in 1951, LSHT expanded its activities to members by teaching Kung Fu and other Chinese martial arts.

The Society in 1952 embarked on a major initiative — to raise funds for and to construct a new society hall and temple. In July 1952, LSHT extended its focus to include youth and youth activities. A youth department was added to include membership enrollment and registration of young people.

A NEW CHALLENGE — A NEW BUILDING

Keeping up with the Neighborhood Redevelopment plans in 1952, the officers and directors undertook two major challenges — first, the construction of a new building and second, fundraising to cover the construction cost.

The low bid, by Calvin Ching, was $49,750. When Lum Yee Nung consulted professional builders, they estimated minimal costs at $47,000 ($445,000 in 2019 dollars). Treasurer Lum Kam Chee assisted by President Lum Wah Hin, Vice President Lum Quon Chock, Lum Chung Chee, Lum See Tuck, Lum Wo, Lum Wah Chan and many others handled the fundraising effort. The total amount collected was $24,000. Added to the existing treasury, the building fund amounted to $35,000. The total cost of the building was projected at $45,000. Lum Quon Chock, Lum Wah Hin and Eddie Lam generously offered to defray any cost overrun, should this amount prove to be insufficient.

The preparation of plans and specifications and construction of the new building were under the capable management of Lum Quon Chock. He generously waived his fees for preparation of the plans and specifications. The members, who wanted to see the building started, applauded him.



Lum Wah Hin, Lum Quon Chock & Alfred K. C. Lum

Eddie Lam chaired the construction committee. Lum Wah Hin and Lum Quon Chock were appointed overseers of building construction; Lum Soong Him was the fiscal officer, and Lum Soong Bow and Lum Wah Fat were auditors. (It is interesting to note that there was no written contract for the construction.)

The design for the ground floor included two spacious rooms for shops in the front and five rooms for living quarters in the back. On the second story, the front would house Tin Hau and in the back, a large kitchen, two toilets and washrooms. The third story would include a conference room and a storeroom. The roof of the building would be in the traditional Chinese architecture.

Prior to construction of the new building, the old building would be torn down and the name of the titleholders to the land corrected to Lum Sai Ho Tong, with proper registration and public announcement. LSHT was thus assured that the land would not be sold and Tin Hau Kung would not be abolished.

TRANSFER OF TIN HAU STATUE

President Lum Wah Hin arranged for the transfer of Tin Hau to Kuan Yin Temple on the 28th day of the 5th month of the lunar calendar (1952). On that day, between 5:00 a.m. and 7:00 Tin Hau's golden statue was transferred to Kuan Yin Temple where it was temporarily enshrined during construction of the new LSHT building. Members of LSHT paid their respects to Tin Hau and a banquet was held that afternoon.

GROUND-BREAKING AND CONSTRUCTION OF NEW BUILDING BEGINS

Once Tin Hau was relocated, plans for groundbreaking ceremonies began in 1952. Taoist priest Lee Han blessed the grounds in accordance with Taoist rites.

In August 1953, demolition of the two old buildings and construction of the new building began. After the work on the foundation for the new building started, poor ground conditions were discovered and needed to be corrected. Two options were considered: Steel piles or a cement surface. If steel piles were driven, the additional cost would further strain the shortage in the project's budget.

The second option was to remove the existing ground fill of mud and refill the site with rocks and concrete mixture and top with concrete. This method provided sufficiently strong to support the building and was approved by the Building Department of the City and County of Honolulu.

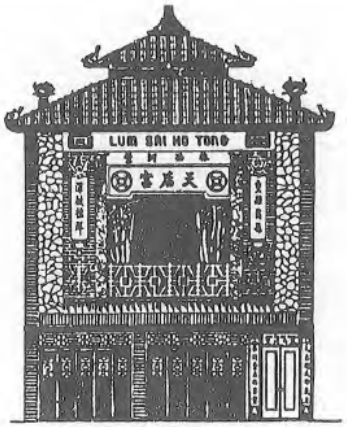
After the decision was made to stabilize the foundation with rockfill and concrete pad, construction of the building began. To reduce expenses, members took on various works themselves. Lum Wah Hin, Lum Quon Chock and Eddie Lam handled procurement of materials and contracting labor forces. Past Presidents Dr. Fred Lam, Lum Chung Chee, Lum Kee Chung, Lum Hong Chee, Lum Wo, Lum Yee Nung and Lum Wah Chan were project overseers.

Work progressed well and the new building was completed on schedule in November 1953.

RITES FOR THE RETURN OF TIN HAU'S STATUE

Upon completion of LSHT's new building, the statue of Tin Hau was re-enshrined in the new temple. Solemn rites were performed to welcome back the sacred statue, on the 15th day of the 11th month of the lunar calendar at 4:00 a.m. All members of LSHT gathered first in the new building, then, at 5:00 a.m., they proceeded to Kuan Yin Temple, to escort the statue of Tin Hau back to her new temple. In the procession, the statue was carried high on the shoulders of the bearers. Upon arrival at the new temple, rites were performed to express gratitude to the "God of Heaven." At the gate of the new temple, solemn respects were paid to the "God of Doors." The central doors were then opened and rites of lighting up the eyes of the statue were performed. The statue of Tin Hau was then returned to its central position on the altar.

One month later, starting on the 15th day of the 12th month of the lunar calendar, Taoist rites were held for three days and three nights. Priest Lee Han presided over the rites, assisted by four priests. Six musicians provided music for the occasion. Many paper images of gods were burned as offerings. Also "heaven" and "earth" rosters of over 6,000 devout followers were included and recited in the ceremony. The rites lasted through the night of the 17th day. Much credit for the success of this event was due to the Lum sisters and sisters-in-law, for their valuable services during this three-day event. Further, it was determined that the 25th day of the 12th month of the Lunar calendar was a suitable day to enshrine two other statues. Therefore, the golden statues of the Dragon Queen and the Terra Queen were placed beside Tin Hau on the altar. Each of the three queens has as her attendants a pair of boy and girl statues, known as Golden Boy and Jade Maiden. (In Chinese mythology, a "dragon" symbolizes supreme power controlling all water sources — oceans, seas, lakes, and rivers.) Mr. and Mrs. Lum See Duck, owners of the Sun Jun Hing antique shop, and other devout followers, donated the Dragon Queen and Terra Queen statues.



Lum Sai Ho Tong Building

DEDICATION OF THE NEW BUILDING

In June 1956, a meeting was called to discuss the details of the rites and ceremonies to celebrate the opening of the new building to the public. November 18, 1956, was the auspicious day of the dedication. It marked a milestone in the history of Lum Sai Ho Tong, which was established in 1889; 67 years previously, in a humble rented upstairs room on Smith Street.

A ribbon-cutting ceremony was held at noon, followed by a cocktail party from 2:00 to 4:00 p.m. A list of donors, with their photos and amount of individual donations, was posted on the bulletin board. To climax this historic event, a banquet was held on Sunday, December 2, 1956, at 5:00 p.m., at the Chinese American Club.

The following Committees were appointed for this event:

Chairman	Eddie T. Lam
Co-Chairman	Dr. Fred K. Lam
Finance	Lum Wah Hin
Chinese Secretary	Lum Yee Nung
English Secretary	Dr. Alfred C. S. Lum
Banquet	Arthur Wo Lum
Social Activities	Lum Quon Chock
Host	Calvin K. C. Lum
Chinese Public Relations	Lum Wah Chan
English Public Relations	Richard T. F. Lum
Program	Rose L. Lum
Cashiers	Lum Hung Lun
	Lum Wah Hin
	Lum Wah Chan
Decoration	Lum Kam On
Publications	Lum Hon Chee
	Eddie Lam
Invitations	Eddie Lam
	Dr. Fred Lam
	Lum Yee Nung
General Affairs	Lum Hung Lun (Kalihi)

STATUE OF KUAN YIN MOVED TO TIN HAU TEMPLE

In 1958, the Kuan Yin Temple was to be demolished and replaced with a new building. On June 7, the original statue of Kuan Yin, and other statutes, were temporarily enshrined at Tin Hau Temple. Taoist rites were performed throughout the day and night.

ACQUIRING THE ADJACENT PARCEL OF LAND

In early 1961, the Honolulu Redevelopment Agency (HRA) of the City and County of Honolulu wrote to LSHT offering to sell the adjacent parcels of land. The letter also stated that if the parcels were bought by someone else, LSHT could be required to relinquish its present land holding in order that the buyer would be able to carry out his development plans.

A meeting was held on February 18, 1961, to discuss this matter. The land offered contained an area of 9,282 square feet, which, at $5.80 per square foot, would cost $54,000 ($457,000 in 2019 dollars). The requirement was that 50% of the area be reserved for parking. Further discussion was held at a general membership meeting on March 12, at which time a decision was made to acquire the adjacent parcels of land.

At that time, LSHT had $20,000; short by $34,000. This necessitated borrowing the additional funds needed. However, the monthly payments to the bank would be more than LSHT's income. Finally, the Directors decided that a portion of the funds, in the amount of $10,000, would be borrowed from members. LSHT President Richard M.C. Lum was in charge of arranging the loan. After much effort, Richard M.C. Lum and Secretary Lum Kam Ping went to the Honolulu Redevelopment Agency to sign the contract. A deposit of $2,700, 5% of the total purchase price, was made on October 20, 1961. The HRA also agreed to permit LSHT to construct buildings on the property for commercial use. The following year, 1962, HRA agreed to level the ground so that the Society could use it for parking.

At the time of the acquisition of the adjoining parcels of land, Mrs. Yee Lum Sui Heong loaned the Society the sum of $5,000, and Mrs. Sin Heong, the sum of $1,000, each waiving interest for the first year in order to assist LSHT in purchasing the parcels of land. LSHT honored its agreement with the two lenders and repaid the loans, including accrued interest. Today, this location at 1315 River Street continues to be headquarters for Lum Sai Ho Tong and Tin Hau Temple.

THE 70TH ANNIVERSARY - 1959

LSHT observed its 70th Anniversary with ceremonial rites on September 6, 1959, under the presidency of Alfred Kam Chee Lum. He donated a whole pig for the occasion. A cocktail party was held at 2:00 p.m. Many leaders and members of the Chinese community were invited. A banquet climaxed the event on September 20, 1959.

THE 75TH ANNIVERSARY - 1964

On February 27, 1964, LSHT had its own statue of Kuan Yin enshrined in Tin Hau Temple. At 8:00 a.m. enshrinement rites were held and Taoist priests were invited to light up the eyes of the statue. Respects to stars and constellations were made.

Also, in February, at a regular and general meeting, President Lum Kam Ping suggested that LSHT reactivate the youth group. Clarence Wing Hoon Lam was elected director and Charles Tung Cho Lum and Lum Yu Hing as assistants to handle all youth activities.

On November 8, 1964, LSHT celebrated its 75th anniversary under the presidency of Lum Kam Ping. A cocktail and dinner party was held. Leaders and members of all Chinese organizations and societies were invited. Alfred Kam Chee Lum was the chairman.

During the same year, rainwater flooded the first floor store spaces. Lum Wah Hin and other loyal members helped clean and repair the building. Also, the statues of the gods in the Tin Hau Temple needed replacement. This was accomplished through generous donations from members and friends. In November 1965. Taoist rites were performed for the placing of the new statues.

Lum Wah Hin brought back from Hong Kong one horizontal and two vertical embroidered brocade hangings for the Temple and the ritual robe for Taoist rites

AMENDING LUM SAI HO TONG'S CHARTER OF INCORPORATION - 1964

On October 11, 1964, a general membership meeting was called to discuss amending the Charter of Incorporation of LSHT.

LSHT was first chartered in 1918, under the statute of the Territory of Hawai`i. Several provisions of the Charter required revision and/or amendment. As the Charter then provided, the assets of LSHT should not exceed the value of $50,000. With LSHT's acquisition of the adjoining parcels of land, the combined value of the land and improvements exceeded the limitation. The membership unanimously approved amendment of the Charter of Incorporation to delete the $50,000 limitation and to increase the limitation to $500,000. The amendment was filed with the Department of Regulatory Agencies, State of Hawai`i. Attorney Richard M.C. Lum provided legal services, at no cost to the Society.

In 1966, LSHT was notified that it would not qualify as a tax-exempt corporation because, as the Charter read, upon dissolution of the corporation, all of its assets would be distributed to its members. This matter was referred to President Richard M.C. Lum for corrective action. The Charter was amended prior to December 31, 1966, to provide that, upon dissolution, the assets of the dissolved corporation would be distributed to another nonprofit corporation and/or entity.

In early 1967, all nonprofit corporations, including LSHT, had their respective Charters of Incorporation reviewed and/or amended, in order to qualify for and obtain tax-exempt status, under the existing Hawaii Statutes and Internal Revenue Service rules and regulations. Richard M.C. Lum reviewed this matter, and he reported that LSHT's Charter of Incorporation was in order and in compliance with all the existing statutes and rules and regulations.

STATUE OF HAU WONG MOVED TO TIN HAU TEMPLE - 1967

On April 30, 1967, a special general membership meeting was held to consider the request of Mr. Lai Kam Lee, of the Hau Wong Temple on School Street, to accommodate the statue of Hau Wong at the Tin Hau Temple, during construction of their new temple. This request was approved at the general meeting. Lum Wah Hin and Lum Wo were elected chairmen of the committee to welcome the statue of Hau Wong to Tin Hau Temple. The day of enshrinement of Hau Wong was June 9, 1967, the 2nd day of the 5th month of the lunar calendar.

THE 80TH ANNIVERSARY - 1969

LSHT celebrated its 80th Anniversary on April 19, 1969, under the presidency of William Hon Kwong Lum. A banquet was held at the Yong Sing Restaurant. Leaders of the Chinese societies were invited, and many Lum members attended and enjoyed the festivities.

THE 90TH ANNIVERSARY - 1979

LSHT celebrated its 90th Anniversary in October 1979, with a large banquet at the Empress Restaurant. Richard Wah Chew Lum was the president. The Society received many gift scrolls and silk hangings for this occasion. Judge Richard M.C. Lum was the master of ceremonies. The Wo Lok Music Club provided the Chinese music and Lung Kong Martial Arts performed the lion dance. Consul General of the Republic of China, Admiral Hoh-Tu Liu, was one of the honored guest speakers at the banquet.

SUPPORTING THE WORLD LIN'S ASSOCIATION and CHEW TIN KUNG, A SISTER TEMPLE – 1980

Lum Sai Ho Tong established an alliance with The World Lin's Association and the Honolulu Tin Hau Temple formed a sister-temple relationship with Pei Kang Chew Tin Kung during the 1980's.

In the fall of 1980, a letter was received from the Lin Association in Taipei, Taiwan inviting the Hawaii LSHT to participate in the planning and establishing of The World Lin's Association with its general headquarters in Taipei. A formal opening conference was scheduled for October 1, 1981 in Taipei. Group life member dues were U.S. $1,300, and individual life member dues were U.S. $100.

At its September 1981 meeting the Directors of LSHT voted to join The World Lin's Association, as a group life member. In addition, Kenneth Kwan Yee Lum, Lam Siu Wing, Lum Wing Kit and Laura Chew Ying Sun joined as individual life members, each paying dues of U.S. $100. Five members were chosen to represent the Hawai`i LSHT at the first World Lin's Association conference on October 1, 1981. They were: Kenneth Kwan Yee Lum, Richard Wah Chew Lum, Lum Wing Kit, Philip Wah Chan Lum and Lam Siu Wing.

While attending the World Lin's conference, Kenneth K. Y. Lum presented, on behalf of Hawai`i LSHT, a portrait of the "Heavenly Goddess" Tin Hau, to the Taipei Lin Association for its Temple For The Lins' Ancestor Juridical Foundation. He also visited and presented a portrait of the "Heavenly Goddess" Tin Hau to the Chew Tin Kung temple at Pei-Kang (North Harbor), Taiwan. This marked the establishment of a sister-temple relationship between the Pei-Kang Chew Tin Kung and the Honolulu Tin Hau Temple.

The following year, June 14, 1982, a delegation of nine representatives of the Pei-Kang Chew Tin Kung, under the leadership of Wong Yin Kwei, accompanied a full-bodied statue of Tin Hau to Honolulu. Greeting the visitors at the Honolulu International Airport and to accept the Matsu statue, with reverence and appreciation, were President Lam Shing Tak, Lum Wing Kit and his wife, Rose Sui King Lum, Kenneth Kwan Yee Lum, Lum Quan Cho, Laura Chew Ying Sun, Lam Siu Wing, and other members of LSHT.

The alliance of Chew Tin Kung and Tin Hau Temple was reconfirmed at a formal service at the Tin Hau Temple in Honolulu on the morning of June 15, 1982. Director General of the Coordination Council for North American Affairs, Mr. Paul C. K. Tso, and Advisor to the Commission of Overseas Chinese Affairs, C. L. Cheng, witnessed the reconfirmation. The two temples pledged mutual cooperation. Chew Tin Kung presented to Tin Hau Temple a gold-plated throne for the enshrinement of the "Heavenly Goddess," Tin Hau or Matsu, the same goddess known by different names in different parts of China. In return, Tin Hau Temple gave Chew Tin Kung a large koa wood bowl, engraved with the Chinese characters, which read, "Sung Yuen Chong Hui," meaning "God given chance which leads to togetherness will forever shine.

THE 95TH ANNIVERSARY - 1984

On April 23, 1984, LSHT celebrated its 95th Anniversary, jointly with Tin Hau's birthday. A banquet was held and all proper ceremonies and rites were observed. Kenneth Kwan Yee Lum was president.

The Temple was cared for by able attendants, including, Lam Siu Wing, who came to Honolulu, Hawai`i, from Hong Kong, where he had served as the secretary of the Nanyang Chamber of Commerce for more than thirty years. He was also the economic reporter of the Oversea Chinese Daily News paper. As a temple attendant of Chinese divination, he helped believers with his good works, selflessness, kind heart and patience.

This year also ushered in happy events for the Lum Society. Two outstanding Lum members were elevated to higher positions. Herman Lum, the Society's legal counsel, was appointed Chief Justice of the State of Hawai`i. He came to pay homage to Tin Hau. A banquet was held in his honor. Also, legal counsel Richard M.C. Lum was appointed a Judge in the Courts of the State of Hawai`i. Congratulatory messages were sent to both of them.

LUM SAI HO TONG CENTENNIAL YEAR 1989

To start the Centennial Year off auspiciously, the Lum Society members showed gratitude for their legacy, being housed in its clubhouse the Tin Hau Temple, by offering prayers at the Temple. They, further, asked for blessings and guidance during this Centennial Year on New Year's Day.

Highlights of this auspicious year, 1989, included the following events, which were chaired by James L. H. Lum and Betsy Y. Lum under the leadership of President William H. K. Lum:

INSTALLATION OF OFFICERS

On New Year's Day, following the bai sun (religious) services, installation of the new officers took place in the Society Hall. Dignitaries from the community and officers from the Chinese community, as well as families and friends, were invited to attend the installation. A luncheon reception followed. President William Hon Kwong Lum and Vice President James Loui Him Lum led the Society during this Centennial Year.

SPRING BANQUET

The annual Spring Banquet was held on May 7, 1989 at Yong Sing Restaurant, at which time the Society honored Ku Po, its Great Grand Aunt. The senior Lum members, 70 years and older, were invited, as special guests of the Society.

SPECIAL CENTENNIAL PROJECTS

Song. The Society was most proud of the talents of its members. A special "Lum Sai Ho Tong Centennial Song" was written and arranged by Rose Lau Lum for this occasion. Members of the Society, accompanied by guests from Chew Tin Temple, Pei Kang, Taiwan, sang this song as an opening number at the centennial banquet celebration.

Medallion. The Centennial Committee wanted something special to present to all of the past and present presidents, including the women's division, under whose leadership and guidance the Society has grown and prospered to its present status. A special gold medallion was designed. The medallion was the size of an American half dollar, inscribed with the words "Lum Sai Ho Tong Hawaii," in Chinese and in English, and the year "1889-1989," to commemorate its Centennial Year. On the reverse side, the presidents' names were engraved in Chinese. Eunice Yen Fen Chun chaired this committee.

Centennial Souvenir Plate. In researching material for the Centennial celebration, the Committee was delighted to discover the Lum Society logo. They incorporated this logo into a souvenir plate to be used as centerpieces and as gifts to our special guests at the Centennial banquet. A 7-1/4 inch plate with a white background was chosen with the logo and inscriptions designed in red. Encircling the logo on the plate, the words "Lum Sai Ho Tong" were placed on the top and the year "1889 - Hawaii - 1989" at the bottom. These souvenir plates were then placed on teakwood stands. A limited edition of these plates was made. President William H. K. Lum and Co-Chairs James L. H. Lum and Betsy Y. Lum generously donated all of these centennial souvenir plates.

In addition, all guests were given a small Chinese candy dish on which a peach bun was placed. On the reverse side of all these candy dishes, the Society's centennial theme, "Lum Sai Ho Tong, 1889 Hawaii 1989" was hand-lettered in gold by Hung Luke Lum.

Centennial Booklet. A major project to record the history of the Lum Sai Ho Tong, in English and Chinese, was suggested, as the only historical booklet of the Lum Society was written solely in Chinese for the Society's 75th anniversary in 1964. A Steering Committee for the project was named — Charles T. C. Lum, Lin Wei Tung, Harold C. K. Lum, James L. H. Lum, Eunice Y. F. Chun and Betsy Y. Lum. A Centennial Book Staff was then formed. The committees and many friends spent countless hours and days in researching, translating, writing and putting together this historical booklet, for which the Society was most grateful.



Fong Suk Ceremony
Laura C. Y. Sun & Rev. Duane Pang

RITE OF SALVATION SERVICE OR FONG SUK
Taoist Rites of Cosmic Renewal and Thanksgiving (Chiao)
"Chow Yen Ching Chia"

On October 12 and 13, LSHT highlighted its centennial celebration with an impressive and colorful "Fong Suk" ceremony by Taoist Priest, Reverend Duane Pang, at Tin Hau Temple.

These formal ritual services were conducted on behalf of the members and community, to give thanks to Tin Hau. It included: "Hoy Tan," inviting the heavenly host of heavenly worthies and saints to attend the celebration; "Ng Kung" offering incense and flowers as a thanksgiving sacrifice; "Go Say" going to Kwan Yin Temple, Wah Kong Temple and Yuk Wong Tan Temple to invite their patron deities to attend; "Jook Sing" invoking the pole star in prayer to forgive our sins and misdoings and asking for blessings; and "Sam Koon Ging," chanting of the "Three Officials of Heaven, Earth and Water Canon."

In the afternoon of October 13, a "Chew Yau" ritual, also referred to as "Fong Suk," was conducted for over two hours. This rite of salvation service was conducted on behalf of the souls of our late Society members, family members, and for those who had no one to care for their wellbeing — the lonely spirits. Prayers were said, on their behalf, to help alleviate their sufferings and help them "crossover" to heaven. Food offerings, joss money and clothing were sacrificed on their behalf.

Displayed were symbolic figures of the Demon King, "Jin Min Dai See," one of the many transformations of Kuan Yin, who controls all souls in the Underworld and "Lam Bong Jeung Quon," who carries the Society's list of contributors to Heaven to be blessed.

Lum Hung Lun, Chairman of the event, President William H.K. Lum and Kenneth K.Y. Lum were the celebrants. Lam Siu Wing and the delegate members of the Taiwan Chew Tin Temple — Hsiang Wu, Tsai Shen-Chu, Hsoeh Chin-Tien and Tsai Po Choung, assisted them. Also participating were Laura C. Y. Sun, Betsy Y. Lum, Eunice Y. F. Chun, Alan S. F. Lum, Violet Au, Ngit Chow Wong, Barbara Chang, Larry Ing, Bow Lum On, Lum Sin Won and many members and friends of the Lum Society and Tin Hau Temple.

A delicious dinner followed the services and was prepared and served by members on both days. Those responsible for the various sumptuous meals on October 12 were Laura C. Y. Sun and Sam Moi Lum Ng; on October 13, Dorothy Chang Lum, Annie Tom Lum, Robert Kong and James L.H. Lum, assisted by many Lum Society members who worked days preparing the food for this auspicious occasion. Thanks were given to Rev. Duane Pang for his assistance.

CENTENNIAL BANQUET
OCTOBER 15, 1989

The climax of the Centennial Year was a lavish Chinese dinner on October 15, 1989, at the Yong Sing Restaurant on Alakea Street. Sounds of exploding firecrackers and Chinese music by the Wo Lok Orchestra filled the air, as the program opened with remarks by Master of Ceremonies Judge Richard M.C. Lum. President William H.K. Lum and Vice President James L.H. Lum, assisted by Daryl Hung Hook Lum (son of Mr. and Mrs. William H.K. Lum) and Christopher Finseth (son of Mrs. Frances Leilani Lam and grandson of the late Mr. Eddie Lam, past president of Lum Sai Ho Tong), lighted the longevity candles, before an ornate altar decorated with symbols of long life and good fortune. Chinese couplets, written by Lam Siu Wing, and portraits of Ku Po and Pi Kan Kung were displayed on the walls.

Society President William H.K. Lum welcomed the guests and delivered the Centennial message. This was followed by the Lum Society members singing the "Lum Sai Ho Tong Centennial Song," arranged and directed by Rose Lau Lum.

Guest speakers on the program were Paul J. K. Tso, Director General, Coordination Council for North American Affairs; Ted Wong, Trustee of the United Chinese Society; Shen Chu Tsai, Director, Puck Kong Chew Tin Kung Temple, Taiwan; and Samuel Bow Yen Lim, President of the Lim Family Benevolent Association, San Francisco, California. Ronald Mun represented Mayor Frank F. Fasi, in presenting a proclamation from the City & County of Honolulu. A delegation of visiting Lum's was introduced.

From California, Samuel Bow Yen Lim, President, Lim Family Benevolent Association of San Francisco and Mr. Lum Jun Wah, President of Lum Gar Kung, Oakland. From Taiwan, Hsiang Wu, Tsai PO Choung, Tsai Shen Chu, and Hsueh Chin Tien, Directors of Chew Tin Temple. (In 1981, the Buck Kong Chew Tin Temple established a sister relationship with the Lum Society's Tin Hau Temple.) The visiting delegation from California and Taiwan presented gifts to the Lum Society, and, in turn, gifts were reciprocated to them.

Past presidents of Lum Sai Ho Tong and its Women's Division were introduced and presented with the gold Centennial medallion by President William H.K. Lum, Women's Division President Annie Tom Lum and Medallion Chair Eunice Y.F. Chun. Also recognized with a gift were several non-member volunteers of the Society who have, over the years, given unselfishly of their time and talents to the Lum Society. They were Violet Au, Eloise Wong, Robert Kong and Quan Ping Yuen.

Chinese operatic entertainment was provided by Rose Lau Lum and the Wo Lok musicians. The specially designed LSHT logo centerpieces on each table were given to a lucky member or guest. Banquet Chairman Kenneth K. Y. Lum joined President William H.K. Lum, Vice President James L.H. Lum and Co-Chair Centennial Committee Betsy Y. Lum in offering the traditional toast.

Vice President James L.H. Lum brought the centennial celebration to a close with his acknowledgment to the many members and friends who had helped to make this a memorable and enjoyable centennial celebration.

HISTORICAL EVENTS 1997 – 2019

1997-1998 Lita Lum is elected the first female president of Lum Sai Ho Tong.

1999-2000 Betsy Kam Sai Yuen is installed as the second female president of Lum Sai Ho Tong. Both she and Lita Lum served with distinction.

1999 (May) 110th Anniversary and Tin Hau Sung Mu's birthday are celebrated with a grand parade through Chinatown, culminating in an elaborate dinner at Yong Sing Restaurant. President Betsy Lum and Jeffery Lam chair these successful events. Community members applaud Lum Sai Ho Tong for bringing everyone together in such a historic way.

2000 At the 8th World Lin Convention, with the support of LSHT's Board behind her, Betsy Lum accepts the invitation to host the 9th World Lin's Association Convention, in Honolulu Hawai`i, in November 2002. This would be the first such event held in Hawai`i.

2002 (Nov.) The 9th World Lin Convention is held in Honolulu, hosted by President Keith Lim and members of Hawai`i Lum Sai Ho Tong. Members of the world Lum Family from Hawai`i, Taiwan, Japan, Okinawa, Singapore, Thailand, Philippines, other Asian countries, the continental USA and Canada convened at the Sheraton Waikiki Hotel. The Lim family of Kohala, the 2002 Na Hōkū Hanohano Award Winner, headlined the festivities.

2004 (October) Delegates and members from Hawai`i participated in the 10th World Lin Convention in Taiwan.

2006 (October) Delegates and members participated in the 11th World Lin Convention in Singapore, attended by more than 3000 international members.

2008 City and County of Honolulu proposes a Housing First project next to Lum Sai Ho Tong and Tin Hau Temple.

2008 (October) Delegates and members attend the 12th World Lin Convention in Manila with over 1500 international members.

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Jan 1st
New Year's Day Installation









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Chinese New Year












34

Ching Ming








35

Tin Hau Banquet








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Tin Hau Dahn









37

Siu Yee









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Monthly Meetings








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2009 (March) The Downtown and Chinatown Community, as well as Lum Sai Ho Tong, unanimously oppose a Housing First Project in Chinatown. Lum Sai Ho Tong and the Chinatown Community form the "Concerned Citizens on River Street Housing," led by President Wesley Fong and LSHT President Howard Lum.

2009 (April) Lum Sai Ho Tong's 120th Anniversary Banquet is held at Golden Palace Restaurant. An amazing birthday gift from Ku Po to Lum Sai Ho Tong: "The survival and rescue of the entire crew of the Princess Tai Ping"!

2010 (July) Honolulu City Council decides to not approve funding for the proposed Housing First project, after overwhelming community opposition, led by Lum Sai Ho Tong and over 60 Chinatown organizations.

2013 (January) City and other community leaders suggest that Lum Sai Ho Tong and Chinatown community leaders work together with the City, to design a satisfactory project on River Street, adjacent to Lum Sai Ho Tong.

Thereafter, Founding member Lum Sai Ho Tong and many community leaders form the "Chinatown Community Center Association," led by president Wesley Fong. CCCA works with the City to conceive a project for the site, next to Lum Sai Ho Tong, that is satisfactory to all involved.

Lum Sai Ho Tong, together with Kwan Yin Temple and others in the community, meets with the State and, after decades of requests, again propose a much-needed crosswalk on Vineyard Boulevard. The crosswalk will unify the River Street historic area, improve pedestrian flow along the Nu`uanu Stream and create harmony and prosperity for the Chinatown community. Representative Karl Rhoads lends pivotal support.

2016 (May) After three years of negotiations, and heartfelt testimony from the members of Lum Sai Ho Tong, the Honolulu City Council unanimously approves the Halewai`olu Residences and Community Center Project, Resolution 16-70, with modifications requested by Lum Sai Ho Tong and the community. Mahalo nui loa to all involved in this historic endeavor.

2016 The State of Hawai`i approves and budgets monies to build the Vineyard Boulevard crosswalk. Rep. Karl Rhoads continues to recognize the importance of the crosswalk and fully backs the project.

In keeping with our legacy of benevolence, in September, LSHT hosts a sold-out community-wide luncheon, entitled, "College is Possible," to share financial aid opportunities for students and their families. Several families and students attend and receive valuable information.

Lum Sai Ho Tong continues needed repair and maintenance of its historic building.

2017 The membership of LSHT amends its Constitution, to strengthen proper management and sustainability of the organization. In particular, the management of the Board would now include up to three Vice Presidents. In addition, to expand membership in the society, a temporary amendment allows the child of any person with the surname Lam, Lim, Lin or Lum, including a maiden name, would be allowed to become a member. Qualified applicants will be accepted until November 4, 2019.

2018 After significant delays and costs increases, the State, again, approves and begins construction of the important Vineyard Boulevard crosswalk. Expected opening in early Summer 2019. A very big Mahalo to Senator Karl Rhoads and many other legislators, Councilwoman Carol Fukunaga and Governor Ige for their support.

Lum Sai Ho Tong continues needed repair and maintenance of its historic building.

2019 In February, the developer of Halewai`olu Residences gains State of Hawai`i approval for full funding of the $80,000,000 project, bringing the community-initiated project to a historic moment. Lum Sai Ho Tong and CCCA continue to monitor the status of the project.

April CCCA requests adoption of the strip of land fronting Lum Sai Ho Tong and the adjacent City property, along the Nu`uanu Stream, to help beautify this vibrant historic community.

LSHT celebrates the 1,059th birthday of Tin Hau Sung Mu and the 130th Anniversary of the society, with four days of jubilant celebrations, spearheaded by President Howard Lum and funded by numerous members, donors and community friends.

April 27 Tin Hau Dahn is held, led by Rev. Duane Pang, who has overseen ceremonies at the temple for over 35 years. The ritual, which commemorates the birthday of the Empress of Heaven, is well attended by members of LSHT and the community. The altar, which is covered in red and festooned with food, flowers, tea, liquor, delicacies, and colorful paper money, is overflowing with offerings to Tin Hau. Many thanks to Mona and Kenneth Lam, the Tin Hau Auxiliary members, and our caretakers, Huang Hao Run and Li Lin Gui for organizing this year's special Dahn.

Following the Dahn, Tin Hau and numerous escorts emerge from the Temple and lead a festive parade around the Nu`uanu River. With gratitude and aloha, Tin Hau visits and is warmly welcomed by Kwan Yin Temple, Izumo Taisha Temple, and the Kwan Yin Statue at the Chinatown Cultural Plaza, before returning to her temple home. She is followed by hundreds of well wishers, including LSHT members, society representatives from all over Hawai`i and the country, Miss Chinatown, and Chinese lion and temple groups, including: Chinese Physical Culture, Lung Kong, Kuo Min Tang, Gee Yung, Chinese Lion Dance, Sing Yung, Kutt Hing Wah Gong Temple. Mahalo nui loa to Howard Lum, Keith Lim, Rev. Pang, Gifford Chang, Donna Chang, Leonard Kam, and all of the devoted sifu who have brought their lions and students to honor Tin Hau.

The parade culminates with a delicious lunch of blessed food, courtesy of Ku Po, our great grand aunt and overseen by Mona and Kenneth Lam, Mae Dang, Ah Yuk, Mor Fung Leung, Verna Takashima, and LSHT and Tin Hau Auxiliary members.

April 28 A sumptuous sold-out Anniversary Banquet is held at Jade Dynasty, Ala Moana Center, for over 320 guests from Hawai`i and beyond. Mahalo nui loa to Chairs Mona Lam and Keith Lim, William and Betsy Lum, Kenneth Lam, President Howard Lum, Emcee Victor Lim, Rev. Duane Pang, and all of the members and friends of Lum Sai Ho Tong, for creating this beautiful celebration, in furtherance of our founders' vision.

Lum Sai Ho Tong will be creating a foundation, to preserve our building and to further our founding members' mission of benevolence to our members and the community.

We, the grateful descendants of Pi Kan and Tin Hau, and members of Lum Sai Ho Tong Hawai`i invite and welcome all with the surname Lum, Lam, Lim, and Lin (林), and their families to become members and to participate in our numerous activities and our precious legacy.

LEGACY LEADERS

Sustaining the legacy of our founders is an act of devotion, generosity, steadfastness and humility. Lum Sai Ho Tong is grateful to every member and patron who shares of themselves, and their abundance, to further our mission. Through all of you, our culture is preserved and LSHT and Tin Hau Temple remain strong and relevant, as a peaceful sanctuary for thousands of Hawai‘i’s residents and immigrants.

Stories of gratitude, honor, sacrifice and family love abound in our society, and, in this 130th Anniversary year, we are honored to profile five special Lum Sai Ho Tong members, nominated by our members, as legacy leaders whose good and noble works inspire us all:

JUDGE RICHARD MEE CHO LUM 林薇初

WILLIAM H. K. & BETSY LUM 林阮金水 & 林阮金水

EDDIE FLORES, JR. 林志雄

HOWARD C. O. LUM 林子安

JUDGE RICHARD MEE CHO LUM 林薇初

Richard Mee Cho Lum was born on November 19, 1925 to business merchant Yan Chew Lum and Violet Yuen Choy Hee, as the eldest children of six. Having been born to a business merchant, who operated a flourishing Chinese merchandise store, known as Tuck Cheong Laup on Maunakea Street, on the site presently occupied by Cindy Lei Shoppe and Wing Loy Market.



After graduating from Cathedral School on Nu`uanu Avenue, he was accepted by Saint Louis High School in Kaimuki. After December 7 1941, his classes were disrupted, for the entire campus and buildings were used as a hospital. Students went to McKinley School, to resume classes, from which he graduated in June 1943. He was hired to work at Liberty Bank, corner of Maunakea and King Streets; a job he had held until his graduation after college. He continued to work after graduation, receiving a salary of $75.00 per month.

He saw that some of his classmates received employment at Pearl Harbor Naval Shipyard or Hickam Air Field, however, since there was an employment freeze, Richard could not change employment. The only exemption was to quit work to attend school at University of Hawai‘i. Richard had a taste of college studies, during the summer of 1943. He asked Liberty Bank to release him to attend college. However, if you were a student, you would be subjected to the draft; unless, you were not a student, but employed in some defense type of work.

Richard decided to enter University of Hawai‘i, in Summer of 1943, as a full-time day student, and during the course of time, he applied for employment at the Pearl Harbor Naval Shipyard and was accepted to work on the graveyard shift, paying 76 cents a machinist helper, in Shop 3, allowing time for him to attend full time at University of Hawai‘i. Richard selected a minimum course credits to be classified as a student. In the meantime, Richard investigated that if he applied and attended the apprentice program as a machinist, the chances of exemption for the draft would be enhanced. So, he entered the Naval Shipyard Apprentice Program, and the first stage, he was paid 51 cents per hour, taking a pay cut from 76 cents per hour, as a machinist helper and civilian employee. As an apprentice, he was inducted into the US Naval Reserve, with a reserved status, until September 26, 1945, when all the apprentices were notified as to the change of status, and each was directed to register at the Selective Service office, near their residence, an office on Pensacola Street in Honolulu. During the interim, Richard pursued his education, by taking courses listed under the College of Arts and Sciences.

On November 26, 1945, Richard received the usual greetings to report, on December 13, 1945, to the United States Army and was transported to Schofield Barracks, Hawai‘i. After basic training, the entire group was mustered out to stand in formation. Every other soldier in formation was directed to step forward and assigned to board the army vehicle for their next assignment, New Caledonia in the South Pacific.

The others not singled out were assigned to other posts on O'ahu. Richard was assigned to the 13th Ordinance Depot, to be stationed on Red Hill and work out of a Hawaiian Ordnance Depot, until his discharge, for the convenience of the government, on February 25, 1947, with a rank of Tec. 4.



While stationed at Red Hill Barrack, Richard lived the life of a "Pineapple Soldier"; able to go home every night, without staying in the barrack at Red Hill. K-P and guard duty assignments were assumed by others, in the unit, whose home towns were not in Honolulu.

From induction to assignment to his unit at Red Hill Barrack and until his discharge, Richard continued his education by attending night classes and taking a minimum of four to six credits.

After his discharge in February 1947, Richard enrolled as a full-time student taking 21 credits a semester, including two summer sessions, to qualify for graduation in June 1949, with a Bachelor of Arts Degree in Business.

Prior to graduation from college in June 1949, Richard continued his chores in the family "Yee On Market," getting up about 3-4 a.m. and, with his Dad, Yan Chew Lum, drove to C.Q. Yee Hop slaughter house, on Middle Street, to pick up the company's quota of three carcasses of pigs, and transporting same to Market Place off A'ala Street, across from the O'ahu Railway Station, during the early morning. Richard prepared each carcass of pig into sections, to be sold to peddlers whose vans came to the market to pick up each required sections of the pigs to be sold to their regular neighborhood customers. After 8:00 a.m., Richard called it a day and drove the pickup truck and parked it near Crawford Hall, for classes until 12:30 p.m., when Richard called it a day and went home.

After graduation from University of Hawai'i, employment was hard to come by. Richard was ineligible to apply and/or receive state unemployment compensation. Reading the handout to Veteran's Administration, Richard tried to cash in the VA unemployment benefit known as 52/20. The VA would pay the veterans the sum of $20.00 for 52-weeks, in the nature of unemployment.

Richard tried his luck by approaching the VA office on Bethel Street (the present Island Insurance Building), in June 1949, and met the VA counselor. (His name escaped Richard's memory.) He informed the counselor of the 52/20. The counselor reviewed Richard's service record and said, "I can get you something better. Make use of your GI bill, VA will send you to school, pay all your tuition and books and also pay you $75.00 stipend, provided you don't get married. According to our records, VA can send you to school, short of three years. Go and get a Master in Business or some graduate studies, using your GI Bill, or go to law school, but your father must provide for you for three or four months. Why don't you talk with your father and get me the name(s) of the school you want to go."

Richard returned to the VA counselor, with the list of law schools, and informed him that a law school aptitude test is required, and the deadline has passed. The VA counselor informed Richard that he would do his best, write letters of application to the list of law schools furnished, and arrange the law school aptitude test to be taken on a single day at Punahou School. All of the law schools to which he had written were not encouraging. Most of them suggested to try for the 1950-1951 school year, except two law schools, namely, University of Missouri, School of Law and Hastings College of the Law, in San Francisco, California.

Arrangements were made by the VA counselor for Richard to attend school in August 1949.

Richard undertook to take the real estate broker's examination and was issued a real estate broker's license, No. 1498, in 1953; which license is still in effect today.

He was admitted to practice law –

Supreme Court, Territory of Hawai'i, June 21, 1954
United States District Court for the District of Hawai'i, July 20, 1954
United States Court of Appeals for the Ninth Circuit, April 9, 1962
Supreme Court of the United States, October 14, 1958

After being admitted to the Hawai'i Bar, Richard was appointed by Judge Carrick Busk to co-counsel with Attorney Jon Uehara, in his first criminal jury trial in a first-degree murder case involving a criminal trial, titled State of Hawai'i vs. Josa, for hijacking Y. Higa, a payroll clerk. After the trial, Richard was appointed by Attorney General Edward N. Sylva to be Deputy Attorney General in 1958. The Deputy General's salary was $300 per month. Richard was assigned to the legal department, Territorial Highway Department, handling land condemnation involving parcels of land taken to construct the H-1, Pali Highway, and Vineyard thoroughfare.

Observing the Associates making far more in salary per month, Richard applied to Supreme Court of Hawai'i, Per Diem Judge, District Court of First Circuit, State of Hawai'i, for a term of six years, on January 2, 1975, and for a second term of six years, on January 2, 1981. He was then appointed Judge District Court of First Circuit, State of Hawai'i for a term of six years, on October 31, 1984, and reappointed for a term of another six years, on October 31, 1990. He retired on October 31, 1994.

Richard married Susan Young and raised three boys and two girls, of which all are successful in their respective professions. All five are graduates of Mun Lun Chinese School, as well.



He has been a member and former President for the following: Lum Sai Ho Tong, Buck Toy Club, Leong Doo Society, United Chinese Labor Association (known as Chung Wah Gung Kung Hui), Chung Shan Association of Hawaii, and Mo Hock Ke Lock Bo (Mun Lun School).

Richard's father, Yan Chew Lum, and grandfather, Gum Fat Lum, were also members and past presidents for Lum Sai Ho Tong.

He has been a member or held positions with several Kiwanis Clubs, for over 50 years, including Kiwanis Club of Waikiki, President of Kiwanis Club of Ala Moana, President of Kiwanis Club of Hawaii Loa, Lieutenant Governor Division 22, California-Hawaii-Nevada District, in 1998.



WILLIAM H. K. & BETSY LUM 林阮金水 & 林阮金水

"The reason why heaven and earth are able to endure and continue thus long is because they do not live of, or for, themselves."

~ Lao Tzu, Tao Te Ching, 600 B.C.

William Hon Kwong Lum and Betsy Kam Sai Yuen Lum epitomize the essence of philosopher Lao Tzu's quote. With over a century of service to Lum Sai Ho Tong between them, Bill and Betsy Lum are selflessly carrying on the legacy of the ancestors, with integrity, steadfastness, benevolence, honesty, knowledge, and humor.

Together they are the heart and soul of Lum Sai Ho Tong and Tin Hau Temple, serving not for favor or advancement, but for the love of Chinese culture, and through a sense of duty, "filial piety." When asked what's motivated them to serve on the board of Lum Sai Ho Tong since before Hawai'i became the 50th State, they are truly at a loss for words to describe what others clearly see as their decades of dedicated, loyal service. Bill and Betsy can't think of life in any other way than to continue what has been handed down by Bill's father, Anthony Hung Lun Lum, an entrepreneur, World War I veteran, and long-time Lum Sai Ho Tong board member.

Anthony was born into a large traditional Chinese family that placed great responsibility on him as an older son. Though not the eldest, Anthony left school in the 4th grade to help his parents, Bung Yun Lum and Lo Yong Ching Lum, care for ten younger siblings, when his two elder brothers were sent back to China (i.e. Sai Gong Li village, Zhongshan County, Guangdong Province). By sending the two eldest sons back to the family village, Bung Yun fulfilled twice over, a vow made to his father, that he would send his eldest son back to the ancestral village, as a condition of being allowed to journey to Hawai'i in 1881.

While not rich in gold, the Lums through Bun Yun's leadership were a respected, hardworking, and trustworthy family known for their successful management and production efforts at the Kalihi Poi Factory and rice farming operations in the Kahana/Punalu'u area of windward O'ahu.

Bill's grandmother, Lo Yong, was esteemed in the community as a seer, a translator, and a moon harp musician, serving all who came to her door. A shrine to the ancestors graced the family home in Kalihi, and the practice of honoring them with sweet-smelling incense, red candles, food and warm tea, was carried on daily.

During the annual Ching Ming season, when Chinese families gather to honor ancestors and tidy gravesites, it was Anthony who organized the Lum family, ensuring that proper preparations were made for ancestors, at the family gravesites in Mānoa. Bill's younger sister, Sai Mee (Gladys) was responsible for preparing/cooking many of the offering dishes presented for the Ching Ming ceremonies, while other family members assisted by gathering baisan supplies, and folding paper money. When it was time to pay respects, Anthony kept a watchful eye on all to ensure that customary bows were deep and proper, foreheads to the ground, and palms pressed down in reverence.

Being active members of Lum Sai Ho Tong was a natural extension of the family's life. It was where Bill's sense of duty to his ancestors, duty to country, and appreciation for Chinese culture was nurtured. The close familial ties, however, would be tested when Bill was drafted to serve in the United States Army, immediately upon graduation from high school.

In 1944, following graduation from Farrington High School, military service for Bill meant active-duty stationed in the Far East. It was the time of the US-China Military Alliance when more than 250,000 Americans served in the China/India/Burma Theater. Bill found himself in China, the homeland of his grandparents, thus, helping to protect his relatives and the people of China. In essence, he was giving back to both nations with his deepest gratitude and respect. Bill served with distinction while stationed in China.

By 1946, when the Chinese were beginning to say, "Go Home G.I.," he requested transfer to the Zone of Interior and was re-assigned to duty in New York State at Fort Wright, on Long Island. While stationed at Fort Wright, the Base Commander and his wife thought that Bill would be an ideal candidate to enter West Point Military Academy.

Bill showed "spark and interest," they said. However, his humility won out, believing he was not sufficiently qualified to spend three years at West Point. He thanked the Commander and his wife, was honorably discharged attaining the rank of Army Staff Sergeant, and like his father and grandfather before him, turned his eye to a career in business.

Upon discharge from the Army, Bill realized it was too late to return home to enroll at the University of Hawaii. So with GI bill in hand, and the guarantee of higher education, he left New York, boarded a train to Chicago, and found his way to Bradley University-- Peoria, Illinois, where he enrolled and in three years earned both a BS in Business Administration and MA in Economics. In 1952, Bill returned to Hawai'i and resumed his involvement at Lum Sai Ho Tong, as well as looking out for the secular and spiritual needs of his family.

While Bill had been serving his country in China and pursuing higher education in the Midwest, Betsy Kam Sai Yuen, was herself excelling academically some 2,000 miles west. A 1943 graduate of Sacred Hearts Academy, Betsy furthered her education by attending Armstrong College, Berkeley, California, earning a degree in Secretarial Administration and a BA in Business.

The daughter of Jack Tim Yuen and Kam Nee Fong Yuen, Betsy's family roots are very similar to Bill's, tracing back to Zhongshan County, Guangdong China. Her paternal grandfather Chee Won Yuen was raised in Jo Bu Tou village, while her paternal grandmother, Look Shee Yuen, hailed from Gak Tin village.

Upon completion of her college studies, Betsy returned to Hawai'i and secured employment first in private industry, then with the City and County of Honolulu, and the Hawaii Territorial government. She was eventually recruited for a Federal position at Central Intelligence Agency, Honolulu field office. With her solid work experience, personable nature, and intelligence, Betsy became the first local woman hired to work out of The Agency's Honolulu field office.

Through the 1960's Betsy turned her full attention and energies to raising and caring for her growing family. She was a devoted, fun-loving mom who together with Bill raised three active boys and their daughter. Once her youngest son began primary school, Betsy returned to the workforce, seeking and finding employment with City and County of Honolulu, where she served capably as administrative secretary to several department directors. In 1986, with nearly two decades of service to

the City and County of Honolulu, she retired and turned her attention to activities at Lum Sai Ho Tong, as well as other local community organizations.

As their names foretold, it was not long before William Hon Kwong (Brightness) and Betsy Kam Sai (Golden Water) would find each other. The couple wed in 1957 and their family grew with children-- Wilbert Hung Tim, Daryl Hung Hook, Carol Kwai Sun (Lau), and Randall Hung Luke. The siblings, now grown with families of their own, reminisced about the Lum Sai Ho Tong events of their youth--fondly remembering annual summer picnics, spring banquets, Christmas and New Year's celebrations. Today, they continue to support and contribute to Lum Sai Ho Tong with their own children.

Bill's education and professional experience proved beneficial both for his family and for Lum Sai Ho Tong. He served for over thirty years in Hawaii's banking community—initially with Hawaiian Trust as a Trust Officer, mortgage-banking responsibilities followed at the Blackfield Corporation and Bank of Hawaii where he served as Assistant Vice President. In the latter years of his career, Bill served with the U.S. Department of Housing and Urban Development, (HUD) in the Multi-Family and Single Family Housing division until his retirement in 1988.

Besides helping to provide financing for sorely needed housing projects throughout the State of Hawai'i, Guam, and Saipan, Bill championed the sustainability of Lum Sai Ho Tong's own real estate asset. To this day, he carefully audits and ensures the organization's fiscal stability.

Over the years, Bill and Betsy have given significant hours of their time and monetary resources to the upkeep, maintenance and operation of LSHT and Tin Hau Temple. And they have each led Lum Sai Ho Tong as President in different years.

Bill served as Lum Sai Ho Tong President twice; first in 1969, then again in 1988, while Betsy served as President in 1999 and 2000. Though she may have wondered and asked herself, "What am I getting myself into" when through marriage, she became part of the LSHT family, Betsy like her husband provided excellent leadership to Lum Sai Ho Tong while serving as the Society's president.

In May of 1999, the 110th Anniversary of Lum Sai Ho Tong, Betsy organized and coordinated a cultural parade that included many of Honolulu's local Chinese groups and organizations. With Ku Po, the Patron Saint, also known as Matsu, leading the way, participants paraded festively through Honolulu's Chinatown.

Then in 2000 during her second tenure as LSHT President, while attending a World Lin Convention in Okinawa, Betsy accepted the invitation to host the 2002, 9th World Lin Convention in Honolulu, Hawai'i. After many months of careful planning, organizing, in November of 2002, an international contingent of convention participants (similarly surnamed Lin, Lum, Lam) from Taiwan, China, Japan, Southeast Asia, and North America gathered in Honolulu, Hawai'i for several days of convention programs and activities. On the convention's final evening, a traditional Chinese banquet brought together World Lin conventioneers with local Lum family and friends, community leaders, and representatives of Chinese cultural organizations. A sumptuous dinner at the Waikiki Sheraton was enjoyed by all, with over 750 invited guests present for the finale of a successful Hawaii, 9th World Lin Convention.

Interestingly, Bill and Betsy Lum are the only husband and wife couple in LSHT history to both grace Lum Sai Ho Tong's "Wall of Presidents." Each have their photographs

included amongst the portraits of past Lum Sai Ho Tong presidents. They have also cultivated numerous members, directors and leaders of the organization, including two Presidents from their own family, brother Edward Hon Hoong Lum and niece Kehaulani Lum, and several more individuals from within the organization.

Through LSHT, their efforts have positively impacted the larger Chinatown community. Together they have been steadfast advocates and supporters of affordable Senior Housing. Each has testified on numerous occasions before the Honolulu City Council and the Neighborhood Board. In particular, they have championed housing for seniors on the City property adjacent to Lum Sai Ho Tong, and after years-long efforts, that affordable Senior housing facility is on the path to becoming a reality.

They are ambassadors of aloha and leaders, within Honolulu's larger Chinatown community. Whether at Lum Sai Ho Tong, or out and about the community representing the Society, Bill and Betsy welcome visitors and guests who stop by the temple.

On auspicious ceremonial-celebration days, they can be found at LSHT handing out red-paper lisee envelopes, adorning the performing Chinese lions, and ensuring that all guests/visitors have enough to eat at lunches served following the special celebrations. Both are active members of the See Dai Doo Society, and they provide support and advice to the Chung Shan Association of Hawai'i.

Their dedication, service, and commitment over the years to Lum Sai Ho Tong members and the larger community, continue an unbroken family chain of reverence that dates back over 2,500 years. Together they are exemplars, along with their descendants, living the Chinese/Confucian virtues of *Xiao (filial piety)*, *Ren (Benevolence)*, *Yi (Honesty)*, *Zhi (Knowledge)*, *Xin (Faithfulness)*, and *Li (Correct behavior)*.

Though in their 90's, both believe they still have much more to contribute and accomplish. Out of a deep sense of duty, respect and gratitude to those who came before them, Bill and Betsy continue their work at Lum Sai Ho Tong, keeping a watchful eye on the future, hopeful that their legacy of service endures as both reminder and example to those who will follow.



EDDIE FLORES, JR. 林志雄

Eddie was born in Hong Kong. His family immigrated to Hawai'i in 1963, when he was 16 years old. Although he had a learning disability and was brought up in a poor social and economic environment, Eddie was able to graduate, with a bachelor's degree, from the University of Hawai'i and a master's degree from the University of Oklahoma. He proudly served six years in the United States Army Reserves Military Intelligence Unit. Eddie started his real estate business, two years after he graduated from University of Hawai'i in 1974. He built his company into the top business brokerage firm in Hawai'i, within a few years.

In 1976, he bought the L & L Drive-Inn restaurant and gave it as a gift to his mother who was working as a waitress at Lynn's Deli. In 1990, Eddie took over L & L and expanded the restaurant chain from three restaurants into 200 locations in 12 states and 6 countries with his partner Johnson Kam. L & L is the first business from Hawai'i to dominate as a restaurant brand in the U.S. Mainland. L & L is also the first from Hawai'i to franchise successfully and open in multiple countries.

Perhaps the most impressive aspect of the way Eddie runs his business is his generosity and unselfishness. Eddie has provided loans, credit and lease guaranty for his employees in the L & L restaurant chain so they can share the same American dream.

Throughout Eddie's career, he has never forgotten his roots and hardship as an immigrant. He volunteered beyond his business or professional responsibilities to serve his community. Eddie was one of the key person to build the largest Filipino Community Center in the United States and the Chinatown Community Center. Eddie had won many professional and volunteer awards that epitomized his success. Some of his major recognition are University of Hawai'i Distinguished Alumni, Hawaii Small Business Entrepreneur of the Year, United Chinese Society Citizen of the Year, National Restaurant Association Diversity Award, and Presidential Award for Overseas Filipinos.

Additionally, Eddie taught real estate, investment, management, business appraisal, and travel courses throughout the State of Hawaii. As an instructor, he received the highest honor by the Hawaii Association of Realtors, as the "Highest Rated Instructor" and "Educator of the Year." As an author, Eddie wrote four books – "Listing and Selling Business Opportunities", "How to List and Sell Business Opportunities", "266 Million Winning Lottery Recipes", and "108 Tips on Travel, Culture and Business in China". He also published articles locally and internationally on various subjects such as real estate, business appraisal, investment and business opportunities.

Eddie has served on many boards and commissions which include the Honolulu Board of Water Supply (former Chairman), Honolulu Police Commission, Chaminade University, East-West Center, Filipino Community Center (Emeritus Chairman), Chinese Chamber of Commerce of Hawaii (Emeritus Board of Director), among others.

Eddie Flores, Jr. and his connection to Lum Sai Ho Tong

Eddie's great grandfather, Mr. Hoy Hin Lum, arrived in Hawai'i as a laborer around 1870. When he made enough money, he started a bakery and later sent for his wife in China. Mr. Lum came from the village of Da' Che (Big Car) in Zhongshan, China. Most of the residents from the Village of Da' Che (中山大车村) have the last name 'Lum.' Eddie visited the Village of Da' Che many times and personally donated many scholarships for the residents to attend the University of Hawai'i.

Eddie's grandfather, Mr. Quon Lock Lum, was born in Maui. Mr. Lum had six children with his first wife, Mrs. Yim Lin Kam. During the depression, Mr. Lum lost his job. He took his family back to China and was supported by various relatives in Zhongshan and Hong Kong. When Japan attacked Pearl Harbor, Mr. Lum returned to Honolulu with his two sons, Kam Lau and Charlie. His oldest daughter Rose returned a few months later. Mr. Lum's other two daughters, Margaret Kwai Lin Lum (Eddie's mother) and Betty, and son George remained in China with relatives. Mrs. Yim Lin Kam passed away at an early age of 36 in China. Thereafter, Mr. Lum remarried in 1948 to Mrs. Sin Won Lau and had another child, Yan Tim Lum, who was born in China. Eddie's grandfather was a member of Lum Sai Ho Tong for many years.

Eddie's mother, Margaret, married his father, Eduardo Flores, in Macau. His father moved the family to Hong Kong after the war. In 1960, Eddie's grandfather, Mr. Lum, visited his family in Hong Kong. He wanted them to have a better life so he paid for their passage on President Cleveland ship in 1963 to Honolulu. However, life became very difficult for Eddie's family, since both of his parents had no skill and had very little education. At that time, they shared an old house on the second floor with two other families and a Chinese Club at 1520 Liliha Street located across from the Liliha Library.

Eddie's other grandmother, Mrs. Sin Won Lau, arrived in Honolulu with her son, Yan Tim Lum, in 1965. She started to work at Lum Sai Ho Tong in 1966, to care for the temple. She was paid a small monthly salary of $80.00. Eddie's grandfather, Mr. Quon Lock Lum, accompanied her to clean and to cook at the temple. Although Grandma Lau dedicated her entire life to the temple, little recognition was given to her. She retired in 1995, after almost 30 years of service.

Eddie's youngest sister, Vicki, studied at Mun Lun Chinese School. She would often stop by Lum Sai Ho Tong after school to visit her grandparents. Of all the siblings, Vicki has the best recollection of Lum Sai Ho Tong. Grandma Lau was a devout Taoist priestess who was often tapped to pray for ancestors who have passed on. Her services were always in great demand, as people from all over the island came to see her. Vicki still remembers the red stick candles burning and her kneeling in front of the name placards of those who had died to pray for them. Some days, Vicki would be very busy folding Chinese money to burn, so that the people Grandma Lau prayed for would have money in the afterlife. Weekends were exciting for the Flores' siblings at the temple, as live musicians would come to clang on their cymbals and play on what looked like a Chinese banjo. Not to mention there was more food for Eddie and his siblings to eat.

Time spent with their grandparents, at Lum Sai Ho Tong, was one of the most memorable and happiest moments they have ever had together as a family.

HOWARD C. O. LUM 林子安

Howard Lum's ties to Lum Sai Ho Tong, Tin Hau Temple, Pi Kan Temple and Tin Hau's Island:

I was born in Honolulu in 1950. Like many other Chinese children of that period, my family was business people. My father, Bung Sun, came from Buck Toy Village in Zhong Shan. My mother, Violet Hatsuyo Yanaru, was born in Honolulu.

Because my parents were always busy at work, it was my aunt (Tong Shee) and uncle (Moon Gett) who raised me and many other children in our extended family, including my brother and my sister. Because my aunt and uncle had no boys, I happily overstayed at their home until I was 11 ½ years old. It was a very happy time of my life. However, during my stay, when I was 4 years old, I got very sick and nearly died. My cousins later told me that if not for Tin Hau Temple and the priestess there, I would not have survived the year. I had developed whooping cough, with no cure at the time. I could not stop coughing and could not eat anything. My aunt told me that for 6 months she carried me on her back from doctor to doctor and tried all kinds of medicine, but it was only when I went to Tin Hau Temple and drank the tea, that the priestess prepared, that I was then able to eat.

Finally, after 6 months, another member of Lum Sai Ho Tong told my aunt that in the new building next door, a doctor had a medicine that may help. She took me there, and after one spoon of medicine, my coughing subsided. As a child, whenever I had problems, my aunt would take me to Lum Sai Ho Tong. Even though I was never told formally, I probably was what we would call a godchild (kai jai) of Tin Hau. After my father and older family members passed on, I, and our family members no longer participated in any of the Lum Sai Ho Tong functions.

Over the years, I have had many experiences myself, and I have seen or heard of many other amazing events having taken place at Tin Hau Temple. I surmise that many others may have had similar experiences over the years.

One day, in 1999, I decided to see what was happening at Lum Sai Ho Tong, and, so, I stopped in. An old timer greeted me, and I said to him, "Wow, you are still operating!" He said, "Yes, young man, and we could use your help." I replied, "Okay", and, so, that is how I returned and started helping there. The old timer was Clarence Lam, who worked with my father (Bung Sun) and others to move the Pu Sats to Kwan Yin Temple in 1953, for the new building. My father and uncle also were big supporters and contributors, back then, to the new Lum Sai Ho Tong building, as well as a school that was built in Buck Toy Village. I guess things always happen for a reason!

After getting re-involved and re-indoctrinated with Lum Sai Ho Tong, in 1999, I also went to several World Lin/Lum World Conventions, and I learned more and more about the World Lum family. I went to Taiwan, Singapore, Philippines, China, Okinawa and other places with them. Being in business, I went all over China and Asia, and, then, I started to do business in Xiamen, in Fukien Province. Knowing that Tin Hau Sung Mu was from Mei Zhou Island, in Po Tin County, Fukien Province, I visited her island. It was very beautiful, with over six temples scattered around the island. They had Tin Hau maidens and helpers all over the island who were extremely kind, and they would guide and help you around. I went there two times, and my son Daren went there once.

During my travels in Asia, I have visited Tin Hau/Matsu Temples all over Taiwan, Singapore, Philippines, Thailand, Vietnam, and in China (Shanghai, Shandong, Xiamen, Guangzhou, as well as on the mainland).

On my second visit to Xiamen and Mei Zhou Island, out of the blue, my Chinese business associate said he had just opened a new factory in Honan, and he insisted that I visit it with him. So, we flew there from Xiamen. Knowing that Great Ancestor Pi Kan was from Honan, I asked him to take me to Pi Kan's Temple, which he did. Pi Kan's Temple is adjacent to the Shao Lin Temple in Hei Bei City. Pi Kan's Temple complex, which is over 3,000 years old, was quite a sight. With over 20 acres, and with several buildings and monuments, it was magnificent. It housed many treasures, including the only known stone stele (monument), carved with a sword by Confucius, honoring Pi Kan as "the most noble of bureaucrats in China." There are also several other famous steles honoring Pi Kan from emperors from the Song, Ming and Ching Dynasties.

On my visit, I paid 12 yuan admission, and I went in like a tourist. When I told them I was a Lum, they immediately treated me differently. Several volunteers came out and dressed me up in a cheong sam and set up a sun toi, with fresh food and flowers, for me to bai san! When I left, they gave me a packet, with the ashes from the burned incense, which I still have today.





ME KE ALOHA PUMEHANA

The Board and members of Lum Sai Ho Tong fondly express our deep gratitude and Aloha to our beloved kupuna who have gone to be with our ancestors. Mahalo nui loa for your many years of devoted leadership and service to our LSHT family.

Me ke aloha Pumehana.

Judge Richard Mee Cho Lum, Past President

Richard Wah Kit Lum, Past President

Clarence Wing Hoon Lum, Past President



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PRESIDENTS OF LUM SAI HO TONG IN HAWAI`I

PRESIDENTS

1899	Lam Say Yip, First President	1966-1967	Charles Tung Cho Lum
1900 - 1916	Lam Toi (Lam Lop Sai)	1968	Harold Chan Kwong Lum
1917 – 1918	Lum Gum Fat	1969	Willian Hon Kwong Lum
1919	Lum Yum	1970	Lum Kam On
1920 – 1921	Lam Toi (Lam Lop Sai)	1971 – 1972	Lum Wing Kit
1922	Lum Hop	1973	James Loy Him Lum
1923	Lum Mun Sook	1974 – 1975	Kenneth Kwan Yee Lum
1924 – 1925	Lum Kung	1976 – 1977	Lum Kwai Wah
1926	Dr. Kalfred Dip Lum	1978 – 1979	Richard Wah Chew Lum
1929 – 1934	Dr. Fred Ung Kwai Lum	1980 – 1981	Kenneth Kwan Yee Lum
1935 – 1936	Lum Chung Chee	1982 – 1983	Lam Shing Tak
1937 – 1938	Lum Dee Chung	1984 – 1985	Kenneth Kwan Yee Lum
1939	Lum Chung Chee	1986 – 1987	Harold Chan Kwong Lum
1940 – 1941	Lum Hong Chee	1988 – 1989	William Hon Kwong Lum
1942 – 1943	Lum Cheong	1990	Kenneth Kwan Yee Lum
1944 – 1945	Arthur Wo Lum	1991 – 1992	Richard Wah Kit Lum
1946	Lum Chung Chee	1993	Alan Sun Fai Lum
1947	Lum Kee Choong	1994	Richard Wah Kit Lum
1948 – 1949	Lum Yee Nung	1995 – 1996	Henry Pik Hom Lim
1950 – 1951	Eddie Lam	1997 – 1998	Lita Lin Tai Hu Lum
1952	Philip Wah Chan Lum	1999 – 2000	Betsy Kam Sai Yuen Lum
1953	Lum Wah Hin	2001 – 2002	Keith Wing Fook Lim
1954	Lum Quon Chook	2003 – 2004	Victor Wai Duck Lim
1955	Dr. Alfred Chock Sun Lum	2005	Peter Wah Hop Lum
1956	Eddie Lam	2005	Yew Fong Lum
1957	Lum Wah Hin	2006	Keith Wing Fook Lim
1958	Lum Hung Lun	2007 – 2008	Edward Hon Hoong Lum
1959	Alfred Kam Chee Lum	2009 – 2010	Howard Chee On Lum
1960	Arthur Wo Lum	2011 – 2012	Victor Wai Duck Lim
1961	Richard Mee Cho Lum	2013 – 2015	Howard Chee On Lum
1962	Lum Young Kam	2016 – 2017	Kehaulani Sai Sin Fah Lum
1963 – 1964	Lum Kam Ping	2018 – 2019	Howard Chee On Lum
1965	Clarence Wing Hoon Lam		

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MAHALO NUI LOA TO OUR ILLUSTRIOUS FOUNDERS AND BENEFACTORS

Founders – 1889

Lum Duck Sun
Lum Duck Yew
Lum Gee Wah
Lam Toi (Lam Lup Sai)
Lum Gee Hoon

Inaugural River Street Land Donors - 1899

Lam Say Yip and Lam Lau See

Tin Hau Kung Building Committee - 1899 to 1900

Lum Kum Chin
Lum Kum Fat
Lum Lup Mow
Lum Wo Sang
Lum Won
Lum Yip Kee

Lum Sai Ho Tong Building Committee – 1952 to 1956

Lum Quon Chock
Lum Chung Chee
Lum Kam Chee
Lum Kee Chung
Dr. Fred Lam
Lum Wah Hin
Lum Soong Bow
Lum Soong Him
Lum See Tuck
Lum Wah Chan
Eddie Lam
Lum Wah Fat
Lum Wo
Lum Yee Nung

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MAHALO NUI LOA TO OUR GENEROUS SPONSORS AND DONORS

130th Anniversary Banquet Table Sponsors

United Chinese Society
L & L Hawaiian Barbecue and Eddie Flores
Robert and Angie Wu, David and Jennifer Pham, Vincent and Jill Lao
Victor and Anita Lim
Patrick and Debra Lim
Patrick and Helena Lam
Keith Lim and Gerald Lam
Aloha Gourmet Products, Inc. and Howard Lum

130th Anniversary Banquet Donors

Anonymous
Susan and the late Judge Richard M. C. Lum
Victor Lim and Patrick Lim
Howard Lum
William and Betsy Lum
Kehaulani Lum
Daren Lum
Reverend Duane Pang
Kuo Min Tang Physical Cultural Association
Jane Gan
Eva Yip
Ross Lee and John Ng
Jeanne M. Lum
Wilfred Lam, Kong Chow Benevolent Society
Donna B. K. Chang

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Anniversary Banquet Volunteers

Mona and Kenneth Lam
Victor Lim
Eva Yip
Kehaulani Lum
Debbie Fikac
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Tin Hau Temple Auxiliary Group
Yew Fong Lum
Ansel Lum
Gerald Lam
Dennis Ho
Jeff Apaka
William and Betsy Lum
Carol Lau
Daren Lum
Douglas Hom
Karen Apuya
Lauren Apuya
Reverend Duane Pang
Connor Lau
Lin Shu Fang Dance Group
Bruce Keaulani
Rick Lau
Colin Fong

Tin Hau Dahn and Anniversary Parade Organizers and Supporters

Howard Lum
Mona and Kenneth Lam
Kehaulani Lum
William and Betsy Lum
Bernard and Edwina Lum
Eva and Clarence Lau
Reverend Duane Pang
Cambao Pham
Debbie Fikac
Karen Apuya
Rena Apuya
Lauren Apuya
Cody Fikac
Li Lin Gui
Leonard Kam
Donna Chang
Hinaleimoana Wong-Kalu
Kwan Yin Temple
United Chinese Society
Hawai'i Chinese Societies
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Keith Lim
Daren Lum
Lita Lum
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Victor Lim
Bruce Keaulani
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Anna Chan
Phoebe Lum
Douglas Hom
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LSHT Members
Huang Hao Run
Gifford Chang
Kalfred Chang
Ross Lee
Miss Chinatown
Izumo Taishakyo Mission
Chinatown Merchants
Lani Kwon

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In gratitude to our Chinese lion dance clubs and temple practitioners:

Cheng Mu Chinese Physical Culture Association
Lung Kong Physical Culture Club
Kuo Min Tang Physical Culture Association
Gee Yung Chinese Martial Arts
Chinese Lion Dance Association
Sing Yung Dragon and Lion Association
Kutt Hing Wah Gong Temple

And all of the volunteers who helped make our parade a success!

Mahalo nui loa to Jade Dynasty Restaurant and all volunteers, guests and participants in the Lum Sai Ho Tong 130th Anniversary and Tin Hau birthday celebrations... MAHALO!



59

神威顯赫　眾望所歸

德澤宏施　功德俱存

恭賀 CONGRATULATIONS

林西河堂天后宮

一百三十周年紀念

用大吉和大利編一個花籃

用祝福和祝願寫一段賀詞

無形雲光發露同體大悲心

善哉媽祖菩薩天人同欽佩



Our Board of Directors, Staff, and Members of the Kuan Yin Temple congratulate Lum Sai Ho Tong on your 130th Anniversary. Your support and service to the community has greatly benefited us all.

祝　福

Blessing



Ven.Tali,Abbess
Marilyn Lee-Tom,President,
Kuan Yin Temple Board

Congratulations

to Lum Sai Ho Tong
on its
130th Anniversary

與眾樂樂

林業舉有限公司賀

慶祝林西河堂一百三十週年紀念

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Congratulations
to Lum Sai Ho Tong
on its 130th Anniversary
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傳相火薪
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Chinese language and culture since 1986
院書華粹
Sui Wah School
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62
Aloha and Congratulations to Lum Sai Ho Tong and Tin Hau Temple
for Preserving our Culture and Family Bonds for Over 130 Years
The Descendants of
Hee Man Lum and Chung Lum
Sai Gong Li, See Dai Doo, Chung Shan, Kwantung, China, c 1850
Bun Yung Lum and Yo Long Ching Lum and Family
Anthony Hung Lun Lum and Mew Yong Au Lum and Family
William Hon Kwong Lum and Betsy Kam Sai Yuen Lum and Family
Edward Hon Hoong Lum and Margaretha Lum and Family
Bernard Lum and Edwina Lum and Family
Kehaulani Sai Sin Fah Lum and Family
May the kinship and fellowship that we enjoy today endure eternally.
Congratulations
Lum Sai Ho Tong and Tin Hau Temple
on your 130th Anniversary
LUM SAI HO TONG
TIN HAU TEMPLE
Association of Chinese
from
Vietnam, Cambodia & Laos
Thomas Sum
President
63


SEE DAI DOO SOCIETY
Perpetuating Chinese Culture Since 1905
Congratulations on your
130th Anniversary
from See Dai Doo Society
Congratulations
Lum Sai Ho Tong
鄭聶寶琴 前任主席
Donna B.K.N. Chang
Past President
Kong Chow Benevolent Assn
WONG KONG HAR TONG OF HAWAII
Established 1902
Congratulations on
Lum Sai Ho Tong's
130th Anniversary!
Wishing all your members a very
healthy and prosperous
2019 Year of the Boar!
84
Congratulations
and best wishes to
Lum Sai Ho Tong
LUM SAI HO TONG
TIN HAU TEMPLE
Chinatown Community Center Assn
Wesley Fong
President
Congratulations
TIN HAU TEMPLE
LUM SAI HO TONG
Honolulu, Hawai'i
Kutt Hing Society
Wah Kong Temple
Lum Sai Ho Tong
Congratulations on your
130th Anniversary
Kong Chow Society
Best wishes on your
130th Anniversary
Lung Kong Kung Shaw
85


Congratulations
Lum Sai Ho Tong & Tin Hau Temple
on your 130th Anniversary
United Chinese Society of Hawaii
Henry Ou
President
Congratulations and best wishes
to Lum Sai Ho Tong and Tin Hau Temple
on this most auspicious occasion
*Feng shui decoration
*Ching Ming offering
Bi San Bou Jok
*Chinese New Year
good luck items
*Funeral services
paper and incense
Hong Fa Corporation
Casanna Gao
88
Congratulations
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and
Tin Hau Temple
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on this most auspicious occasion
"My father Siu Wing Lam was a good, talented and kind person loved by all his family. "
-- Charles Lam
"My father worked very hard and did an excellent job to support the entire family."
-- Brian Lam
Lam Siu Wing
Lum Sai Ho Tong Caretaker
1983 - 1998
67

The Family of Wah Hin Lum
extends our appreciation to
Lum Sai Ho Tong and Tin Hau Temple
for perpetuating the
Chinese culture in Hawaii
for the past 130 years



堂河西林山香檀

Congratulations
Lum Sai Ho Tong

Ket On Society
Lori Kam
President

Best Wishes
on your
130th Anniversary

Kams' Society
Wendy Mow-Taira
President

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Congratulations
Lum Sai Ho Tong
on this most
Auspicious Occasion

Chinese Physical Culture Association

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For performance requests contact:
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Ph. (808) 685-8805

MAHALO
Lum Sai Ho Tong
no iwi mālama pono
~caring for our ancestral burials~

Palile Pākī royal family

Gerald N.Y.C. Lam
Pākī royal genealogist

Congratulations
Lum Sai Ho Tong
and Tin Hau Temple
on your
130th Anniversary

Rev. Duane Pang

Best Wishes
Lum Sai Ho Tong
and Tin Hau Temple

Kuo Min Tang
Physical Culture Assn

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Congratulations and Best Wishes
Lum Sai Ho Tong
and
Tin Hau Temple
on your 130th Anniversary



Kulike Company, Inc.
Electrical contractor * general contractor
Herman Ho, President
(808) 216-6868

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On behalf of the family of
Quon Chock "Q.C." Lum
we would like to congratulate
Lum Sai Ho Tong
on its 130th Anniversary



Congratulations
Lum Sai Ho Tong and
Tin Hau Temple
on your
130th Anniversary

The Descendants of
Bung Sun Lum & Hatsuyo Lum
Moon Gett Lum & Tong Shee Lum

Best Wishes
Lum Sai Ho Tong
and Tin Hau Temple

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San Pedro, CA 90731
agh@pohina.com

Our congratulations and best wishes to Lum Sai Ho Tong and Tin Hau Temple

Emil and Leda Lim

Family of Thomas W.C. Lum

William H.K. & Betsy Y. Lum

Winston Lim

71

Best Wishes to
Lum Sai Ho Tong and Tin Hau Temple



from the Howard C.O. Lum Family

Congratulations
on this most auspicious occasion

LUM SAI HO TONG
1889 HAWAII 2019

Sun Chong Company, Ltd
Ann & Shirley

72

Congratulations
Lum Sai Ho Tong
on your
130th Anniversary

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— Jade Dynasty —
Seafood Restaurant

Congratulations and Best Wishes to
Lum Sai Ho Tong and Tin Hau Temple
on your 130th Anniversary

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Howard C.O. Lum
CEO

Daren G.D. Lum
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CONGRATULATIONS TO THE LUM SAI HO TONG FOR 130 SUCCESSFUL YEARS



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Appendix C

Housing project wrong for Chinatown

By Wesley F. Fong

Honolulu's Chinatown has a unique history and character. Extending from Nimitz Highway to Vineyard Boulevard and from Nu'uanu Avenue to River Street, it is a vibrant neighborhood of shops, temples, schools and affordable housing complexes.

However, unlike the Chinatown of yesterday, today you can find not only Chinese but Vietnamese, Cambodians, Laotians, Filipinos, Japanese, Koreans working side by side in the many shops and marketplaces. Vietnamese pho may have just supplanted the Chinese won ton mein in popularity.

There is even a distinctive art district that harmoniously coexists with the heart of Chinatown and is now a part of the fabric of Chinatown, though you may not find a Chinatown produce shopper visiting an art gallery to admire the work of an emerging artist or an art patron going to a Chinatown market to buy a bunch of choi sum.

Despite all of the changes to its fabric, Chinatown's character has not dramatically changed. A visit to Chinatown is still an adventure in sightseeing, shopping and eating. Where else can you find a cure for your cold at an herb shop, stop at a dim sum restaurant and order chicken feet for lunch, watch a friendly game of mah jong or if lucky join in a Chinese card game and then purchase the ingredients for the evening's meal?

An integral part of Chinatown is its river walk. Just a block away from the bustle of the busy produce markets is the River Street walk that extends from Nimitz Highway to Vineyard Boulevard. If one walks up the River Street mall to the Kwan Yin Temple in the early morning, one can feel a sense of peace and tranquility.

Unfortunately, the city has proposed to develop a residence for the homeless on River Street near Vineyard Boulevard. This so-called "Housing First" concept includes housing for those who are mentally incapacitated and/or have drug and alcohol abuse problems. Although counseling services will be available, they are strictly voluntary and not a condition of occupancy. These residents are free to roam the Chinatown neighborhood with little accountability.

The city should be commended for its efforts to help the homeless, but the proposed location for the "Housing First" project is inappropriate. Within just a block of the proposed site, there are three schools. One school has more than 290 students and about 80 percent of them live in the neighborhood. Many students walk within a half block of the proposed site.

There are also three temples within a half block and three affordable housing complexes and about 70 businesses within a block of the proposed site. In addition

to the Chinatown community, the Downtown Neighborhood Board 13 and the Art District Art Merchants Association are opposed to the proposed location. Even the city's own prosecuting attorney's office is opposed because the location conflicts with the "Weed and Seed" program for the area.

A viable alternative to the "Housing First" project at the proposed location is an affordable senior housing complex with a senior multipurpose center. There is a great need for senior housing and a place for our seniors in the neighborhood to exercise, practice old skills, learn new ones and just socialize.

Such an alternative would be compatible with Chinatown's existing character and in keeping with the intent and purpose of the City Council's Resolution 09-364 CD1 adopted unanimously by the council on Jan. 27. The resolution requested the city administration to prepare a special area plan for Chinatown including the subject location to conform to the Chinatown Special District, emphasizing consideration of a low-rise, senior or other affordable housing project on River Street and with Chinatown community participation.

To date, the administration has not complied with the City Council's request.

We understand that there is a problem with the homeless not only in Chinatown but in nearly every neighborhood of Honolulu. But simply building a residence for the homeless at one location, especially without community input, will not solve the problem.

Since the homeless issue is of islandwide concern, won't it be more prudent for the city, state and all affected parties to sit down and together discuss a mutually acceptable master plan to address the homeless issue in all of Honolulu?

It is also important to ensure that the homeless actually agree to live in the homeless residence and follow its rules. This suggested forum is practical and should save a duplication of public and private effort and resources, but again this may just be political naīvet talking.

There is still a great need to protect and preserve the unique character of our Chinatown and its River Street walk and to preserve its rich heritage, culture and family life. San Antonio has its River Walk, so why can't Honolulu have its River Walk in Chinatown?

Wesley F. Fong is an attorney and community volunteer. He wrote this commentary for The Advertiser in his role as president of Concerned Citizens on River Street Housing.

Appendix R

Phase I Environmental Site Assessment
July 2015

Phase I Environmental Site Assessment

Halewaiolu Residences
1331-1347 River Street
(TMK Number: [1] 1-7-006: Parcel 012)
Honolulu, Oahu, Hawaii

July 28, 2015
Project Number 17015-015079.00

Prepared for:

MICHAELS DEVELOPMENT COMPANY
Mauka Tower, Pacific Guardian Center
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813



Prepared by:

BUREAU VERITAS NORTH AMERICA, INC.
Health, Safety, and Environmental Services
841 Bishop Street, Suite 1100
Honolulu, Hawaii 96813
808.531.6708
www.us.bureauveritas.com

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List of Acronyms

AAI	All Appropriate Inquiry
ACM	Asbestos-Containing Materials
AOC	Area of Concern
AST	Aboveground storage tanks
ASTM	ASTM International
AULs	Activity and Use Limitations
Bureau Veritas	Bureau Veritas North America, Inc.
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
COC	Chemicals of Concern
CORRACTS	Corrective Action Report
CPA	Certified Public Accountant
DLNR	State of Hawaii, Department of Land and Natural Resources
DOD	Department of Defense Sites
DPP	Department of Planning and Permitting
EDR	Environmental Data Resources, Inc.
EDR MGP	EDR Proprietray Manufactured Gas Plants
EDR US Hist Auto Stat	EDR Exclusive Historic Gas Stations
EDR US Hist Cleaners	EDR Exclusive Historic Dry Cleaners
ENG CONTROLS	Engineering Control Sites
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FINDS	Facility Index System
FIRM	Flood Insurance Rate Map
FOD	Formerly Used Defense Sites
FUDS	Formerly Used Defense sites
HEER	Hazard Evaluation and Emergency Response
HDOH	State of Hawaii Department of Health
INST CONTROL	Institutional Control
LUST	Leaking underground storage tank
NonGen	Non-Generator
PCBs	Polychlorinated biphenyls
RCRA	Resource Conservation and Recovery Act
SHWB	Soil and Hazardous Waste Branch
SHWS	State Hazardous Waste Site
TMK	Tax Map Key
UIC	Underground Injection Control
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground storage tank
VCP	Voluntary Response Program Site
VEC	Vapor Encroachment Condition
VES	Vapor Encroachment Screen

Executive Summary

Michaels Development Company ("Client") retained Bureau Veritas North America, Inc. (Bureau Veritas) to conduct a Phase I Environmental Site Assessment ("ESA" or "assessment") of Halewaiolu Residences property located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012) in Honolulu, Oahu, Hawaii (the "subject property"). The objective of the assessment was to provide an independent, professional opinion regarding the presence or absence of recognized environmental conditions, as defined by ASTM International (ASTM), associated with the subject property.

This assessment was performed in accordance with Bureau Veritas' Proposal Number 1709.15.166, dated June 8, 2015 and ASTM Practice E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. The United States Environmental Protection Agency (USEPA) has determined that the ASTM E1527-13 standard is consistent with the requirements for conducting All Appropriate Inquiry (AAI) and may be used to comply with the AAI regulations (40 Code of Federal Regulations [CFR] Part 312). The methods and terms are defined in the ASTM standard and AAI regulations. Details of the work performed, sources of information, and findings are presented in the report. Limitations of the assessment are described in Sections 1.2 and 1.3.

The subject property is comprised of a rectangular parcel with approximately 26,925 square feet of land area located in the densely developed Chinatown district of Honolulu, Oahu, Hawaii. The City and County of Honolulu Public Access database lists the subject property as TMK: (1) 1-7-006: Parcel 012, which is currently zoned "BMX-4 Central Business Mixed Use." The State Land Use designation is "Urban District." The City and County of Honolulu Real Property Assessment Division lists the Property Class of the subject property as "Commercial."

A description of the current uses and improvements at the subject property is presented in the following table:

Parcel/Street Address (including known historic address[es])	1331-1347 River Street (TMK: [1] 1-7-006: Parcel 012), Honolulu, Oahu, Hawaii Specific addresses: 1331 River Street 1333 River Street 1335 River Street 1337 River Street 1339 River Street 1341 River Street 1343 River Street 1345 River Street 1347 River Street
Owner:	City and County of Honolulu
Number and Size of Buildings:	The subject property is improved with a two-story multi-tenant commercial building, approximately 10,234 square feet in size and the associated asphalt-paved parking lot.
Construction Date(s):	1959
Tenants:	Hanagusa Inn, Mikis Florist, Uptown Café, and Lloyd M. Nakasone CPA (Certified Public Accountant)
Current Usage:	Commercial tenants, including restaurants, a florist, and offices

The historical research presented in this assessment has established the obvious uses of the subject property since 1914. In addition, information on historic uses of adjoining properties was also obtained. A chronological summary of the historic use of the subject and adjoining/nearby properties is presented below.

The earliest available fire insurance map, dated 1914, showed the subject property as multiple lots developed with stores and dwellings. River Street was depicted adjacent to the northwest of the subject property, beyond which was Nuuanu Stream. North Vineyard Boulevard was depicted to the northeast of the subject property. The general area was depicted as a residential neighborhood. The 1950 fire insurance map depicted an auto repair on the northeast adjoining property. The 1955 fire insurance map also shows an oil and grease storage on the northeast adjoining property. The 1963 fire insurance map depicted the subject property developed with the current building, labeled with seven "Stores." According to Department of Planning and Permitting records, the building was constructed in 1959.

Readily available records at the City and County of Honolulu Real Property Tax Assessment Office were reviewed to assess past ownership and uses of the subject property. The subject property is listed as TMK: (1) 1-7-006: Parcel 012. In 1935, the subject property was owned by James F. Gilliland, Gonatanco N. Gilliland, and Annie R. Franco. It was deeded to James F. Gilliland Estate and Annie Franco in 1962; to Agnes M Gilliland Trust and Saint Louis Chaminade Education Center in 1986, St. Louis Education Foundation in 1987; and to Shanghai Investment Company, Inc. in 1989. In 1992, the parcel was deeded to the City and County of Honolulu, the current owner.

This assessment has revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property, except for the following:

- **Former Auto Repair Facility on the Northeast Adjoining Property –** The 1950 and 1955 fire insurance maps depicted an "Auto Repair" on the northeast adjoining property. The 1955 fire insurance map also depicted an "Oil and Grease Storage" on the northeast adjoining property.

  This is considered a recognized environmental condition because there is a potential for past releases of petroleum hydrocarbons and other chemicals from the northeast adjoining property to migrate to the subject property. Bureau Veritas recommends conducting a subsurface investigation along the northeastern boundary of the subject property, including soil and groundwater sampling with laboratory analyses.

However, this assessment has revealed the following environmental conditions, which are not considered recognized environmental conditions, as defined by ASTM, in connection with the subject property:

- **Suspect Asbestos-Containing Materials (ACM)** – The building on the subject property was constructed in 1959 and may contain asbestos-containing materials (ACM). Suspect ACM were observed in the subject building, including vinyl floor tiles with associated mastic, drop and hard wall plaster. The building may also include suspect ACM that were hidden from view, such as caulking or sealant between building components and roofing materials.

  This finding is not considered a recognized environmental condition because asbestos is not an ASTM issue. However, prior to any activities (i.e., repair, renovation, demolition) which may disturb suspect ACM, these and similar materials should be sampled and analyzed for possible asbestos content. If these materials are found to contain asbestos, the building owner or leased space tenant may be required to comply with applicable United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), National Emission Standards for Hazardous Air Pollutants (NESHAPS), and state and local regulations.

- **Suspect Lead-Based paint (LBP) –** The subject property is improved with a multi-tenant building constructed in 1959. Therefore, LBP could be an issue at the subject property. The way to determine if LBP is an issue is through sampling and laboratory analysis to determine the presence or absence of LBP.

  This finding is not considered a recognized environmental condition because LBP on buildings is not considered an ASTM issue. Sampling and analysis should be conducted prior to renovation or demolition activities that may disturb painted surfaces. If the paints are found to contain lead, the building owner or leased space tenant may be required to comply with applicable USEPA, NESHAPS, OSHA, and state and local regulations.

1.0 INTRODUCTION

Michaels Development Company ("Client") retained Bureau Veritas North America, Inc. (Bureau Veritas) to conduct a Phase I Environmental Site Assessment ("ESA" or "assessment") of Halewaiolu Residences located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012) in Honolulu, Oahu, Hawaii (the "subject property"). The objective of the assessment was to provide an independent, professional opinion regarding the presence or absence of recognized environmental conditions, as defined by ASTM International (ASTM), associated with the subject property.

1.1 PURPOSE

The purpose of the assessment is to follow ASTM Practice E1527-13, which defines good commercial and customary practice in the United States of America for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products. As such, this standard is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitation on CERCLA liability (the landowner liability protections or LLPs); that is, the standard that constitutes all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial and customary practice as defined at 42 United States Code 9601(35) (B). The term recognized environmental conditions is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at the property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

1.2 METHODOLOGY

This assessment was performed under the conditions of, and in accordance with Bureau Veritas' Proposal Number 1709.15.166, dated June 8, 2015 and ASTM International Practice E1527-13, Standard Practice for Environmental Site Assessments: Phase I ESA Process. The United States Environmental Protection Agency (USEPA) has determined that the ASTM E1527-13 standard is consistent with the requirements for conducting All Appropriate Inquiry (AAI) and may be used to comply with the AAI regulations (40 Code of Federal Regulations [CFR] Part 312). The methods and terms are as defined in the ASTM standard and AAI regulations. Details of the work performed, sources of information, and findings are presented in the report. Limitations of the assessment are described in Sections 1.2 and 1.3.

The assessment generally included the following components:

- Review information provided by the client. This includes that information required by the Standard with respect to "User Responsibilities" as well as other information provided (e.g., Environmental Liens, Activity and Use Limitations [AULs], Specialized Knowledge).

- Review selected information on general geology and topography of the subject property, local groundwater conditions, and proximity to ecologically sensitive receptors, such as streams, that might be impacted by recognized environmental conditions. A determination of the sources of water, power, and sewer service at the subject property.

- Investigate historical use of the subject property through reasonably ascertainable ASTM Standard Historical Sources for evidence of prior land use that could have led to recognized environmental conditions. These Standard Historical Sources may include: aerial photography, United States Geological Survey (USGS) topographic maps, fire insurance maps, property tax files, building department records and zoning/land use records.

- Review of environmental records available from the client, property owner or site contact for evidence of recognized environmental conditions and AULs. This includes documents such as regulatory agency reports, permits, registrations, previous assessments, etc.

- Review a commercial database summary of ASTM Standard Federal, State, and Tribal regulatory agency records pertinent to the subject property and offsite facilities located within ASTM specified search distances from the subject property.

- Conduct interviews with the subject property owner (or their designated Key Site Manager) and occupants regarding current and previous uses of the subject property, particularly with respect to activities involving hazardous substances and petroleum products. Past owners, operators and occupants may also be interviewed to the extent they may be identified and their information is not likely to be duplicative.

- Conduct an onsite reconnaissance of the subject property for visual evidence of recognized environmental conditions, including, but not limited to: existing or potential soil and water contamination, as evidenced by soil or pavement staining or discoloration, unnaturally stressed vegetation, or indications of waste dumping or burial; pits, ponds, or lagoons; containers of hazardous substances or petroleum products; electrical and hydraulic equipment that may contain polychlorinated biphenyls (PCBs), such as electrical transformers and hydraulic hoists; underground and aboveground storage tanks (USTs and ASTs, respectively); etc.

- Perform a subject property line visual reconnaissance of adjacent properties for evidence of potential offsite environmental conditions that may affect the subject property.

- Evaluate information gathered during the assessment to reach conclusions concerning recognized environmental conditions and prepare this report.

This assessment also included the following non-ASTM items:

- Asbestos-Containing Materials (ACM)
- Lead-Based Paint (LBP)
- Radon
- Wetlands

This assessment did not include sampling or analysis of suspect ACM, paints, soil, groundwater or other materials.

Bureau Veritas representative Ms. Nicole Okino, Staff Geologist, under the supervision of Mr. Tim Swartz, Senior Project Manager and Environmental Professional as defined in §312.10 of 40 Code of Federal Regulations (CFR) 312 (see Section 10.0), conducted the site walkthrough portion of the assessment on June 25, 2015, accompanied by Mr. Richard Char, Vice President and Senior Property Manager of Hawaiian Properties, Ltd. and representative of the subject property owner.

Copies of selected relevant documents and supporting information are included in the applicable appendices. See the Table of Contents for a list of Appendices. Resumes for assessors and Environmental Professionals involved in this assessment are included in the Appendices. Photographs taken at the time of the walkthrough are included behind the Photographs Tab.

1.3 EXCEPTIONS & LIMITING CONDITIONS OF ASSESSMENT

Information for the assessment was obtained from the sources listed in the Appendices. This information, to the extent it was relied on to form our opinion, is assumed to be correct and complete. Bureau Veritas is not responsible for the quality or content of information from these sources.

1.3.1 Unavailable Documentation

All requested documentation regarding the subject property was made available for review.

1.3.2 Lack of Access/Reconnaissance Limitations

Bureau Veritas did not encounter significant access or reconnaissance limitations at the subject property.

1.3.3 Data Gaps

The ASTM E1527-13 requires that the report identify the following: 1) obvious uses of the subject property since 1940 or first development, whichever is earlier; and 2) significant "data gaps" which affect the ability of the Environmental Professional to identify recognized environmental conditions. The report is also to include information on the sources consulted to address the data gaps.

Historical subject property ownership and/or use information was obtained for the time period 1914 to present. Based on this information, Bureau Veritas has established the history of *obvious* uses of the subject property since 1940 or first development, whichever is *earlier*. No significant data gaps (or other data gaps warranting discussion) were encountered during this Phase I ESA.

1.4 RELIANCE

The information and opinions rendered in this report are exclusively for use by Michaels Development Company. Bureau Veritas will not distribute or publish this report without consent except as required by law or court order. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment. The services provided by Bureau Veritas in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made.

2.0 USER PROVIDED INFORMATION

ASTM E1527-13 defines "*User*" as the party seeking to use Practice E1527 to complete an environmental site assessment of the subject property. Bureau Veritas understands that Palolo Apartments LLC and Bank of Hawaii are the *User* as defined by ASTM E1527-13. ASTM E1527-13 specifies that certain tasks associated with identifying potential recognized environmental conditions at the subject property should be performed by the *User* and provided to the Environmental Professional (i.e., *User Responsibilities*). Accordingly, Bureau Veritas provided the *User* a questionnaire, requesting specific information (see Appendices).

The User Questionnaire included requests for information on the following: environmental liens and AULs that are filed or recorded against the property; "specialized knowledge" of the *User*; relationship of the purchase price to the fair market value of the property if it were not contaminated; commonly known or reasonable ascertainable information; the degree of obviousness of the presence of likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation; the

presence of *Proceedings Involving the Property* (e.g., litigation, regulatory agency rulings, violations); the reason for performing the Phase I ESA, and other information/documents (e.g., site plan, ALTA survey).

Based on Bureau Veritas' review of the *User* provided information, no readily apparent evidence of potential recognized environmental conditions at the subject property was noted.

3.0 SUBJECT PROPERTY DESCRIPTION

3.1 LOCATION

The subject property is comprised of a rectangular parcel with approximately 26,925 square feet of land area located in the densely developed Chinatown district of Honolulu, Oahu, Hawaii. The City and County of Honolulu Public Access database lists the subject property as TMK: (1) 1-7-006: Parcel 012, which is currently zoned "BMX-4 Central Business Mixed Use." The State Land Use designation is "Urban District." The City and County of Honolulu Real Property Assessment Division lists the Property Class of the subject property as "Commercial."

3.2 CURRENT USE OF SUBJECT PROPERTY

A description of the current uses and improvements at the subject parcel is presented in the table on the below.

Parcel/Street Address (including known historic address[es])	1331-1347 River Street (TMK: [1] 1-7-006: Parcel 012), Honolulu, Oahu, Hawaii Specific addresses: 1331 River Street 1333 River Street 1335 River Street 1337 River Street 1339 River Street 1341 River Street 1343 River Street 1345 River Street 1347 River Street
Owner:	City and County of Honolulu
Number and Size of Buildings:	The subject property is improved with a two-story multi-tenant commercial building, approximately 10,234 square feet in size and the associated asphalt-paved parking lot.
Construction Date(s):	1959
Tenants:	Hanagusa Inn, Mikis Florist, Uptown Café, and Lloyd M. Nakasone CPA (Certified Public Accountant)
Current Usage:	Commercial tenants, including restaurants, a florist, and offices

3.3 CURRENT USES OF ADJOINING/NEARBY PROPERTIES

The area surrounding the subject property consists primarily of commercial buildings. Adjoining and nearby properties were observed (from the subject property or from public access areas) for evidence of potential recognized environmental conditions and their potential to pose an environmental concern to the subject property (Figure 1, Figures Tab). The uses and features of adjoining properties are described below (by relative compass direction and across adjoining roadways):

Northwest		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
River Street, beyond which is Nuuanu Stream	Not applicable	Stream

North		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
River Street, beyond which is Nuuanu Stream	Not applicable	Stream

Northeast		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Borthwick Mortuary	1330 Maunakea Street	Mortuary and associated parking lot

East		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Memorial Chapel Borthwick Mortuary	1330 Maunakea Street	Mortuary and associated parking lot

Southeast		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Borthwick Mortuary	1330 Maunakea Street	Mortuary and associated parking lot

South		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Borthwick Mortuary	1330 Maunakea Street	Mortuary and associated parking lot

Southwest		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
Lum Sai Ho Tang building	1315 River Street	Commercial building

West		
Company/Facility Name	**Address**	**Type/Relevant Observations (if any)**
River Street, beyond which is Nuuanu Stream	Not applicable	Stream

Information regarding historical or other documented uses of nearby properties that may pose an environmental concern to the subject property is discussed in Sections 4.0 and 6.0, respectively.

3.4 PHYSICAL SETTING

The physical setting of the subject property was assessed through a review of the following: USGS Topographic Maps, visual observations at the subject property and nearby properties, and selected additional documentation (e.g., soil survey, geotechnical reports, previous Phase II assessment, interviews with local personnel). General information on the topography, surface water, soils, bedrock and groundwater in the vicinity of the subject property is as follows:

Soil Type	The southwestern portion of the subject property is Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes and the northeastern portion of the subject property is Kaena clay, 2 to 6 percent slopes (USDA, 1972)
Nearby Surface Water/Drainage Features	Nuuanu Stream adjacent to the northwest beyond River Street
Estimated Depth Shallow Groundwater:	Approximately 3 to 8 feet
Estimated Shallow Groundwater Flow Direction	Southwest, toward the Pacific Ocean at Honolulu Harbor (USGS, Honolulu, 2013)

Bureau Veritas reviewed the *Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii, Report No. 179*, published by the Water Resources Research Center at the University of Hawaii, for information on groundwater conditions below the subject property. The report describes the regional groundwater in the vicinity of and beneath the subject property as part of the Kalihi aquifer system within the Honolulu aquifer sector.

The upper aquifer is described as an unconfined, basal aquifer of the sedimentary type, occurring in non-volcanic lithology. This aquifer is listed with moderate salinity (1,000 to 5,000 milligrams of chloride per liter of water (mg/L Cl^-) that is not of ecological importance and is not used as a drinking water supply. It is identified as replaceable, with a high vulnerability to contamination.

The lower aquifer is described as a confined, basal aquifer of the flank type, occurring in horizontally extensive lavas. This aquifer is listed as a currently used, irreplaceable, fresh (less than 250 mg/L Cl^-) drinking water source with a low vulnerability to contamination.

The subject property is located above the HDOH defined Underground Injection Control (UIC) line. Areas above the UIC line denote potential underground drinking water aquifers. Areas below the UIC line generally denote aquifers that are unsuitable for drinking water purposes. Consequently, the groundwater below the subject property is considered a potential drinking water source.

The subsurface conditions under the subject property are interpreted from available data and may vary. Estimated groundwater flow direction is based on topography and nearby water features unless otherwise noted. Topography is not always a reliable basis for predicting groundwater flow direction. The local groundwater gradient under the subject property may be influenced naturally by tidal influences, zones of higher or lower permeability, or artificially by nearby pumping or recharge, and may deviate from the regional trend.

4.0 HISTORICAL REVIEW

The following Sections detail Bureau Veritas' review of available historical and related information. This includes a review of ASTM Standard Historical Sources, Agency/Department records/personnel interviews and other documents. The historical summary also incorporates information obtained from interviews and other components of the assessment process.

4.1 SUMMARY OF HISTORICAL REVIEW

The historical research presented in this assessment has established the obvious uses of the subject property since 1914. In addition, information on historic uses of adjoining properties was also obtained. A chronological summary of the historic use of the subject and adjoining/nearby properties is presented below.

The earliest available fire insurance map, dated 1914, showed the subject property as multiple lots developed with stores and dwellings. River Street was depicted adjacent to the northwest of the subject property, beyond which was Nuuanu Stream. North Vineyard Boulevard was depicted to the northeast of the subject property. The general area was depicted as a residential neighborhood. The 1950 fire insurance map depicted an auto repair on the northeast adjoining property. The 1955 fire insurance map also shows an oil and grease storage on the northeast adjoining property. The 1963 fire insurance map depicted the subject property developed with the current building, labeled with seven "Stores." According to Department of Planning and Permitting records, the building was constructed in 1959.

Readily available records at the City and County of Honolulu Real Property Tax Assessment Office were reviewed to assess past ownership and uses of the subject property. The subject property is listed as TMK: (1) 1-7-006: Parcel 012. In 1935, the subject property was owned by James F. Gilliland, Gonatanco N Gilliland, and Annie R. Franco. It was deeded to James F Gilliland Estate and Annie Franco in 1962; to Agnes M Gilliland Trust and Saint Louis Chaminade Education Center in 1986, St. Louis Education Foundation in 1987; and to Shanghai Investment Company, Inc. in 1989. In 1992, the parcel was deeded to the City and County of Honolulu, the current owner.

4.2 AERIAL PHOTOGRAPHS

Aerial photographs, including the subject and adjoining properties, were obtained from Environmental Data Resources, Inc. (EDR), and Google Earth™. Photographs taken in the years 1952, 1968, 1976, 1978, 1985, 1992, 2000, 2004, 2006, 2008, 2009, 2011, 2013, and 2014 were reviewed. Aerial photographs from EDR are included in Appendix D. Key findings noted during this review are as follows:

- The 1952 aerial photograph showed the subject property with trees and improved with four buildings. River Street was shown adjacent to the northwest, beyond which was Nuuanu Stream. North Vineyard Boulevard appeared to the northeast. The general area appeared as an urban neighborhood.

- The 1968 aerial photograph showed the subject property developed with the current structure. The east, south, and southwest adjoining properties also appeared redeveloped with structures. No significant changes were noted in the 1976, 1978, and 1985 aerial photographs.

- No significant changes were noted in the 1992 aerial photograph, except that the east adjoining property structure was no longer shown. No significant changes were noted in the remaining aerial photographs from 2000 through 2014.

4.3 USGS TOPOGRAPHIC MAPS

Available historic topographic maps for the subject property and vicinity were obtained from EDR and included the years 1928, 1953, 1954, 1959, 1969, 1970, 1983, 1998, and 2013. Topographic maps from EDR are included in Appendix E. Key findings noted during this review are as follows:

- The earliest available topographic map, from 1928, depicted the subject property developed with a small structure and a portion of a larger structure that extended to the southwest. The current roadways were depicted in the area, and most of the adjoining areas were developed with building.

- The 1953 topographic map showed the subject parcel shaded pink to denote unspecified development. No significant changes were observed on the remaining topographic maps, dated from 1954 to 2013.

4.4 FIRE INSURANCE MAPS

Fire insurance maps typically depict either the locations of manufacturing and industrial facilities within the city limits or potential hazards existing within individual building structures. In many cases, evidence of environmental concern, such as locations of USTs, can be found by reviewing fire insurance maps.

Fire insurance maps for the subject property and vicinity were obtained from EDR of fire insurance maps for the years 1914, 1927, 1950, 1955, 1963, 1974, 1975, 1976, 1978, 1985, 1991, and 1993. The maps provided by EDR are included in Appendix E. Key findings noted during this review are as follows:

- The earliest available fire insurance map, dated 1914, showed the subject property as multiple lots developed with stores and dwellings. River Street was depicted adjacent to the northwest of the subject property, beyond which was Nuuanu Stream. North Vineyard Boulevard was depicted to the northeast of the subject property. The general area was depicted as a residential neighborhood. No significant changes were noted on the 1927 fire insurance map.

- The 1950 fire insurance mas depicted the subject property similar to the 1927 fire insurance map. The northeast adjoining parcel was shown with an “Auto Repair” facility.

- The 1955 fire insurance map depicted the subject property similar to the 1950 fire insurance map. The northeast adjoining property was shown with an “Oil and Grease Storage”, in addition to the auto repair facility.

- The 1963 fire insurance map depicted the subject property developed with the current building, labeled with seven “Stores.” The southwest adjoining property was depicted redeveloped with a store and the south adjoining property was redeveloped with Borthwick Mortuary. No significant changes were noted on the 1974 fire insurance map.

- No significant changes were observed in the remaining fire insurance maps from 1975 through 1993.

4.5 RECORDED LAND TITLE RECORDS

Information provided to Bureau Veritas by the *User* with respect to environmental liens or AULs was discussed in Section 2.0. ASTM E1527-13 recommends that the User retain a title company or title professional to provide recorded land title records.

As part of this assessment, Bureau Veritas was provided a title report reflecting recorded land title records and lien records that are filed under federal, state, tribal, or local law from Title Guaranty of Hawaii, Inc., and dated April 28, 2015. Bureau Veritas' review of the land title records did not reveal environmental liens or AULs associated with the subject property.

Readily available records at the City and County of Honolulu Real Property Tax Assessment Office were reviewed to assess past ownership and uses of the subject property. The subject property is listed as TMK: (1) 1-7-006: Parcel 012. In 1935, the subject property was owned by James F. Gilliland, Gonatanco N Gilliland, and Annie R. Franco. It was deeded to James F Gilliland Estate and Annie Franco in 1962; to Agnes M Gilliland Trust and Saint Louis Chaminade Education Center in 1986; St. Louis Education Foundation in 1987; Shanghai Investment Company, Inc. in 1989. In 1992 the parcel was deeded to the City and County of Honolulu, the current owner. A summary of past ownership for the subject property is presented in the table below:

Parcel	Year	Property Transaction
TMK: (1) 1-7-006: Parcel 012	1935	The earliest records indicate the parcel was owned by James F. Gilliland, Gonatanco N. Gilliland, and Annie R. Franco.
	1962	Parcel deeded to James F. Gilliland Estate and Annie Franco.
	1983	Parcel leased to RJ Associates.
	1986	Parcel deeded to Agnes M. Gilliland Trust and Saint Louis Chaminade Education Center.
	1987	Parcel deeded to St. Louis Education Foundation.
	1989	Parcel deeded to Shanghai Investment Company, Inc.
	1992	Parcel deeded to City and County of Honolulu, the current owner.
	2006	Parcel leased to New Hanagasa Inn Corp.

No readily apparent evidence of recognized environmental conditions at the subject property was noted during our review of tax assessment records.

4.6 CITY DIRECTORY

A city directory provides names of former businesses and occupants of the subject property, which may indicate potential environmental concerns associated with the business. A city directory report was provided by EDR, and is included in Appendix G. A summary of the listings for the subject property is shown below. No facilities of environmental concern were listed for the adjoining and nearby properties.

Year	Listing
1995	1333 River Street: Riverside Inn 1335 River Street: Beauty Salon Toyo, Chinen Masa Graphic Design, Envisions Plus, Inc., Rowland Higa, Eric Hill, Hironaka and Associates Inc., Owen Kobayashi Graphic Design, and Property International 1341 River Street: Chikaramochi Store 1343 River Street: Collage Walk Diner 1347 River Street: Mikis Florist

Year	Listing
1999	1333 River Street: Riverside Inn 1335 River Street: Beauty Salon Toyo, Eric Hill, First Model Management Incorporated, Gordon Loriann Landscape Architect, Hironaka and Associates Incorporated, Loriann Gordon, Mock J Realty, and Property International 1341 River Street: Chikaramochi Store 1343 River Street: Collage Walk Diner 1347 River Street: Mikis Florist
2003	1333 River Street: Helene Toya and Uptown Cafe 1335 River Street: Beauty Salon Toyo, Envisions Plus, Inc., Eric Hill, Gordon Loriann Landscape Architect, Hironaka and Associates Inc., Honolulu Realty, Honolulu Realty Management, M&M Electric Inc., Mock J Realty, Ray Kar Computers, and Saturnino Tamayo 1343 River Street: Collage Walk Inn 1347 River Street: Mikis Florist
2008	1335 River Street: Beauty Salon Toyo, Envisions Plus, Inc., Honolulu Realty, Jun Shiatsu Seitai, Lloyd M Nakasone CPA, Lloyd Nakasone, and M&M Electric Inc. 1343 River Street: Hanagasa Inn Inc. 1347 River Street: Mikis Florist
2013	1333 River Street: Uptown Cafe 1335 River Street: Honolulu Realyt, Jun Shiatsu Seitai, and Nakasone Lloyd M CPA 1343 River Street: New Hanagasa Inn Corp. 1347 River Street: Mikis Florist

No readily apparent evidence of recognized environmental conditions at the subject property and adjoining properties were noted in the city directory report.

4.7 AGENCY CONTACTS

4.7.1 Building, Planning, and/or Zoning Departments

According to the City and County of Honolulu DPP database, the subject property is currently zoned "BMX-4 Central Business Mixed Use," and the State Land Use designation is "Urban District." The City and County of Honolulu Real Property Assessment Division lists the Property Class of the subject property as "Commercial." The DPP database also indicates that the two-story retail building on the subject property was constructed in 1959.

Bureau Veritas also reviewed building permits maintained by the DPP to obtain historical information for the subject property. Five permits, dated from 1973 to 2004, were listed for the subject property, which included permits for alterations, electrical work, and plumbing.

No readily apparent evidence of recognized environmental conditions at the subject parcel/property was noted in the building permit records reviewed.

4.7.2 Fire Department

The Honolulu Fire Department was contacted on June 16, 2015 to obtain information regarding any fires, complaints, permits, or violations involving hazardous material use, USTs, or ASTs on record for the subject and/or adjoining properties.

The Honolulu Fire Department has one dumpster fire incident report, number 2005-38721. The incident report was reviewed at the Honolulu Fire Department on July 6, 2015. The report stated that a dumpster fire occurred on Sunday, November 27, 2005 at approximately 5:04 PM. No evidence of environmental concern was noted in the incident report.

4.7.3 Department of Health (Solid and Hazardous Waste Branch)

The State of Hawaii Department of Health (HDOH), Solid and Hazardous Waste Branch UST and leaking underground storage tank (LUST) databases (2015) were reviewed to obtain information regarding any USTs or LUSTs at the subject property or adjoining properties.

The subject property and immediately surrounding properties were not listed in the UST and LUST databases reviewed.

4.7.4 Department of Health (Hazard Evaluation & Emergency Response Office)

The HDOH Hazard Evaluation and Emergency Response (HEER) Office Release Notification database (2014) was reviewed to obtain information regarding any spills or other environmental incidents that may have occurred at the subject property or adjacent properties.

The subject property and adjoining properties were not listed in the HEER databases reviewed.

4.8 PREVIOUS ENVIRONMENTAL REPORTS OR OTHER DOCUMENTS

No previous environmental reports or other historical documents regarding the subject parcel/property were provided to Bureau Veritas for review during this assessment.

5.0 INTERVIEWS

Bureau Veritas interviewed selected individuals associated with the subject property. The purpose of the interviews was to obtain additional information related to: 1) the current and past operations at the subject and/or adjoining properties that may result in recognized environmental conditions; and 2) the presence of Proceedings Involving the Property (e.g., litigation, regulatory agency rulings, violations).

Bureau Veritas interviewed Mr. Richard Char, Vice President and Senior Project Manager with Hawaiian Properties, Ltd. and representative of the subject property owner, during the site walkthrough on June 25, 2015. Mr. Char has been associated with the subject property for approximately ten years, and appeared to be forthcoming with the information for which he had knowledge.

Mr. Char was unaware of any USTs, hydraulic equipment, chemical spills, or hazardous materials releases on the subject property. Furthermore, he was unaware of any undocumented or unpermitted wells on the subject property. He was aware of a sump-pump located on the southern portion of the subject property used to collect storm water and pump it into the City and County of Honolulu storm drain system. The subject property is hooked up to the city gas line for cooking purposes at the two cafes in the subject building.

Trash is collected in a dumpster on the northeastern corner of the subject property and disposed offsite on a regular basis.

Mr. Char was asked whether any asbestos or lead paint testing had been conducted at the subject property. He was only aware that the spray-applied acoustical ("popcorn") ceiling plaster on the second floor of the subject building was removed. However, he was not able to provide a copy of the test results or asbestos abatement documents.

Mr. Char was asked the following and responded to the best of his knowledge:

Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property.	Yes _____	No **X**
Any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property.	Yes _____	No **X**
Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.	Yes _____	No **X**

6.0 STANDARD ENVIRONMENTAL RECORD SOURCES: FEDERAL, STATE, AND TRIBAL

Available government database information prepared by EDR was reviewed to evaluate both the subject property and any listed sites within ASTM-recommended search distances, which could potentially impact the subject property. Federal, state, and local databases reviewed are included in Appendix H.

The regulatory database report also included an Unmappable Sites Section. Unmappable sites are sites that cannot be plotted with confidence, but can be located by zip code or city name. In general, a site cannot be geocoded due to inaccurate or missing information in the environmental database record provided by its applicable agency. Unmappable sites that were identified by Bureau Veritas are included, as applicable, within the following paragraphs.

Subject Property

The subject property was not identified in the EDR database report.

Nearby Properties

A total of 116 listings were identified within the specified search distances from the subject parcel, including: one Corrective Action Report (CORRACTS), six Resource Conservation and Recovery Act, Conditionally Exempt Small Quantity Generator (RCRA-CESQG) site; 66 State Hazardous Waste Sites (SHWS); 23 Leaking Underground Storage Tank (LUST) sites; one Underground Storage Tank (UST) sites; four Institutional Control (INST CONTROL) sites; two Engineering Control (ENG CONTROLS) sites; one Voluntary Response Program Sites (VCP); three RCRA Non-Generator (NonGen) sites, one Department of Defense site (DOD); one Formerly Used Defense sites (FUDS); two EDR Proprietary Manufactured Gas Plants (EDR MGP); four EDR Exclusive Historic Dry Cleaners (EDR US Hist Cleaners); and one EDR Exclusive Historic Gas Station (EDR US Hist Auto Stat) sites.

Nearby sites with the potential to impact the subject property were evaluated in detail and are listed as follows:

Facility/Address	Database	Orientation from Subject Property (approximate)	Environmental Concern
Kukui Tower 35 North Kukui Street	RCRA-CESQG	Approximately 600 feet south	No; one RCRA-CESQG listed with "No Violations Found."
Nuuanu Medical Center 1374 Nuuanu Avenue	RCRA-CESQG	Approximately 600 feet southeast	No; one RCRA-CESQG listed with "No Violations Found."
Young Laundry and Dry Cleaning 1365 Nuuanu Avenue	EDR US Hist Cleaners	Approximately 600 feet southeast	No; last listed in 2012 as Young Laundry and Dry Cleaners. This site is too distant and cross-gradient to affect the subject property.

The other listed sites are not expected to present an environmental concern to the subject property because they require no further action, or based upon Bureau Veritas' review, are too distant and/or topographically down-gradient or cross-gradient relative to the subject property to reasonably affect it.

7.0 TIER 1 VAPOR ENCROACHMENT SCREEN (VES)

Bureau Veritas conducted a Tier 1 VES during the Phase I ESA. The VES was conducted in accordance with ASTM E2600-10, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions (VES standard). A VES is often conducted in conjunction with a Phase I assessment as much of the information utilized is common to both processes. The methods and terms are as defined in the ASTM VES standard.

The goal of a VES is to identify a vapor encroachment condition (VEC) at a subject property. A VEC is defined as the presence of likely presence of chemicals of concern (COC) vapors in the subsurface of a subject property caused by the release of vapors from contaminated soil or groundwater either on or near the subject property.

In accordance with the VES standard, Bureau Veritas requested that the *User* provide information on the subject property, with respect to the following: "specialized knowledge" of the *User*; and commonly known or reasonable ascertainable information.

Based on Bureau Veritas' review of the *User* provided information, no readily apparent evidence of potential vapor encroachment conditions at the subject property was noted.

7.1 TIER 1 SCREENING INFORMATION

A Tier 1 VES includes obtaining and reviewing information on the subject property and adjoining properties. This includes information on the following: user provided information; physical setting information; existing/planned use of the subject property; types of structures/existing or planned on the subject property; surrounding area description; selected Federal, State, Local and Tribal environmental records sources; historical records related to the past use of the subject property and adjoining properties within the area of concern (AOC), 1/10 to 1/3 mile; the likely COC; and the presence of significant natural or man-made conduits that can serve as preferential pathways, such as utility corridors, sewers, storm

drains, etc. (Note: These “preferential pathways” may provide for a more direct route for vapors to encroach upon the subject property).

As stated previously, most of this information was obtained as part of the standard Phase I assessment process and has already been discussed in the applicable sections of this report. Additional information was also obtained with respect to the following: planned additional structures; and significant natural or man-made “preferential pathways” of potential vapor migration. This information is summarized below:

- Currently, there are plans to demolish the current building and construct a new apartment building.

- The subject property includes utilities, each of which includes underground conduits. Below-grade utilities include water, sanitary sewer, electricity, and gas (for cooking).

7.2 TIER 1 SCREENING EVALUATION

An evaluation includes two tests: 1) a search distance test to evaluate the proximity of the target property to known or suspected “contaminated properties”, and 2) a COC test to determine the likely presence of COCs at the subject or properties within the AOC. In evaluating the data, the distance and proximity to potentially contaminated off-site properties must be evaluated, including whether they are up-, cross-, or down-gradient relative to the subject property. A brief summary of relevant information considered for the Tier 1 screening follows:

Use of Property:	Retail stores
Soil Characteristics	Ewa silty clay loam and Kaena clay (USDA, 1972)
Depth to groundwater:	3 to 5 feet (USGS, Honolulu, 2013)
Preferential Pathways:	Underground utilities

The VES process has been completed in accordance with the ASTM E2600-10. Based on the information gathered during this assessment, no potential sources of COC, as defined in the ASTM E2600-10, were identified, except for the former “Auto Repair” and Oil and Grease Storage” structures identified on the northeast adjoining property on the 1950 and 1955 fire insurance maps (see Section 4.4.) This finding is considered a VEC and a recognized environmental condition in relation to the subject property.

8.0 SITE RECONNAISSANCE

8.1 GENERAL OBSERVATIONS

At the time of the site walkthrough on June 25, 2015, the subject property was observed as a two-story commercial building and associated asphalt-paved parking lot along River Street. The parking lot was observed in good condition with *de minimis* staining from incidental leakage of parked vehicles.

The subject building was observed on the western portion of the subject property. The southernmost tenant was Uptown Café, and their ovens/stoves are hooked up to the city gas line for cooking purposes. A food grease trap was observed under the sink in the kitchen. However, Uptown Café cleans out the food grease trap and the food grease in 55-gallon drums located outside the rear door to Uptown Cafe.

The restaurant area of Uptown Café was observed with drop ceilings and vinyl flooring, which are suspect ACM. Uptown Café had one women's and one men's bathroom in the northern portion of the restaurant area.

There was a vacant space north of Uptown Café. The vacant space was observed with black mold or soot on the walls and ceiling. It included concrete floors and electrical outlets hanging from the ceiling. Hanagasa Inn was not open at the time of the site walkthrough; however, Hanagasa Inn is similar to Uptown Café.

Mikis Florist occupies the northernmost space on the ground floor of the subject building. Mikis Florist was observed with a lawn equipment repair area in the rear of the store. A small amount of staining (de minimis) was observed on the floor. Shelves held associated tools for fixing equipment. A small used oil container was observed outside the rear door to Mikis Florist in a cardboard box.

Bureau Veritas was able to access all of the second floor units except one, the Lloyd Nakasone, CPA office. The second floor units were observed with carpet or vinyl flooring. Each unit had its own bathroom. Most of the units were observed with peeling paint, which is suspect LBP.

Covers for a sump-pump were observed on the central portion of the subject property for the collection of storm water. A trash dumpster was observed on the northeastern corner of the subject property. A pad-mounted electrical transformer, owned and maintained by Hawaiian Electric, was observed on the southern corner of the subject property. "No PCBs" stickers were not observed on the transformer vault.

No evidence of significant releases was observed, and no evidence of subsurface structures of environmental concern (e.g., USTs, hydraulic lifts) was observed on the subject property.

8.2 HAZARDOUS SUBSTANCES AND PETROLEUM PRODUCTS (OTHER THAN UST/AST)

The subject property was assessed for signs of use, storage, or disposal of hazardous substances and/or petroleum products. Property uses where these types of materials are typically found include: vehicle service bays, vehicle repair operations, auto body shops and related activities (e.g., solvents, cleaners, degreasers, lubricants, paints, antifreeze); dry cleaners, rug cleaners, steam laundries, Laundromats with self-serve dry clean machines (e.g., chlorinated solvents, Naphtha, mineral spirits); manufacturing operations, plating facilities and other industrial/commercial operations. For purposes of this assessment, this does not include use/storage of small quantities of typical janitorial and maintenance materials (if any), unless considered relevant.

Bureau Veritas observed one container of used oil in a cardboard box located at the rear of Mikis Florist. Mr. Miki stated that he takes the container (after it is full) to his friend who owns as automobile mechanic shop for disposal.

8.3 STORAGE TANKS

8.3.1 Underground Storage Tanks

The subject property was assessed for evidence of USTs. The assessment consisted of noting evidence (e.g., fill ports, vent piping, dispensing equipment, pavement variations) indicating that USTs are currently or were previously located on the subject property.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of USTs at the subject property.

8.3.2 Aboveground Storage Tanks

The subject property was assessed for evidence of ASTs. The assessment included noting evidence (e.g., concrete foundations or saddles, pedestals or steel support structures) indicating that ASTs were previously located on the subject property.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of ASTs at the subject property.

8.3.3 In-Ground Hydraulic Equipment

The subject property was assessed for evidence of in-ground hydraulic equipment (e.g., hydraulic elevators or lifts that have hydraulic fluid-containing reservoirs or jacks below ground surface) or other types of hydraulic equipment. Hydraulic fluid in equipment installed in 1978 or before may contain PCBs.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of in-ground hydraulic equipment at the subject property.

8.4 WASTES

The subject property was assessed for evidence suggesting the generation or disposal of “wastes” onsite (e.g., drums, dumpsters, debris piles). Observations suggesting the presence of wastes onsite (if any) are presented below. This includes observations/information suggesting 1) the placement of significant quantities of “fill” materials (from an unknown or potentially contaminated source) or 2) the “disposal” of wastes/debris/trash onsite.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of onsite waste disposal at the subject property. Food grease barrels for Uptown Café and Hanagasa Inn were observed at the rear of the subject building. Each restaurant is responsible for disposal of the grease container. Household-type wastes are placed in a trash dumpster on the northeastern portion of the subject property and are collected for off-site disposal on a regular basis.

8.5 POLYCHLORINATED BIPHENYLS

The subject property was assessed for the presence of liquid-cooled electrical units (e.g., transformers) and major sources of hydraulic fluid (e.g., elevators, lifts). Such units are notable because they may be potential PCB sources.

A pad-mounted transformer vault was observed on the southern corner of the subject property. A “No PCBs” sticker was not observed on the transformer. However, through communications with Hawaiian Electric, Bureau Veritas learned that transformer number 82836 is a Non-PCB unit. The letter from Hawaiian Electric is included as Appendix I.

8.6 WASTE WATER AND STORM WATER DISCHARGE

The subject property was assessed for evidence of waste or process water discharges (if any) and storm water discharges. For purposes of this assessment, this generally includes discharges other than domestic waste water from sinks and toilets. In addition, properly functioning septic systems used strictly for residential and most commercial operations generally do not represent a cause for concern.

Exceptions can include those instances where hazardous substances/petroleum products may be discharged through the system (e.g., spent solvents at an auto repair facility).

Wastewater is not currently generated at the subject property.

The storm water runoff from the subject property flows via sheet flow to the northwest, into River Street and the associated storm drains. Storm water also flows into the sump-pump on the central portion of the subject property, where it is pumped to the City and County of Honolulu storm drain system.

The assessment consisted of noting evidence of the following: hatches, manholes, patches on the floor slabs, clean out access points; oil/water separators, clarifiers, sumps and trench drains; septic systems; pools of liquid (i.e., likely to contain hazardous substances or petroleum products); pits, ponds, or lagoons (i.e., associated with waste disposal or treatment); industrial or other process discharge sources; etc.

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of the above noted features or discharges sources.

8.7 WELLS

The subject property was assessed for evidence of wells (e.g., dry, irrigation, injection, abandoned, monitor, supply).

No visual evidence was observed, and no other information was obtained, to indicate the current and/or potential past presence of wells at the subject property. According to the State of Hawaii, Department of Land and Natural Resources (DLNR), Division of Water Resource Management *Ground Water Index and Summary* database (2006), there are no records of active, inactive, or destroyed wells on the subject property. The nearest well (Well No.3-1951-001), is located approximately 500 feet northeast of the subject property. This well was drilled in 1883 to a depth of 767 feet. The well is owned by the City and County Parks and Recreation and is listed as abandoned and sealed.

9.0 NON-ASTM ISSUES

9.1 ASBESTOS-CONTAINING MATERIALS

The apartment building on the subject property was constructed in 1959 and may contain asbestos-containing materials (ACM). Suspect ACM were observed in the subject building, including vinyl floor tiles with associated mastic, drop-in ceiling panels, and hard wall plaster. The building may also include suspect ACM that were hidden from view, such as caulking or sealant between building components and roofing materials.

Mr. Char stated that some of the popcorn ceiling on the second floor of the subject building was removed before he was associated with the property. However, he was not able to provide a copy of the test results or asbestos abatement documents.

Physical sampling and analysis of suspect ACM was not conducted during the assessment. Prior to any activities (i.e., repair, renovation, demolition) which may disturb suspect ACM, these and similar materials should be sampled and analyzed for possible asbestos content. If these materials are found to contain asbestos, the building owner or leased space tenant may be required to comply with applicable United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), National Emission Standards for Hazardous Air Pollutants (NESHAPS), and state and local regulations.

9.2 RADON

Radon is a naturally occurring radioactive gas formed by the decay of uranium in bedrock and soil. The potential adverse health effects associated with radon gas depend on various factors, such as the concentration of the gas and duration of exposure. The concentration of radon gas in a building depends on subsurface soil conditions, the integrity of the building's foundation, and the building's ventilation system.

Due to the relatively young geological age (less than five million years) of the southernmost islands of the Hawaiian archipelago, radon gas does not occur at elevated levels. Therefore, no further investigation of radon is recommended for the subject property.

9.3 LEAD-BASED PAINT

Lead-based paint (LBP) was commonly used for corrosion protection in the 1960s, and in prime, intermediate, and finish coats well into the 1970s. Regulations specifically addressing LBP include Housing and Urban Development (HUD) (1995) guidelines and the Consumer Product Safety Act (1977). These regulations define LBP as containing 0.5 percent (%) lead by weight (5,000 ppm), and 0.009% lead by weight (90 parts per million), respectively, for housing and consumer products. There is no industrial definition. There are specific testing methods for sampling and analyzing lead in paint.

Because the building on the subject property was built before 1978, LBP may be an issue at this site. The way to determine if LBP is an issue is through sampling and laboratory analysis to determine the presence or absence of LBP. Sampling and analysis should be conducted prior to renovation or demolition activities that may disturb painted surfaces. If the paints are found to contain lead, the building owner or leased space tenant may be required to comply with applicable USEPA, NESHAPS, OSHA, and state and local regulations.

9.4 WETLANDS

The subject property was inspected for the presence of sensitive ecological areas by noting environmental indicators (e.g., wetlands, vegetation, floodplains) located on or immediately adjoining the subject property.

No sensitive ecological areas were observed on the subject property. The USGS 7.5-Minute Topographic Quadrangle Map, Honolulu (2013), which includes the subject property and adjoining properties, and the National Wetlands Inventory Map do not depict wetlands or other sensitive ecological areas on the subject property. The nearest designated wetlands area is the Nuunau Stream, located adjacent to the northwest of the subject property, beyond River Street. Nuuanu Stream is described as Estuarine and Marine Deepwater.

The Federal Emergency Management Agency Flood Insurance Rate Map (FEMA/FIRM) was reviewed to determine if the subject property is located in a flood hazard area. According to the FEMA/FIRM index map (FEMA/FIRM Panel No. 15003C0366G, dated January 19, 2011), the subject property and adjoining properties are located in Zone X. to denote areas determined to be outside the 0.2% annual chance floodplain.

10.0 FINDINGS AND OPINIONS

Bureau Veritas has performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 for Halewaiolu Residences located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012) in Honolulu, Oahu, Hawaii (the "subject property"). Any exceptions to, or deletions from, this practice are described in Sections 1.2 and 1.3 of this report.

This assessment has revealed no evidence of recognized environmental conditions, as defined by ASTM, in connection with the subject property, except for the following:

- **Former Auto Repair Facility on the Northeast Adjoining Property-** The 1950 and 1955 fire insurance maps depicted an "Auto Repair" on the northeast adjoining property. The 1955 fire insurance map also depicted an "Oil and Grease Storage" on the northeast adjoining property.

  This is considered a recognized environmental condition because there is a potential for past releases of petroleum hydrocarbons and other chemicals from the northeast adjoining property to migrate to the subject property. Bureau Veritas recommends conducting a subsurface investigation along the northeastern boundary of the subject property, including soil and groundwater sampling with laboratory analyses.

However, this assessment has revealed the following environmental conditions, which are not considered recognized environmental conditions, as defined by ASTM, in connection with the subject property:

- **Suspect ACM** –The building on the subject property was constructed in 1959 and may contain ACM. Suspect ACM were observed in the subject building, including vinyl floor tiles with associated mastic, drop and hard wall plaster. The building may also include suspect ACM that were hidden from view, such as caulking or sealant between building components and roofing materials.

  This finding is not considered a recognized environmental condition because asbestos is not an ASTM issue. However, prior to any activities (i.e., repair, renovation, demolition) which may disturb suspect ACM, these and similar materials should be sampled and analyzed for possible asbestos content. If these materials are found to contain asbestos, the building owner or leased space tenant may be required to comply with applicable United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), National Emission Standards for Hazardous Air Pollutants (NESHAPS), and state and local regulations.

- **Suspect LBP-** The subject property is improved with a multi-tenant building constructed in 1959. Therefore, LBP could be an issue at the subject property. The way to determine if LBP is an issue is through sampling and laboratory analysis to determine the presence or absence of LBP.

  This finding is not considered a recognized environmental condition because LBP on buildings is not considered an ASTM issue. Sampling and analysis should be conducted prior to renovation or demolition activities that may disturb painted surfaces. If the paints are found to contain lead, the building owner or leased space tenant may be required to comply with applicable USEPA, NESHAPS, OSHA, and state and local regulations.

11.0 SIGNATURES

Certification of both Environmental Professionals signing below:

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

This report was prepared by:

Tim Swartz
Senior Project Manager
Health, Safety, and Environmental Services

This report reviewed by:

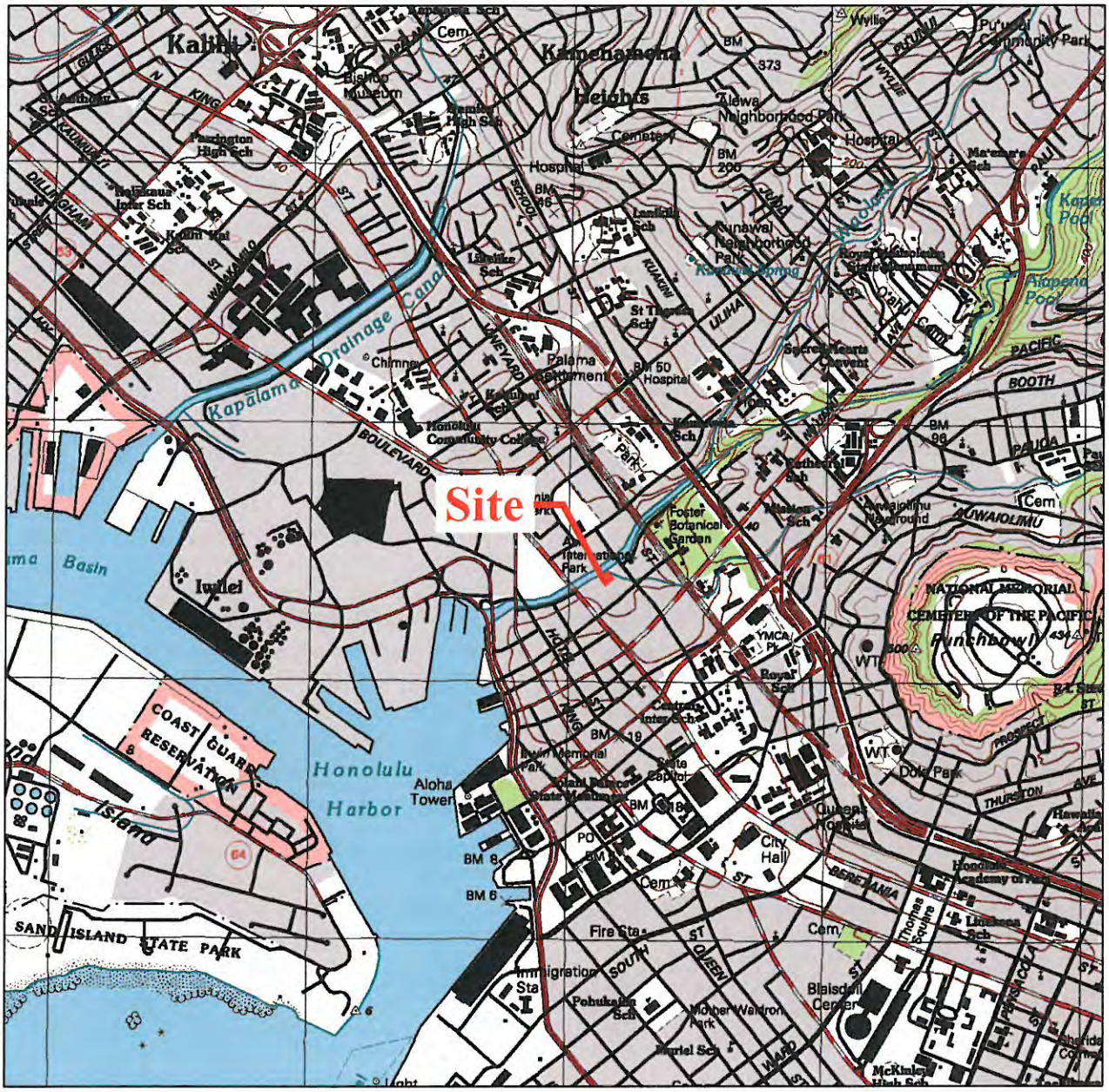
John P. Rau, P.G.
Senior Geologist/Manager
Health, Safety, and Environmental Services

July 28, 2015

Phase I Environmental Site Assessment
Halewaiolu Residences
1331-1347 River Street
(TMK Number: [1] 1-7-006: Parcel 012)
Honolulu, Oahu, Hawaii

Bureau Veritas Project No. 17015-015079.00

FIGURES



SCALE 1: 24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

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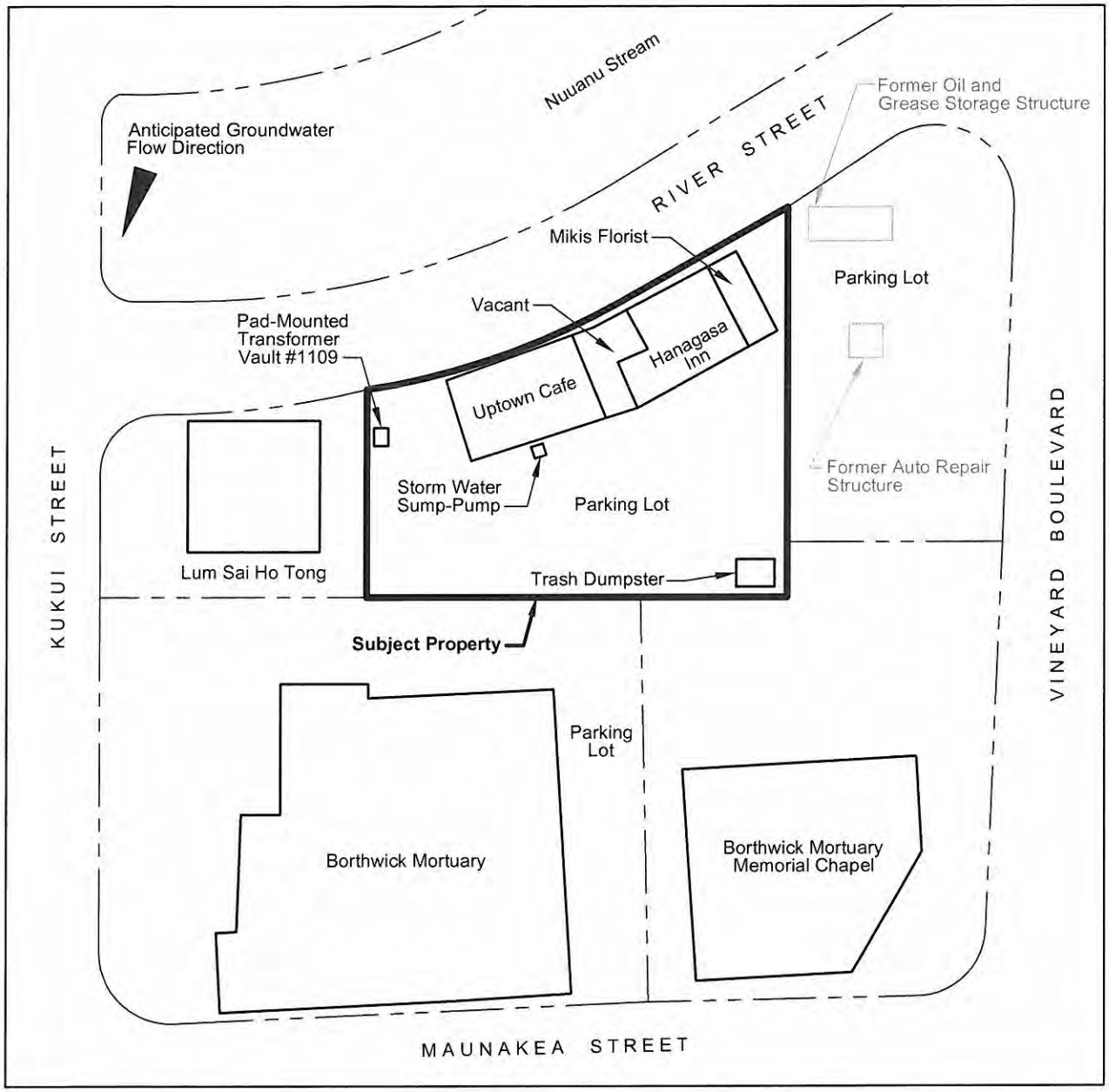
Portion of 7.5-minute Series (Topographic) Maps
United States Department of Interior
United States Geological Survey
Honolulu Quadrangle, City & County of Honolulu, Hawaii
1998

BUREAU VERITAS	Project No.: 17015-015079.00	Title: Site Location Map	FIGURE 1
	Date: 07/08/15	Location: Proposed Halewaiolu Residences Property 1331-1347 River Street (TMK: [1] 1-7-006: Parcel 012) Honolulu, Oahu, Hawaii	
	Revised By: DG		
	Checked By: NO	Client: Michaels Development Company	



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0 20' 40' 80' 160'

Approximate Scale

BUREAU VERITAS	Project No.: 17015-015079.00	Title: Site Vicinity Map	FIGURE 2
	Date: 07/08/15	Location: Proposed Halewaiolu Residences Property 1331-1347 River Street (TMK: [1] 1-7-006: Parcel 012) Honolulu, Oahu, Hawaii	
	Revised By: DG		
	Checked By: NO	Client: Michaels Development Company	

PHOTOGRAPHS



Project No. **17015-015079.00**	**Description**	View of two-story commercial building on the subject property, looking northeast	**Photo 1**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No. **17015-015079.00**	**Description**	View of the subject property, looking north	**Photo 2**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



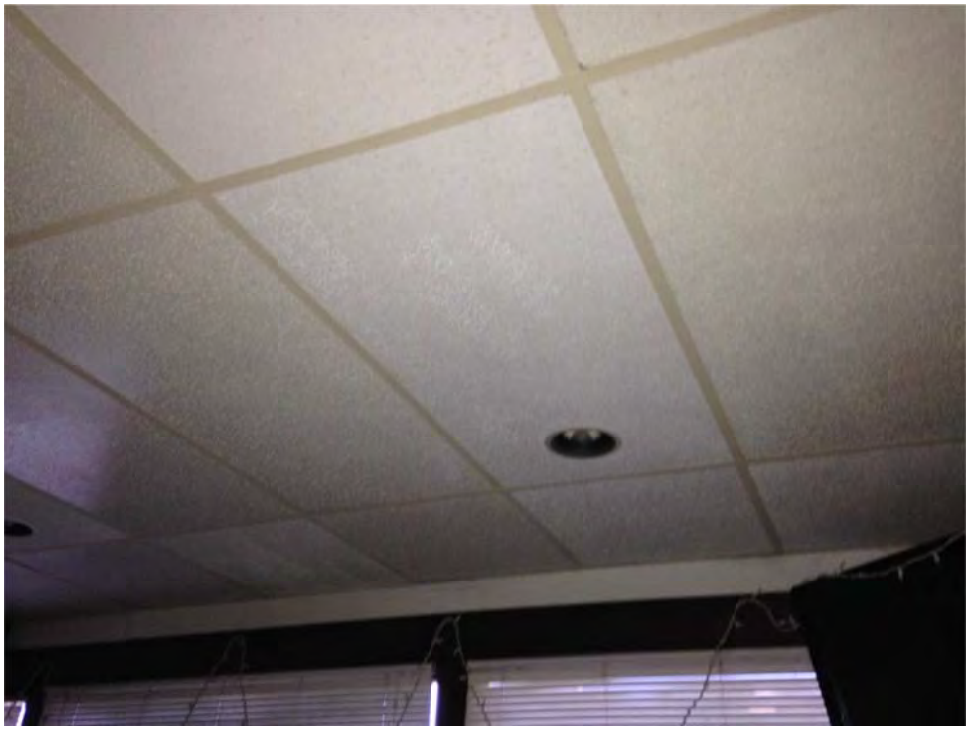
Project No.			
17015-015079.00	**Description**	Kitchen for Uptown Café in the southern portion of the subject building	**Photo 3**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Grease trap in Uptown Café Kitchen	**Photo 4**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



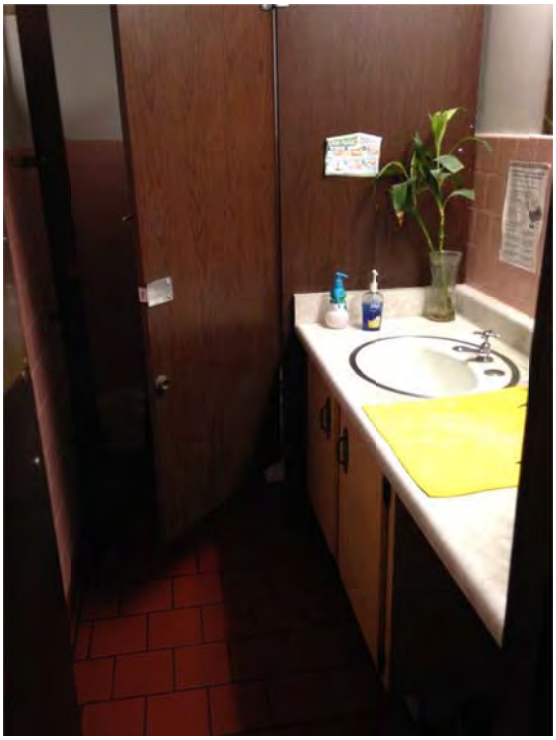
Project No. 17015-015079.00	Description	Restaurant dining area for Uptown Café on the subject property	Photo 5
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date June 25, 2015
	Client	Michaels Development Company	



Project No. 17015-015079.00	Description	Drop-in ceiling panels (suspect ACM) in Uptown Café	Photo 6
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Vinyl floor tiles (suspect ACM) in Uptown Café	**Photo 7**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Bathroom of Uptown Café on the subject property	**Photo 8**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	55-gallon drum used for food grease storage by Uptown Café	**Photo 9**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Vacant space on the ground floor of the subject building	**Photo 10**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.	Description	Electrical outlets hanging from the ceiling in the vacant space of the commercial building	Photo 11
17015-015079.00	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date
	Client	Michaels Development Company	June 25, 2015



Project No.	Description	Front retail area of Mikis Florist in the northern portion of the subject building	Photo 12
17015-015079.00	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date
	Client	Michaels Development Company	June 25, 2015

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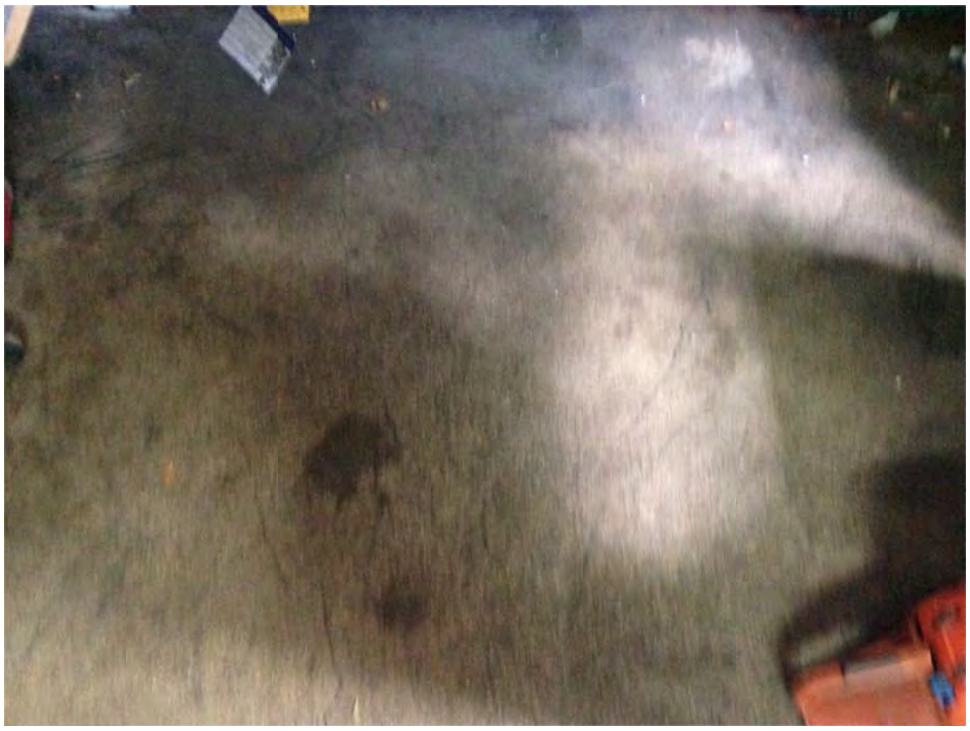
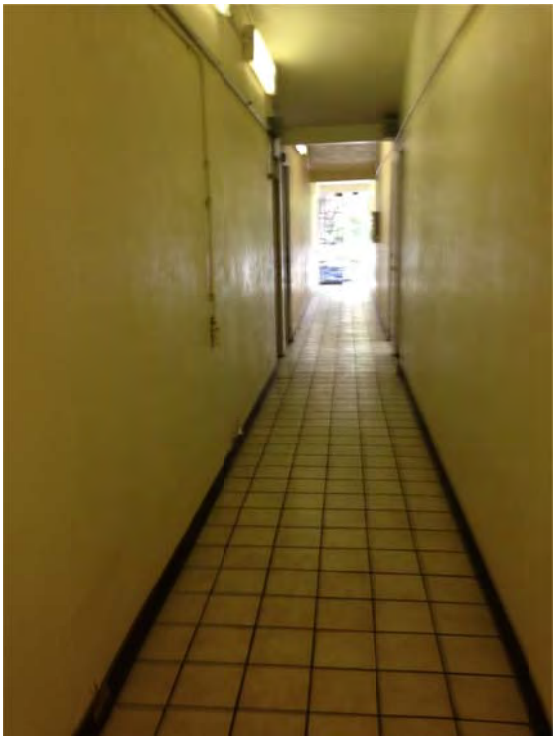
Project No.	Description	Rear portion of Mikis Florist, used as a repair area for lawn equipment	Photo 13
17015-015079.00	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date
	Client	Michaels Development Company	June 25, 2015



Project No.	Description	Used oil storage from Mikis Florist	Photo 14
17015-015079.00	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date
	Client	Michaels Development Company	June 25, 2015



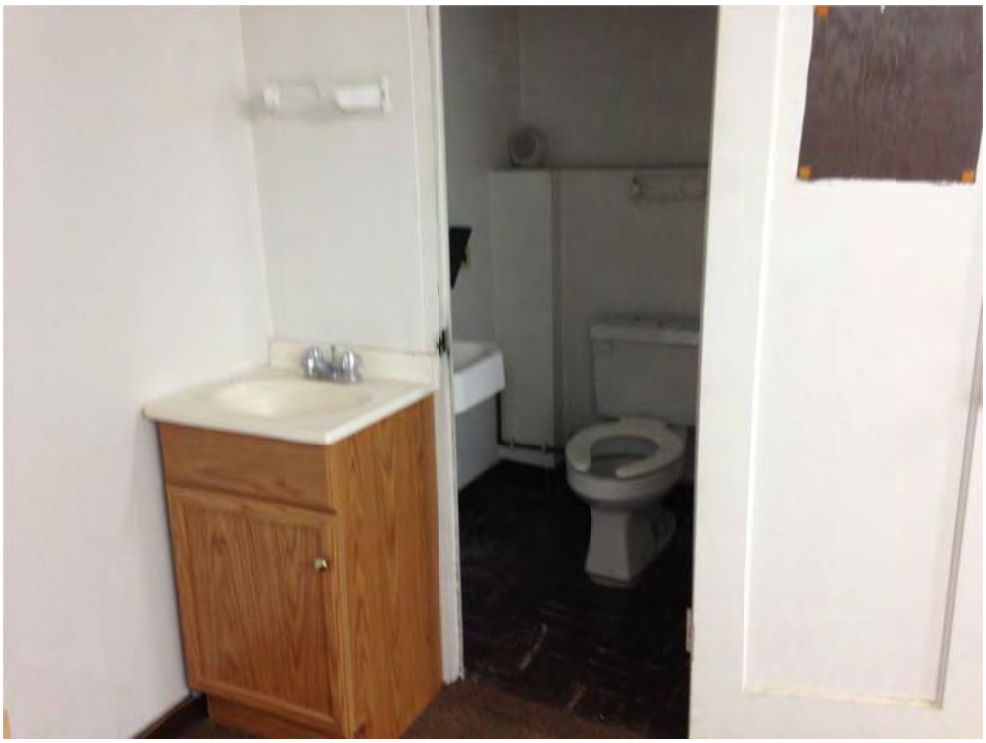
Project No.	Description	Stained floor (de minimis) of Mikis Florist	Photo 15
17015-015079.00	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date
	Client	Michaels Development Company	June 25, 2015



Project No.	Description	Second floor hallway with suspect ACM and LBP	Photo 16
17015-015079.00	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date
	Client	Michaels Development Company	June 25, 2015



Project No.			
17015-015079.00	**Description**	Typical office space on the second floor of the subject building (1 of 16)	**Photo 17**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Typical bathroom on the second floor of the subject building (1 of 16)	**Photo 18**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No. 17015-015079.00			
	Description	Pad-mounted Hawaiian Electric transformer (no PCBs) on the southern corner of the subject property	**Photo 19**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No. 17015-015079.00			
	Description	Sump pump for storm water on the central portion of the subject property	**Photo 20**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No. 17015-015079.00	Description	Roll-Off trash dumpster on the northern corner of the subject property	Photo 21
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date June 25, 2015
	Client	Michaels Development Company	



Project No. 17015-015079.00	Description	Water meter covers on the western perimeter of the subject property (typical utility)	Photo 22
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	Photo Date June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	River Street, beyond which is Nuuanu Stream adjacent to the northwest of the subject property	**Photo 23**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Lum Sai Ho Tong building adjacent to the southwest of the subject property	**Photo 24**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Borthwick Mortuary adjacent to the south of the subject property	**Photo 25**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	



Project No.			
17015-015079.00	**Description**	Borthwick Mortuary Memorial Chapel adjacent to the east of the subject property	**Photo 26**
	Site Name	Halewaiolu Residences located at 1331-1347 River Street; TMK: (1) 17-006: Parcel 012), Honolulu, Oahu, Hawaii 96817	**Photo Date** June 25, 2015
	Client	Michaels Development Company	

APPENDIX A

RESUMES

Tim J. Swartz

Senior Project Manager

Associate of Science Degree (AS) in Occupational and Environmental Safety Management
Honolulu Community College, Honolulu, Hawaii

Undergraduate Studies in Psychology and Biology
University of Kansas, Lawrence, Kansas

Environmental Professional as defined in Section 312.10 of 40 CFR 312

Asbestos Hazard Emergency Response Act (AHERA) Building Inspector

AHERA Management Planner

State of Hawaii Department of Health (DOH) - Certified Asbestos Project Monitor

National Institute of Occupational Safety and Health (NIOSH) 582 Phase Contrast Microscopy/Asbestos Identification/AAR Participant

SCITEC Radiation Safety Training

OSHA 40-Hour Hazardous Waste, Health, and Safety Accreditation/Annual Update

Lead-Based Paint Inspector

Lead-Based Paint Abatement Worker Awareness Training Course

Tim Swartz has over 27 years of experience in the environmental and industrial hygiene fields. His background includes numerous Phase I environmental site assessments (ESAs) and management of large-scale Phase I ESA projects; soil and groundwater sampling; asbestos and lead paint assessments and management of large-scale asbestos and lead paint projects; air monitoring and project oversight for asbestos and lead paint abatement projects; and various air quality surveys.

Mr. Swartz has extensive project management experience and is familiar with standards and requirements of the American Society for Testing and Materials (ASTM) International standards for Phase I environmental site assessments (ESAs), and Asbestos Hazard Emergency Response Act (AHERA) standards for asbestos projects. He is also familiar with Environmental Protection Agency (EPA) regulations for asbestos building surveys and air monitoring projects; EPA and Department of Housing and Urban Development (HUD) guidelines for lead-based paint surveys and abatement; and Occupational Safety and Health Administration (OSHA) regulations for projects involving worker health and safety.

John P. Rau, P.G.

Senior Geologist/Manager, Environmental Services

B.A., Geology, 1989
La Salle University, Philadelphia, Pennsylvania

Registered Professional Geologist, Tennessee, Number 4188

Hazardous Waste Operations and Emergency (HAZWOPER) Response Training (40-Hour), 1992

HAZWOPER Refresher Training (8-Hour), Annual

Environmental Compliance Officer Course, US Army, 2000 with Annual Refreshers through 2004

Defense Hazardous Materials/Waste Handling Course, US Army Logistical Management College, 2001

AHERA Asbestos Management Planner, 2000

AHERA Asbestos Building Inspector, 2000

Combined Arms Service and Staff Course, US Army, 2000

Chemical Officer Advanced Course, US Army Chemical School, 1999

Chemical Officer Basic Course, US Army Chemical School, 1989

Live Toxic Agent Training, US Army Chemical Decontamination Training Facility (CDTF), 1999 and 1989

Mr. Rau is the Manager of the Environmental Service (ES) Division of Bureau Veritas' Honolulu Office. He has more than 22 years of experience conducting release response actions, underground storage tanks (USTs) closures, site characterization, remedial investigations, remedial alternative analysis, and remedial action design, construction, and implementation. He has conducted numerous investigations for public and private clients, including financial institutions, law firms, real estate developers, commercial and manufacturing organizations, and government agencies. His experience includes participation in numerous response actions completed under the Hawaii State Contingency Plan and UST regulations. Mr. Rau has conducted and supervised field activities for hundreds of environmental investigations involving the collection of soil and groundwater samples, supervision of drilling and the installation of monitoring wells, execution of soil vapor surveys, and the characterization, treatment, and disposal of impacted soil and groundwater.

Mr. Rau has worked closely with the personnel at the State of Hawaii Department of Health (HDOH). He is able to interact with the HDOH personnel to allow environmental issues to be managed and resolved effectively. Through numerous years of interaction, he is often able to anticipate HDOH's expectations and he has a complete understanding of their concerns and requirements.

Mr. Rau served twenty-four years with the US Army, the US Army Reserve, and the Hawaii Army National Guard. He has served in both the enlisted and officer ranks. He was stationed in Hawaii, the Republic of Korea, the Republic of Iraq, and many locations throughout the Continental US. As part of the US Army Chemical Corps, Mr. Rau has extensive experience with chemical, biological, radiological and nuclear (CBRN) issues and training. While part of the Hawaii Army National Guard's Environmental Management Office, Mr. Rau conducted environmental compliance audits of facilities and provided training and assistance to units to ensure adherence to Federal, State, and US Army regulations.

During mid-2004 through early 2006, Mr. Rau was mobilized for service in Iraq with the 2-299th Infantry Battalion of the Hawaii Army National Guard. His duties as the Battalion Civil Affairs Officer required him to work closely with the civilian populace within southwestern Baghdad, including members of the Iraqi Government. He led unit efforts to provide reconstruction support and supply humanitarian assistance to the Iraqi people within the unit's area of operation. During his deployment, Mr. Rau managed over 1.5-million dollars' worth of reconstruction projects, which were completed in the city of Baghdad, using Iraqi contractors and labor.

APPENDIX B

SOURCES AND REFERENCES

REFERENCES

Sources of Information

- ASTM International, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," ASTM Designation E1527-13
- ASTM International, “Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions,” ASTM Designation E2600-10

Persons/Agencies Contacted

- Mr. Richard Char, Vice President and Senior Property Manager with Hawaiian Properties, Ltd., representative of the owner, phone (808) 539-9714, June 25, 2015.

Physical Setting

- *Aquifer Identification and Classification for Oahu, Groundwater Protection Strategy for Hawaii. Technical Report No. 179*, dated 1990, prepared by Mink, J.F. and L.S. Lau
- *Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) Map Number 15003C0366G*, dated January 19, 2011, prepared by FEMA
- *Ground Water Index and Summary* database, prepared by the State of Hawaii, Department of Land and Natural Resources, Commission on Water Resource Management, January 2006
- *Soil Survey of Island of Kauai, Oahu, Maui, Molokai, and Lanai,* dated 1972, prepared by Foote, Donald E. et al. US Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawaii Agricultural Experiment Station

Federal, State and County Agencies

- *The EDR Radius Map Report*, dated June 17, 2015, prepared by Environmental Data Resources, Inc.
- *Hazard Evaluation & Emergency Response (HEER) Office Database*, dated 2014, prepared by State of Hawaii, Department of Health, HEER Office
- Ownership records and Tax Map Key maps, prepared by the City and County of Honolulu Real Property Tax Assessment Office
- City and County of Honolulu Department of Planning and Permitting (DPP) Database
- *Underground Storage Tank (UST) Database* and *Leaking Underground Storage Tank (LUST) Database*, dated 2014, prepared by State of Hawaii, Department of Health, Solid and Hazardous Waste Branch

REFERENCES
(Continued)

- United States Department of Housing and Urban Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, 2012

Aerial Photographs

Sources: Environmental Data Resources, Inc. and Google Earth™

Date: 1952	Aerial Photograph EDR Panel No. 4328367.9
Date: 1968	Aerial Photograph EDR Panel No. 4328367.9
Date: 1974	Aerial Photograph EDR Panel No. 4328367.9
Date: 1978	Aerial Photograph EDR Panel No. 4328367.9
Date: 1985	Aerial Photograph EDR Panel No. 4328367.9
Date: 1992	Aerial Photograph EDR Panel No. 4328367.9
Date: 2000	Aerial Photograph Source: Google Earth™
Date: 2004	Aerial Photograph EDR Panel No. 4328367.9
Date: 2006	Aerial Photograph Source: Google Earth™
Date: 2008	Aerial Photograph Source: Google Earth™
Date: 2009	Aerial Photograph Source: Google Earth™
Date: 2011	Aerial Photograph Source: Google Earth™
Date: 2013	Aerial Photograph Source: Google Earth™
Date: 2014	Aerial Photograph Source: Google Earth™

Topographic Maps

Source: USGS online database, and Environmental Data Resources, Inc.

USGS Quadrangle: Honolulu, Hawaii **Scale: 1:20,000**

Year: 1928

USGS Quadrangle: Honolulu, Hawaii **Scale: 1:24,000**

Year: 1953, 1959, 1969, 1983, 1998 and 2013

USGS Quadrangle: Honolulu Vicinity South, Hawaii **Scale: 1:24,000**

Years: 1954

USGS Quadrangle: Oahu, Hawaii **Scale: 1:62,500**

Year: 1970

USGS Quadrangle: Honolulu, Hawaii **Scale: 1:50,000**

Year: 1983

APPENDIX C

USER QUESTIONNAIRE

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE
To be returned to Bureau Veritas with the authorized proposal

GENERAL INFORMATION

User/Client Name(s):	Michaels Development Company
Property Name and Address (Include known current and former address[es] and parcel no.):	Halewai`olu Senior Residences 1331; 1333; 1335; 1337; 1339; 1341; 1343; 1345; and 1347 River Street Honolulu, Hawaii 96817 Tax Key (1) 1-7-006-012
Property Acreage:	0.618
Current Property Type (Designate property type and list current tenants [business name and type of operation]):	Residential: __ Commercial: ✓ Industrial: __ Other: __ Miki's Florist: Flower Shop Hanagusa Inn: Restaurant Uptown Cafe: Restaurant Lloyd M Nakasone CPA: Accountant
Type of Property Transaction with respect to User (Designate one):	Purchase: __ Lease: ✓ 65 Year Ground Lease with City & County of Honolulu Other (provide further information): __
Reason Phase I is Required (Check all that apply):	*Landowner Liability Protections* (e.g. Innocent Landowner Defense): __ Evaluation of Business Risk: __ Other (list): Required for 201H Exemption Application and Consolidated Financial Application (Note: If no reason is given it is assumed that this assessment is being performed to satisfy one of the requirements for *Landowner Liability Protections* to *CERCLA* liability.
Site Owner/ Contact(s) (Name and phone number):	City & County of Honolulu Chris Sadayasu, Asset Management Administrator (808) 768-4292

Please provide the above information as well as a site plan (ALTA Survey, if available) which clearly designates the boundaries of the subject property for purposes of this Phase I ESA. A list of other Helpful documents is included with the proposal.

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE (Continued)

Providing the following information (if available) to the *environmental professional* (Bureau Veritas) is one of the requirements to qualify for one of the *Landowner Liability Protections (LLPs)* offered under CERCLA. Missing or incomplete information could result in a determination that "*all appropriate inquiry*" is not complete. If further information is desired regarding these issues, Bureau Veritas recommends you consult with an Environmental Attorney.

REQUIRED INFORMATION

The citation at the end of each item (e.g., 40 CFR 312.XX) is the section of EPA's November 1, 2005 AAI Final Rule which discusses that item. The ASTM Standard requires that reasonably ascertainable recorded land title records that are filed under federal, tribal, state and local law should be reviewed to determine the presence of Environmental Liens and Activity and Use Limitations (AULs) that are currently recorded against the property. This should also include a review of Environmental Liens and AULs that are imposed by judicial authorities and recorded/filed in judicial records. The Standard recommends that the User retain a title company or title professional to undertake a review of recorded land title records. Furthermore, the User is to provide any actual knowledge on Environmental Liens and AULs, as well as other selected information regarding *recognized environmental conditions,* to the *environmental professional.*

1. **Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).**
Given the above requirement, are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law? (Check One)

No: X

Yes (If "Yes" provide further information): __

(Note: If you desire that Bureau Veritas retain a title company/title professional on your behalf to review reasonably ascertainable recorded land title records for the presence of environmental cleanup liens and AULs currently recorded against the property please designate such on the Proposal Acceptance Agreement)

2. **Activity and land use limitations (AULs) that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).**
Given the above requirement, are you aware of any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? (Check One)

No: __

Yes (If "Yes" provide further information): ✓ See Preliminary Report Dated May 6, 2015.

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE (Continued)

3. Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).

As the *user* of this *ESA* do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business? (Check One)

No: X

Yes (If "Yes" provide further information): __

4. Relationship of the purchase price to the fair market value of the *property* if it were not contaminated (40 CFR 312.29).

Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?

Yes: __

No (If "No" provide further information): __

Not Applicable (e.g., transaction is a lease): X

5. Commonly known or *reasonably ascertainable* information about the *property* (40 CFR 312.30).

Are you aware of commonly known or *reasonably ascertainable* information about the *property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases?

No: X

Yes (If "Yes" provide further information): __

For example, as *user*,

(a.) Do you know the past uses of the *property*?

No: X

Yes (If "Yes" provide further information): __

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE (Continued)

(b.) Do you know of specific chemicals that are present or once were present at the *property*?
No: X
Yes (If "Yes" provide further information): __

(c.) Do you know of spills or other chemical releases that have taken place at the *property*?
No: X
Yes (If "Yes" provide further information): __

(d.) Do you know of any environmental cleanups that have taken place at the *property*?
No: X
Yes (If "Yes" provide further information): __

6. The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).
As the *user* of this *ESA*, based on your knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property*?
No: X
Yes (If "Yes" provide further information): __

7. Proceedings involving the *property* (ASTM E 1527-05 § 10.9).
Are you aware of any of the following:
(a.) Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?
No: X
Yes (If "Yes" provide further information): __

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE (Continued)

(a.) Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property?

No: X

Yes (If "Yes" provide further information): __

(b.) Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?

No: X

Yes (If "Yes" provide further information): __

SIGNATURE

It is understood that the information presented in this form is an integral part of the Phase I ESA process and that Bureau Veritas will evaluate and rely on this information in the development of the final Phase I ESA report.
Questionnaire Prepared By: Karen Seddon
Print/Type Name: Karen Seddon
Title: Vice President of Development
Company: Michaels Development Company
Date: June 25, 2015

APPENDIX D

AERIAL PHOTOGRAPHS

1331-1347 River Street
1331-1347 River Street
Honolulu, HI 96817

Inquiry Number: 4328367.9
June 17, 2015

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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Date EDR Searched Historical Sources:

Aerial Photography June 17, 2015

Target Property:

1331-1347 River Street

Honolulu, HI 96817

Year	***Scale***	***Details***	***Source***
1952	Aerial Photograph. Scale: 1"=750'	Flight Date: April 03, 1952	EDR
1968	Aerial Photograph. Scale: 1"=500'	Flight Date: February 26, 1968	EDR
1976	Aerial Photograph. Scale: 1"=500'	Flight Date: November 10, 1976	USGS
1978	Aerial Photograph. Scale: 1"=500'	Flight Date: January 05, 1978	USGS
1985	Aerial Photograph. Scale: 1"=750'	Flight Date: April 29, 1985	EDR
1992	Aerial Photograph. Scale: 1"=1000'	Flight Date: September 25, 1992	EDR
2004	Aerial Photograph. Scale: 1"=500'	Flight Date: February 16, 2004	USGS



INQUIRY #: 4328367.9

YEAR: 1952

= 750'

N

EDR


INQUIRY #: 4328367.9
YEAR: 1968
= 500'
N
EDR


INQUIRY #: 4328367.9
YEAR: 1976
= 500'
N
EDR


INQUIRY #: 4328367.9
YEAR: 1978
= 500'
N
EDR


INQUIRY #: 4328367.9
YEAR: 1985
= 750'
N
EDR


INQUIRY #: 4328367.9
YEAR: 1992
= 1000'
N
EDR


INQUIRY #: 4328367.9
YEAR: 2004
= 500'
N
EDR

APPENDIX E

USGS TOPOGRAPHIC MAPS

1331-1347 River Street
1331-1347 River Street
Honolulu, HI 96817

Inquiry Number: 4328367.4
June 17, 2015

EDR Historical Topographic Map Report

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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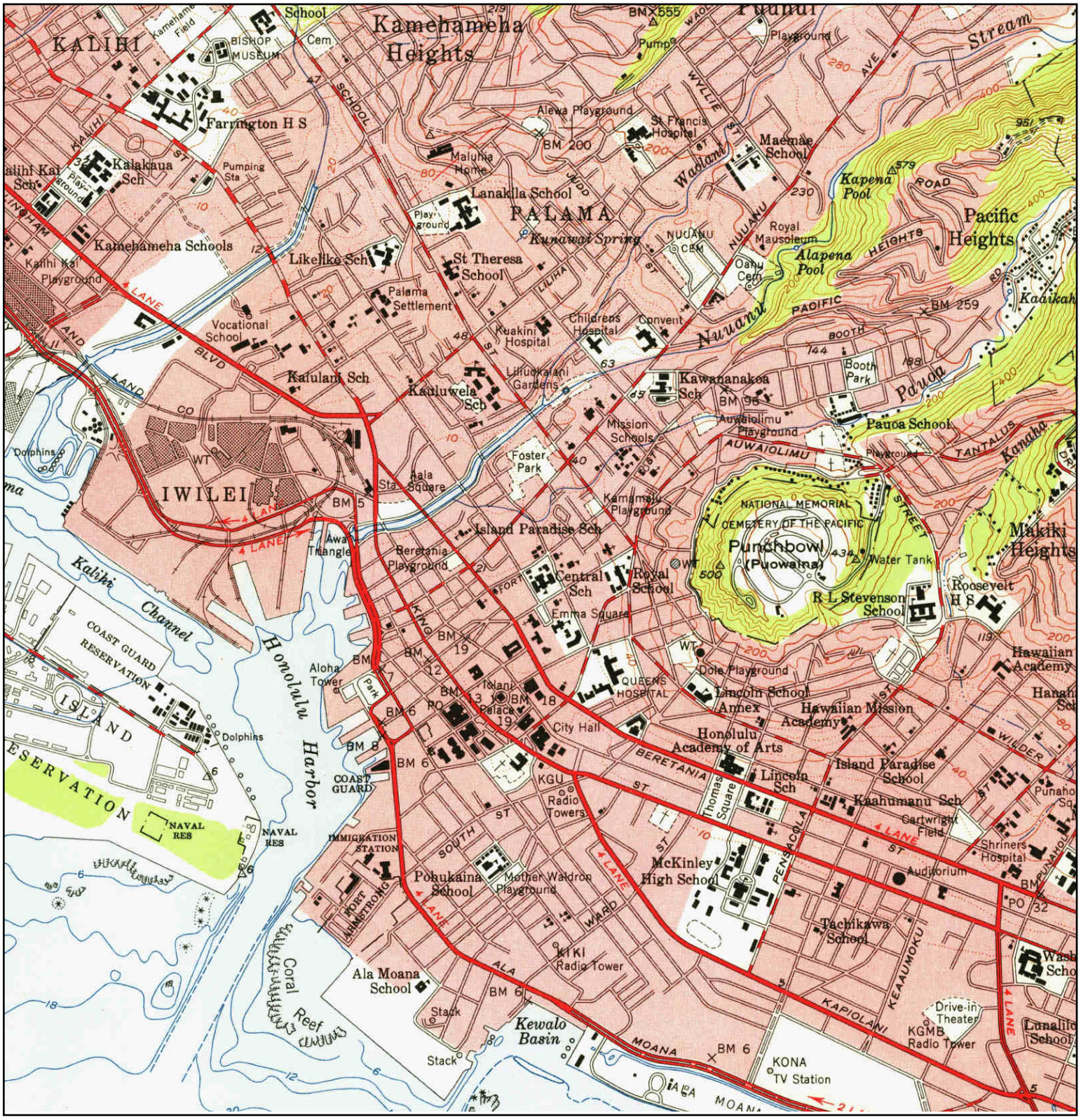
Historical Topographic Map

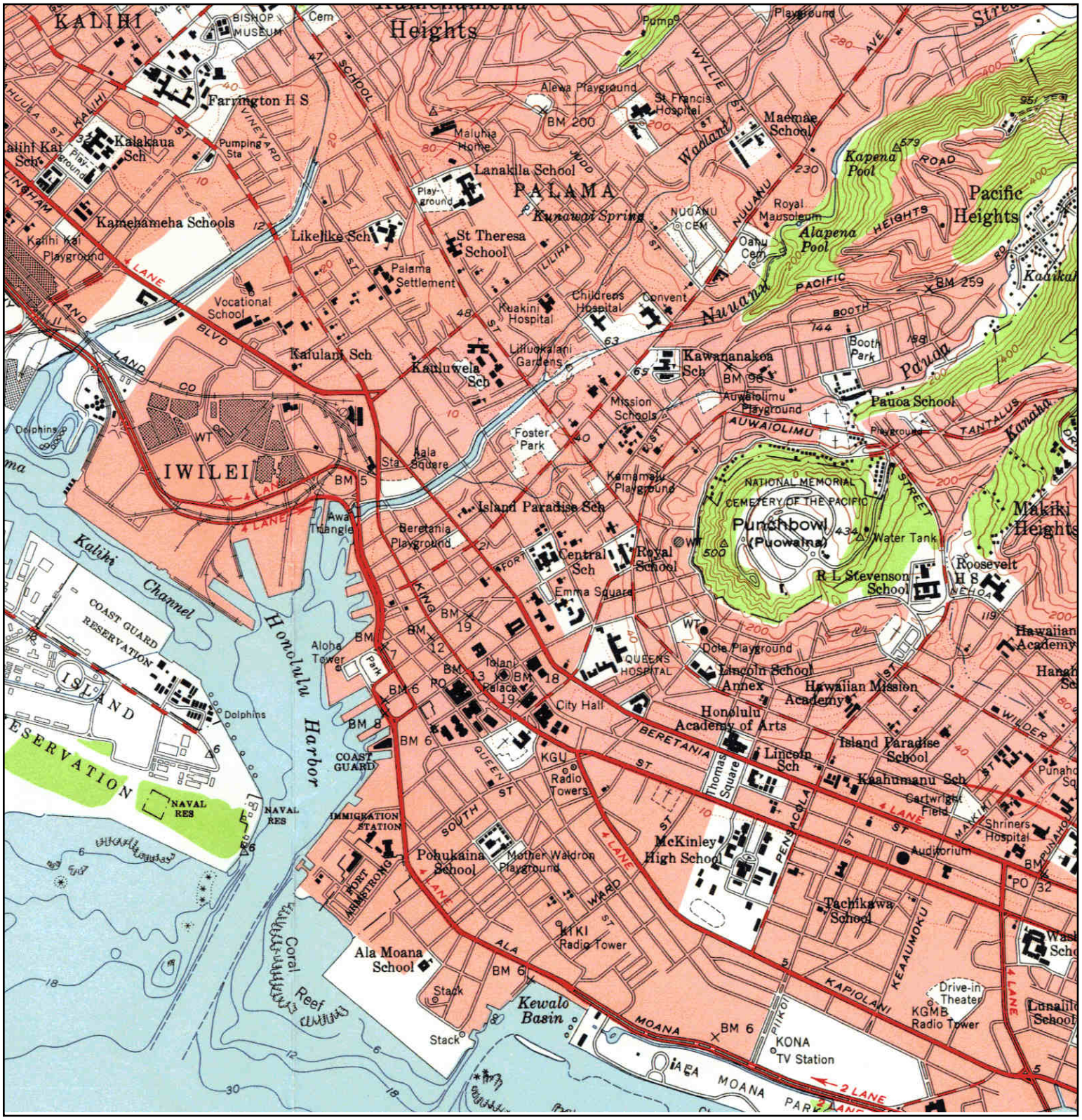


N	TARGET QUAD NAME: HONOLULU MAP YEAR: 1928 SERIES: 7.5 SCALE: 1:20000	SITE NAME: 1331-1347 River Street ADDRESS: 1331-1347 River Street Honolulu, HI 96817 LAT/LONG: 21.3157 / -157.8597	CLIENT: Bureau Veritas North America, Inc. CONTACT: Nicole Okino INQUIRY#: 4328367.4 RESEARCH DATE: 06/17/2015

Historical Topographic Map

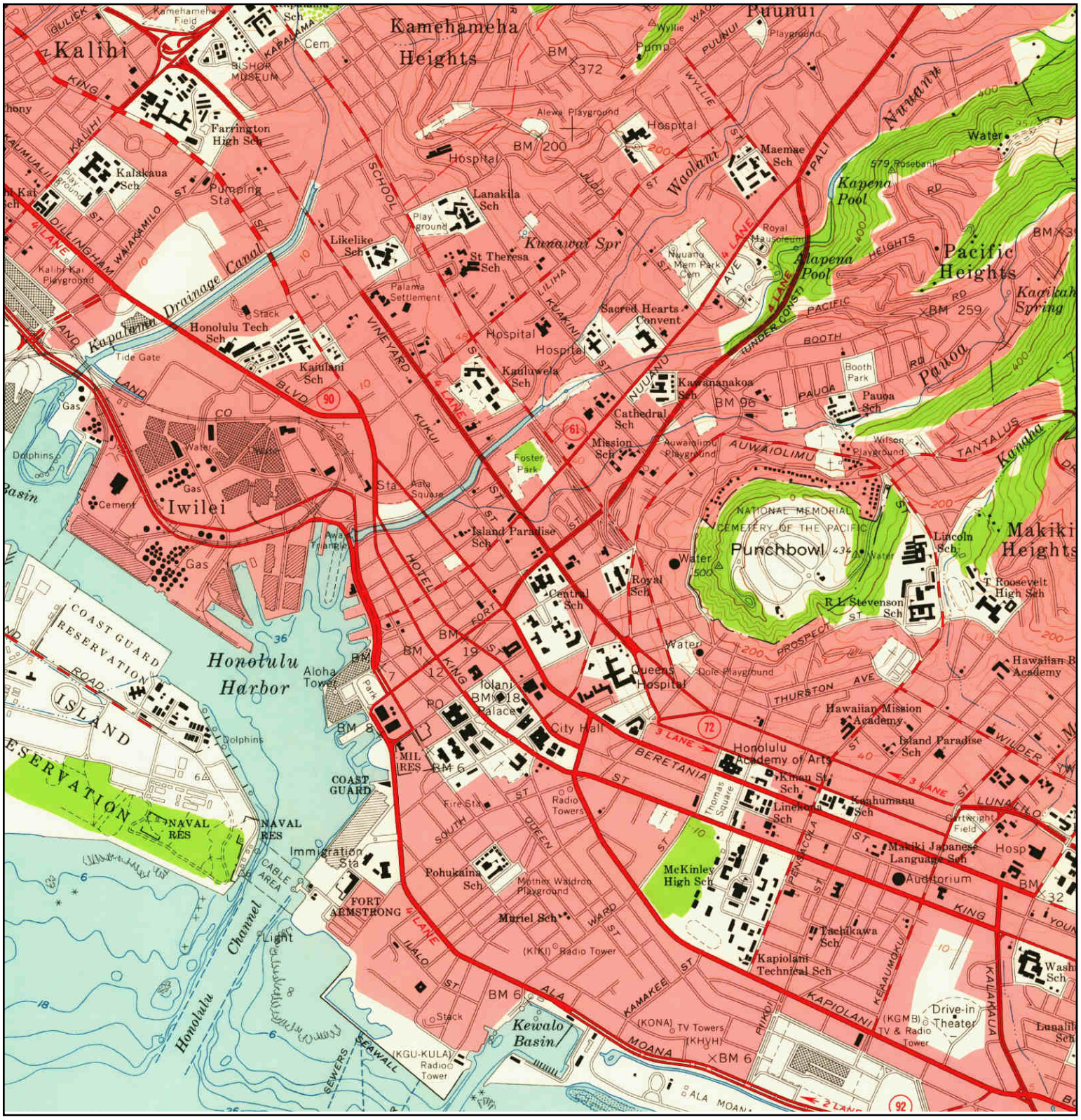

KALIHI
Kamehameha Heights
PALAMA
IWILEI
Pacific Heights
Makiki Heights
Punchbowl (Puowaina)
NATIONAL MEMORIAL CEMETERY OF THE PACIFIC
Honolulu Harbor
Kalihi Channel
Coral Reef
ISLAND
Farrington H S
Kamehameha Schools
Likelike Sch
St Theresa School
Lanakila School
Maemae School
Kawananakoa Sch
Pauoa School
Roosevelt H S
R L Stevenson School
Central Sch
Royal School
Island Paradise Sch
Lincoln Sch
Lincoln School Annex
Hawaiian Mission Academy
Honolulu Academy of Arts
Kaahumanu Sch
McKinley High School
Pohukaina School
Ala Moana School
Tachikawa School
Kaiulani Sch
Kauluwela Sch
Vocational School
Palama Settlement
Foster Park
Aala Square
Aloha Tower
City Hall
Iolani Palace
Thomas Square
Cartwright Field
Auditorium
Shriners Hospital
Queens Hospital
Kewalo Basin
Ala Moana
KONA TV Station
KGMB Radio Tower
KGU Radio Towers
KI KI Radio Tower
Drive-in Theater
Alapena Pool
Kapena Pool
Booth Park
Auwaiolimu Playground
Kamamalu Playground
Beretania Playground
Mother Waldron Playground
Kuakini Hospital
Childrens Hospital
Convent
Royal Mausoleum
Oahu Cem
Nuuanu Cem
Maluhia Home
St Francis Hospital
Alewa Playground
Punahou
Kaimuki
Kaimuki
Kaimuki

Historical Topographic Map



N			
	TARGET QUAD NAME: HONOLULU VICINITY SOUTH MAP YEAR: 1954 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 1331-1347 River Street ADDRESS: 1331-1347 River Street Honolulu, HI 96817 LAT/LONG: 21.3157 / -157.8597	CLIENT: Bureau Veritas North America, Inc. CONTACT: Nicole Okino INQUIRY#: 4328367.4 RESEARCH DATE: 06/17/2015

Historical Topographic Map



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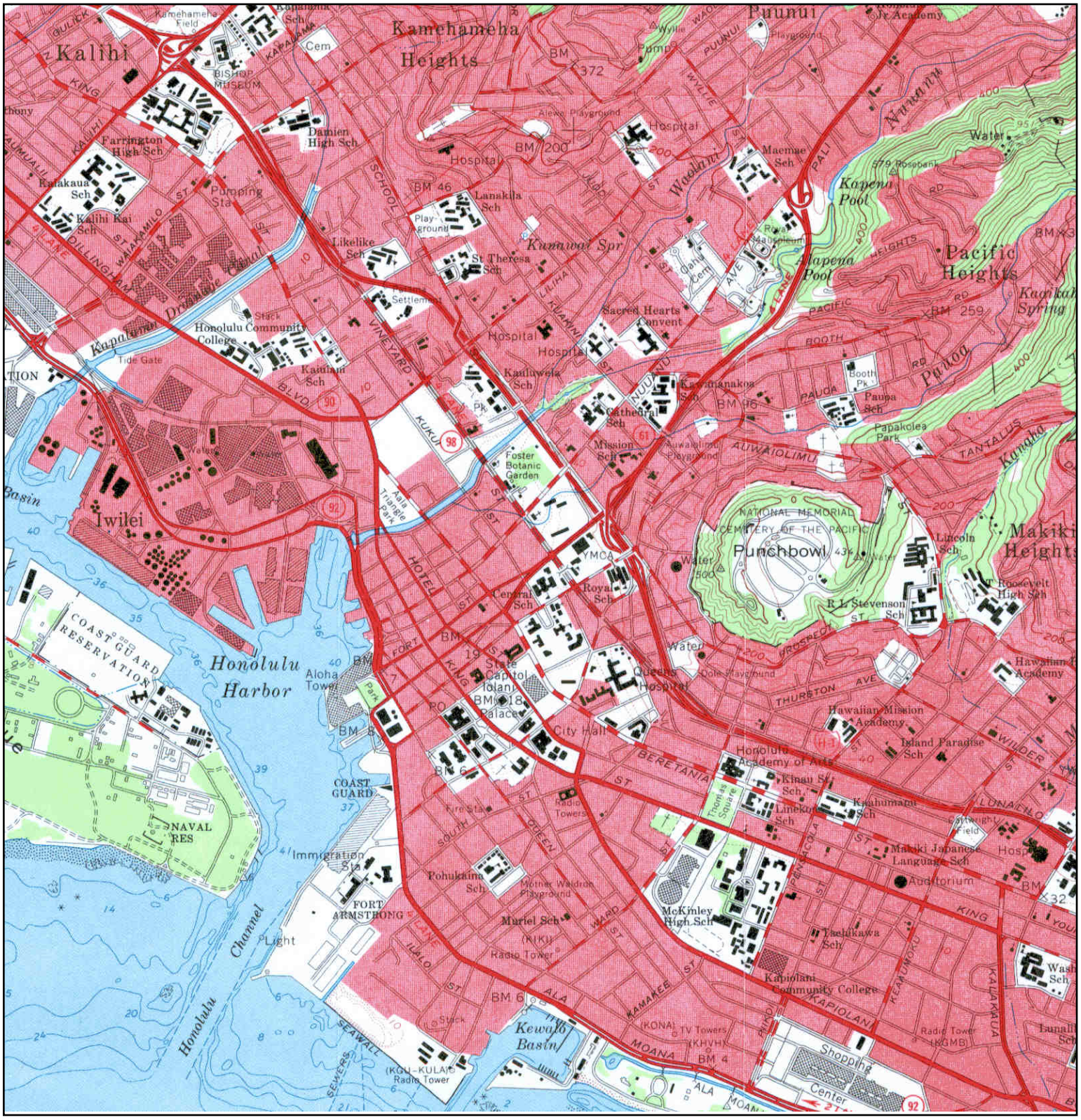
Historical Topographic Map


Kalihi
Kamehameha Heights
Puunui
Pacific Heights
Punchbowl
Makiki Heights
Iwilei
Honolulu Harbor
Kewalo Basin
Honolulu Community College
Farrington High Sch
Damien High Sch
Kamehameha Sch
Bishop Museum
Kapalama Cem
Lanakila Sch
Likelike Sch
St Theresa Sch
Kuhio Park Terrace
Kuhio Park Terrace Playground
Kuhio Park Terrace Settlement
Kuhio Park Terrace Stack
Kuhio Park Terrace Water
Kuhio Park Terrace Tide Gate
Kuhio Park Terrace Pk
Kuhio Park Terrace Canal
Kuhio Park Terrace Pumping Sta
Kuhio Park Terrace Drainage Canal
Kuhio Park Terrace Kaiulani Sch
Kuhio Park Terrace Kauluwela Sch
Kuhio Park Terrace Foster Botanical Garden
Kuhio Park Terrace Aala Triangle Park
Kuhio Park Terrace Sacred Hearts Convent
Kuhio Park Terrace Hospital
Kuhio Park Terrace Cathedral Sch
Kuhio Park Terrace Mission Sch
Kuhio Park Terrace Kawaiahao Playground
Kuhio Park Terrace Kawaiahao Sch
Kuhio Park Terrace Pauoa Sch
Kuhio Park Terrace Booth Pk
Kuhio Park Terrace Papakolea Park
Kuhio Park Terrace Kapena Pool
Kuhio Park Terrace Maemae Sch
Kuhio Park Terrace Water Tank
Kuhio Park Terrace Kunawai Spr
Kuhio Park Terrace Alexander Playground
Kuhio Park Terrace Wylie Pump
Kuhio Park Terrace Jr Academy
Kuhio Park Terrace Playground
Kuhio Park Terrace Mausoleum
Kuhio Park Terrace Dana Cem
Kuhio Park Terrace Rosebank
Kuhio Park Terrace Kaimuki Spr
Kuhio Park Terrace Kaimuki Sch
Kuhio Park Terrace Booth Pk
Kuhio Park Terrace Pauoa Sch
Kuhio Park Terrace Papakolea Park
Kuhio Park Terrace Tantalus
Kuhio Park Terrace Kumuhau
Kuhio Park Terrace National Memorial Cemetery of the Pacific
Kuhio Park Terrace Punchbowl
Kuhio Park Terrace Lincoln Sch
Kuhio Park Terrace R L Stevenson Sch
Kuhio Park Terrace T Roosevelt High Sch
Kuhio Park Terrace YMCA
Kuhio Park Terrace Central Sch
Kuhio Park Terrace Royal Sch
Kuhio Park Terrace Queens Hospital
Kuhio Park Terrace Dole Playground
Kuhio Park Terrace Hawaiian Mission Academy
Kuhio Park Terrace Inland Paradise Sch
Kuhio Park Terrace Honolulu Academy of Arts
Kuhio Park Terrace Kinau St Sch
Kuhio Park Terrace Kauhumanu Sch
Kuhio Park Terrace Linekuna Sch
Kuhio Park Terrace Makiki Japanese Language Sch
Kuhio Park Terrace Auditorium
Kuhio Park Terrace McKinley High Sch
Kuhio Park Terrace Taehukawa Sch
Kuhio Park Terrace Kapiolani Community College
Kuhio Park Terrace Shopping Center
Kuhio Park Terrace Radio Tower (KGMB)
Kuhio Park Terrace TV Towers (KHVH) (KONA)
Kuhio Park Terrace Radio Towers
Kuhio Park Terrace Radio Tower (KGU-KULA)
Kuhio Park Terrace Mother Waldron Playground
Kuhio Park Terrace Muriel Sch (KIKI)
Kuhio Park Terrace Pohukaina Sch
Kuhio Park Terrace Immigration Sta
Kuhio Park Terrace Coast Guard Reservation
Kuhio Park Terrace Naval Res
Kuhio Park Terrace Coast Guard
Kuhio Park Terrace Fort Armstrong
Kuhio Park Terrace Aloha Tower
Kuhio Park Terrace State Capitol
Kuhio Park Terrace Iolani Palace
Kuhio Park Terrace City Hall
Kuhio Park Terrace Honolulu Channel
Kuhio Park Terrace Seawall
Kuhio Park Terrace Sewers
Kuhio Park Terrace Light
Kuhio Park Terrace Fire Sta
Kuhio Park Terrace Water Tower
Kuhio Park Terrace Water
Kuhio Park Terrace Stack
Kuhio Park Terrace Pk
Kuhio Park Terrace Playground
Kuhio Park Terrace Hospital
Kuhio Park Terrace Sch
Kuhio Park Terrace Cem
Kuhio Park Terrace Canal
Kuhio Park Terrace Basin
Kuhio Park Terrace Park
Kuhio Park Terrace Square
Kuhio Park Terrace Field
Kuhio Park Terrace Pump
Kuhio Park Terrace Tower
Kuhio Park Terrace Light

Historical Topographic Map


HONOLULU
BAY
FORT ARMSTRONG
FORT DE RUSSY
KEEHI
LAGOON
Salt Lake
Aliamanu Crater
Damon Tract
Kalihi
Kapalama
Palama
Iwilei
Kamehameha Heights
Punchbowl
Makiki Heights
Pacific Hts
Alewa Heights
Napuumaia
Pauoa Flats
Tantalus
Puu Lanihuli
Waikiki
Kapahulu
Moiliili
St Louis Heights
Woodlawn
Rocky Hill
Round Top
Puu Kakea
Honolulu Hbr
Kapalama Basin
Ala Moana Park
Yacht Harbor
Waikiki Beach
HONOLULU ZOO
Kapiolani Park
Diamond Head
Fort DeRussy
Fort Shafter
Camp Catlin
Tripler Hospital
Kalihi Valley
Manoa Valley
Nuuanu Valley
Pauoa Valley
Makiki
Kamanaiki
Kahauiki
Moanalua
Kapalama Stream
Kalihi Stream
Pauoa Stream
Nuuanu Stream
Manoa Stream
Ala Wai Canal
Ala Wai Golf Course
Kalihi Channel
Mokuoo Island
Coral Reef
Mud
Borrow Pit
Naval Reservation
Airport
Runway
Seaplane
Entrance
Channel
Rear
Ala Moana
Kalakaua Ave
Beretania St
King St
Nuuanu Ave
Pali Hwy
Moanalua Fwy
Lunalilo Fwy
Waialae
Kaimuki
Kaalawai
Coast Guard Res
Diamond Head State Mon
Mil Res
Natatorium
Leahi
Kuilei Cliff
Lighthouse
Tunnel
Spillway
Reservoir
Golf Course
Trig Sta
Hospital
Memorial
Park
Beach Park
Playground
Tennis Courts
Swimming Pool
Baseball Diamond
Stadium
Bridge
Ferry
Pier
Wharf
Boat Harbor
Boat Channel
Breakwater
Jetty
Seawall
Sewage Disposal Plant
Water Tank
Tower
Radio Tower
TV Towers
Church
Cemetery
Mausoleum
Monument
Memorial
Fire Station
Police Station
Post Office
Library
Museum
Observatory
Lighthouse
Coast Guard Station
Coast Guard Res
Naval Reservation
Naval Base
Naval Air Station
Naval Hospital
Naval Magazine
Naval Ammunition Depot
Naval Supply Depot
Naval Shipyard
Naval Station
Naval Training Center
Naval Academy
Naval War College
Naval Postgraduate School
Naval Research Laboratory
Naval Observatory
Naval Oceanographic Office
Naval Hydrographic Office
Naval Meteorology and Oceanography Command
Naval Sea Systems Command
Naval Air Systems Command
Naval Supply Systems Command
Naval Facilities Engineering Command
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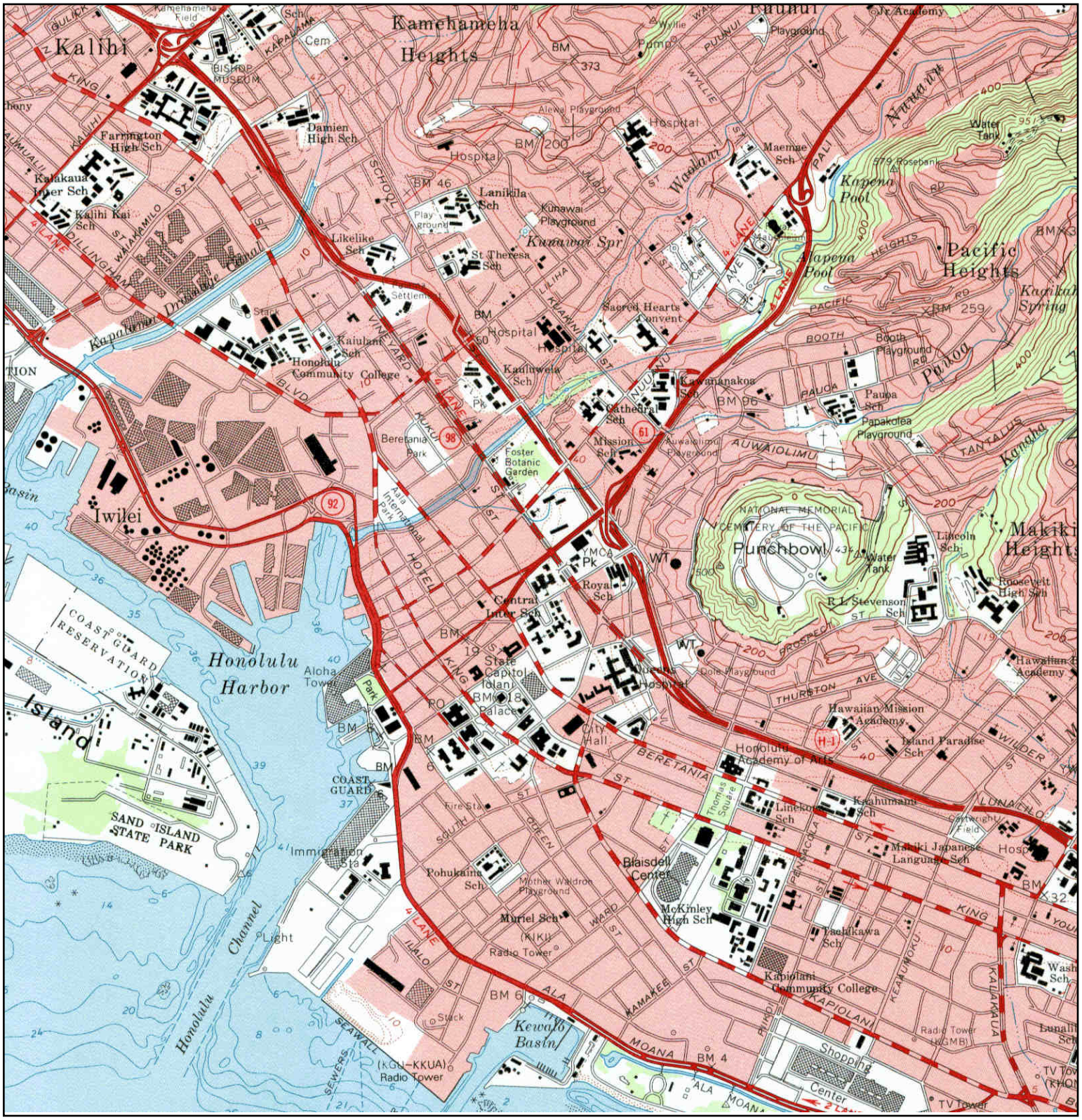
Historical Topographic Map



N	TARGET QUAD			
	NAME:	HONOLULU	SITE NAME:	1331-1347 River Street
	MAP YEAR:	1983	ADDRESS:	1331-1347 River Street Honolulu, HI 96817
	SERIES:	7.5	LAT/LONG:	21.3157 / -157.8597
	SCALE:	1:24000		

CLIENT:	Bureau Veritas North America, Inc.
CONTACT:	Nicole Okino
INQUIRY#:	4328367.4
RESEARCH DATE:	06/17/2015

Historical Topographic Map



N	TARGET QUAD NAME: HONOLULU MAP YEAR: 1983 SERIES: 15 SCALE: 1:50000	SITE NAME: 1331-1347 River Street ADDRESS: 1331-1347 River Street Honolulu, HI 96817 LAT/LONG: 21.3157 / -157.8597	CLIENT: Bureau Veritas North America, Inc. CONTACT: Nicole Okino INQUIRY#: 4328367.4 RESEARCH DATE: 06/17/2015

Historical Topographic Map



N	TARGET QUAD NAME: HONOLULU MAP YEAR: 1998 SERIES: 7.5 SCALE: 1:24000	SITE NAME: 1331-1347 River Street ADDRESS: 1331-1347 River Street Honolulu, HI 96817 LAT/LONG: 21.3157 / -157.8597	CLIENT: Bureau Veritas North America, Inc. CONTACT: Nicole Okino INQUIRY#: 4328367.4 RESEARCH DATE: 06/17/2015

APPENDIX F

FIRE INSURANCE MAPS

1331-1347 River Street
1331-1347 River Street
Honolulu, HI 96817

Inquiry Number: 4328367.3
June 17, 2015

Certified Sanborn® Map Report

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/17/15

Site Name:
1331-1347 River Street
1331-1347 River Street
Honolulu, HI 96817

Client Name:
Bureau Veritas North America,
841 Bishop Street Suite 1100
Honolulu, HI 96813-0000

EDR Inquiry # 4328367.3

Contact: Nicole Okino

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Bureau Veritas North America, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Site Name: 1331-1347 River Street
Address: 1331-1347 River Street
City, State, Zip: Honolulu, HI 96817
Cross Street:
P.O. # NA
Project: 17015-015079.00
Certification # DBCE-46CA-9455

Maps Provided:

1993	1974
1991	1963
1985	1955
1978	1950
1976	1927
1975	1914

Sanborn® Library search results
Certification # DBCE-46CA-9455

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✓ Library of Congress
- ✓ University Publications of America
- ✓ EDR Private Collection

The Sanborn Library LLC Since 1866™

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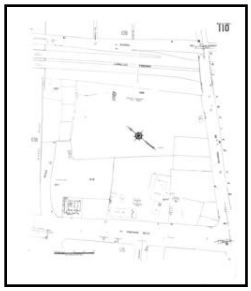
Sanborn Sheet Thumbnails

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

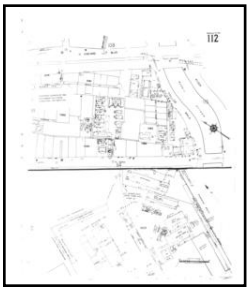
1993 Source Sheets



Volume 1, Sheet 108



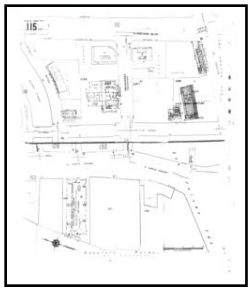
Volume 1, Sheet 110



Volume 1, Sheet 112



Volume 1, Sheet 114



Volume 1, Sheet 115

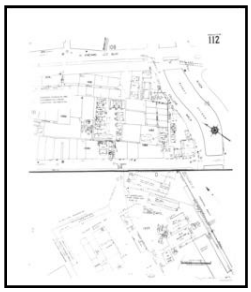


Volume 1, Sheet 116

1991 Source Sheets



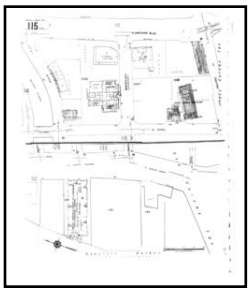
Volume 1, Sheet 110



Volume 1, Sheet 112



Volume 1, Sheet 114



Volume 1, Sheet 115



Volume 1, Sheet 116



Volume 1, Sheet 108

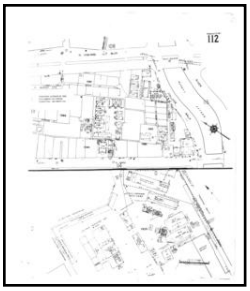
1985 Source Sheets



Volume 1, Sheet 108



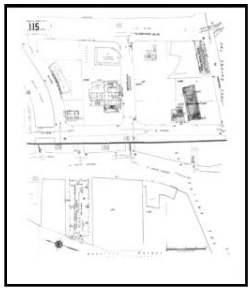
Volume 1, Sheet 110



Volume 1, Sheet 112



Volume 1, Sheet 114



Volume 1, Sheet 115



Volume 1, Sheet 116

1978 Source Sheets



Volume 1, Sheet 108



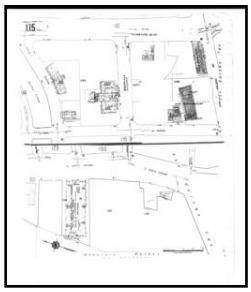
Volume 1, Sheet 110



Volume 1, Sheet 112



Volume 1, Sheet 114

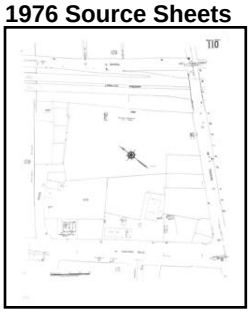


Volume 1, Sheet 115



Volume 1, Sheet 116

1976 Source Sheets



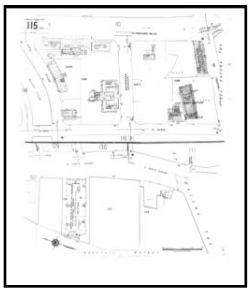
Volume 1, Sheet 110



Volume 1, Sheet 112



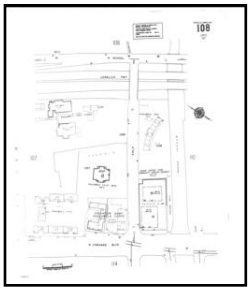
Volume 1, Sheet 114



Volume 1, Sheet 115



Volume 1, Sheet 116

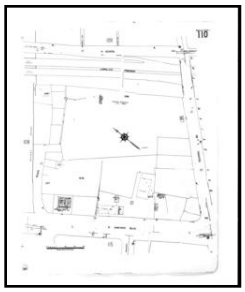


Volume 1, Sheet 108

1975 Source Sheets



Volume 1, Sheet 108



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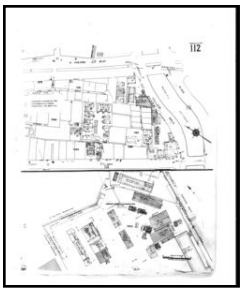
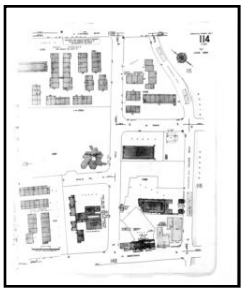


Volume 1, Sheet 112



Volume 1, Sheet 114



Volume 1, Sheet 115



Volume 1, Sheet 116

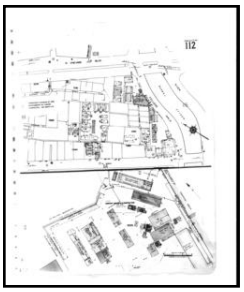
1974 Source Sheets



Volume 1, Sheet 108



Volume 1, Sheet 110

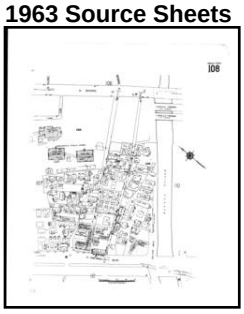


Volume 1, Sheet 112



Volume 1, Sheet 116

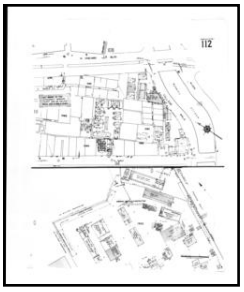
1963 Source Sheets



Volume 1, Sheet 108



Volume 1, Sheet 110



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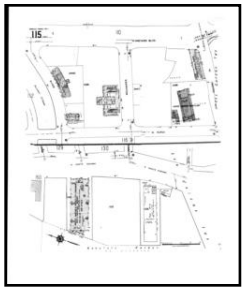
Volume 1, Sheet 114



Volume 1, Sheet 115



Volume 1, Sheet 116

1955 Source Sheets



Volume 1, Sheet 108



Volume 1, Sheet 110



Volume 1, Sheet 112



Volume 1, Sheet 114



Volume 1, Sheet 115

Volume 1, Sheet 116



Volume 1, Sheet 108



Volume 1, Sheet 110

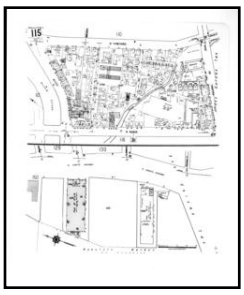


Volume 1, Sheet 112



Volume 1, Sheet 114





Volume 1, Sheet 115



Volume 1, Sheet 116

1950 Source Sheets



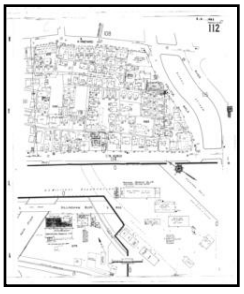
Volume 1, Sheet xxxx



Volume 1, Sheet 108



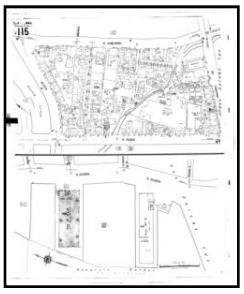
Volume 1, Sheet 110



Volume 1, Sheet 112



Volume 1, Sheet 114



Volume 1, Sheet 115



Volume 1, Sheet 116

1927 Source Sheets



Volume 1, Sheet xxxx



Volume 1, Sheet 108



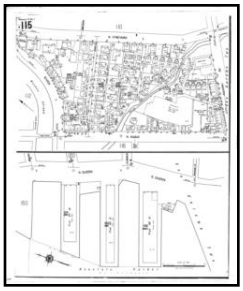
Volume 1, Sheet 110



Volume 1, Sheet 112



Volume 1, Sheet 114



Volume 1, Sheet 115



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1914 Source Sheets



Volume 1, Sheet xxxx



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Volume 1, Sheet 31



Volume 1, Sheet 34



Volume 1, Sheet 35

1993 Certified Sanborn Map



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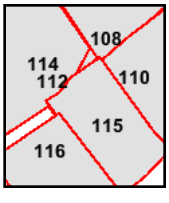

Volume 1, Sheet 108
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N

1991 Certified Sanborn Map



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Certification #	DBCE-46CA-9455
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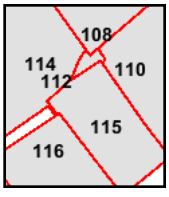

Volume 1, Sheet 110
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Volume 1, Sheet 116
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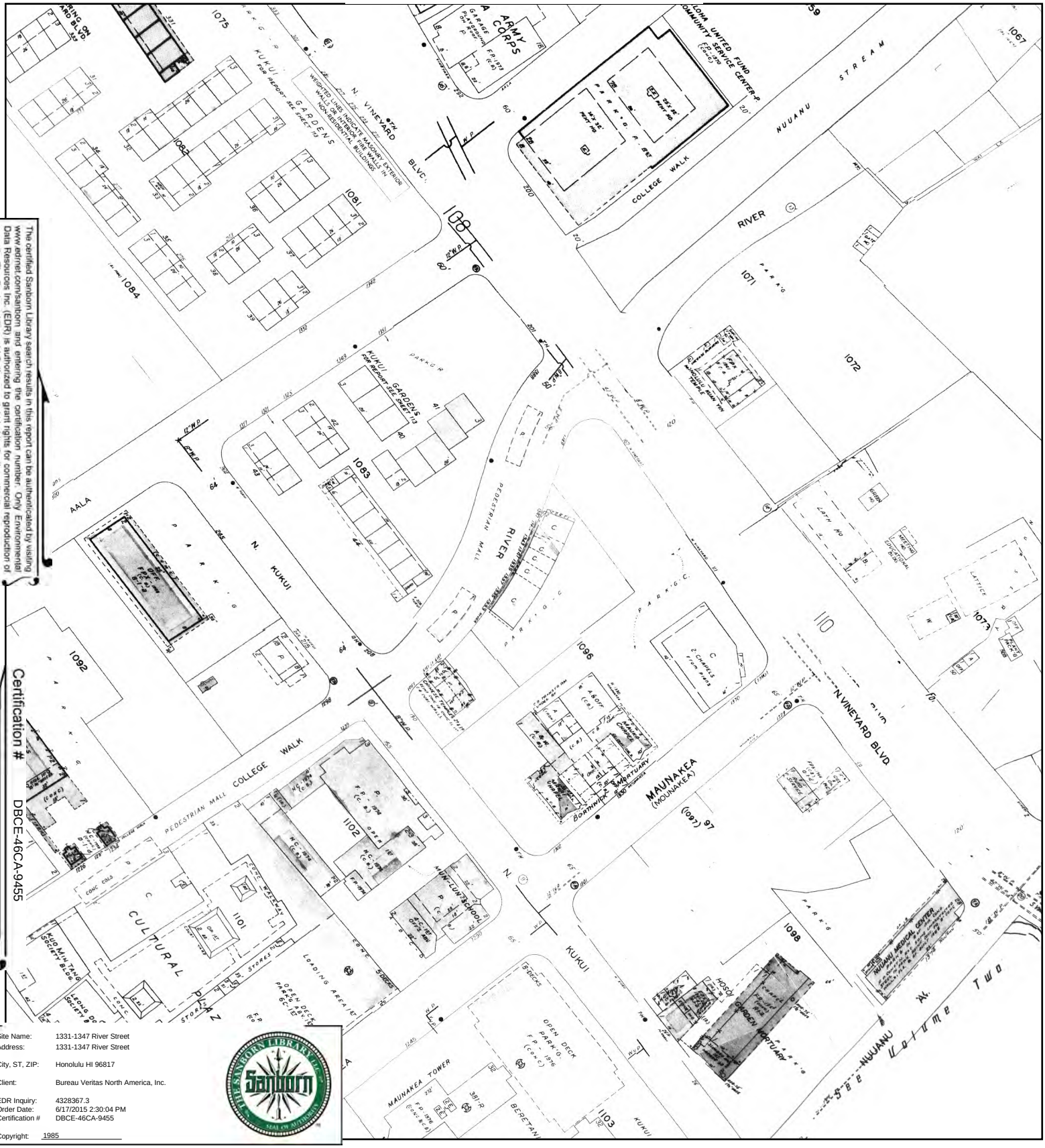
1985 Certified Sanborn Map



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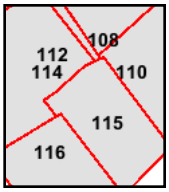

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Volume 1, Sheet 112
Volume 1, Sheet 114
Volume 1, Sheet 115
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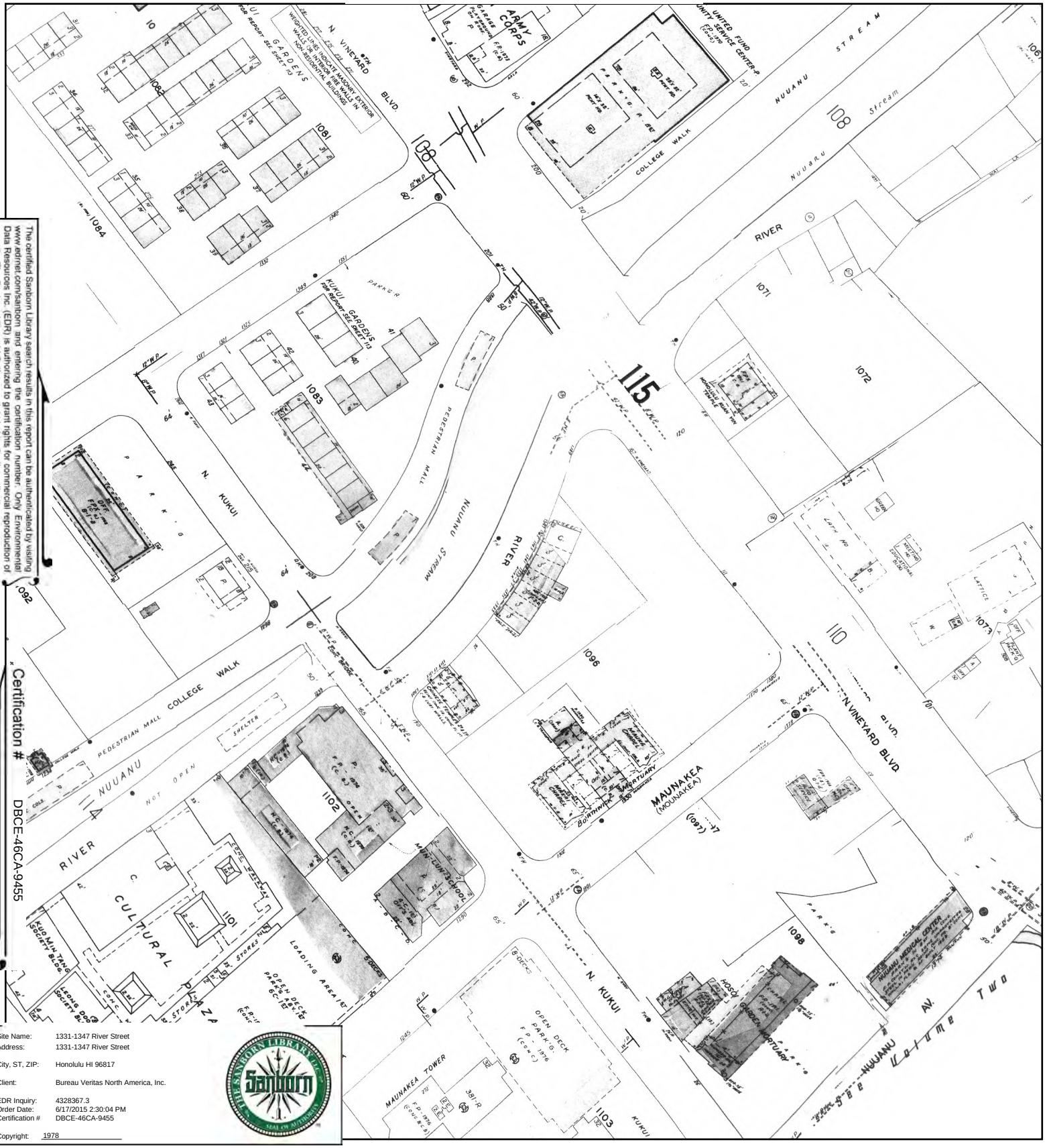
N

1978 Certified Sanborn Map



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Certification #	DBCE-46CA-9455
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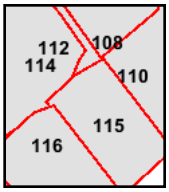

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Volume 1, Sheet 116

N

1976 Certified Sanborn Map



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Certification #	DBCE-46CA-9455
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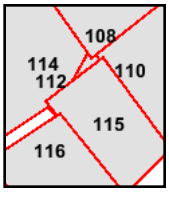

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Volume 1, Sheet 115
Volume 1, Sheet 116
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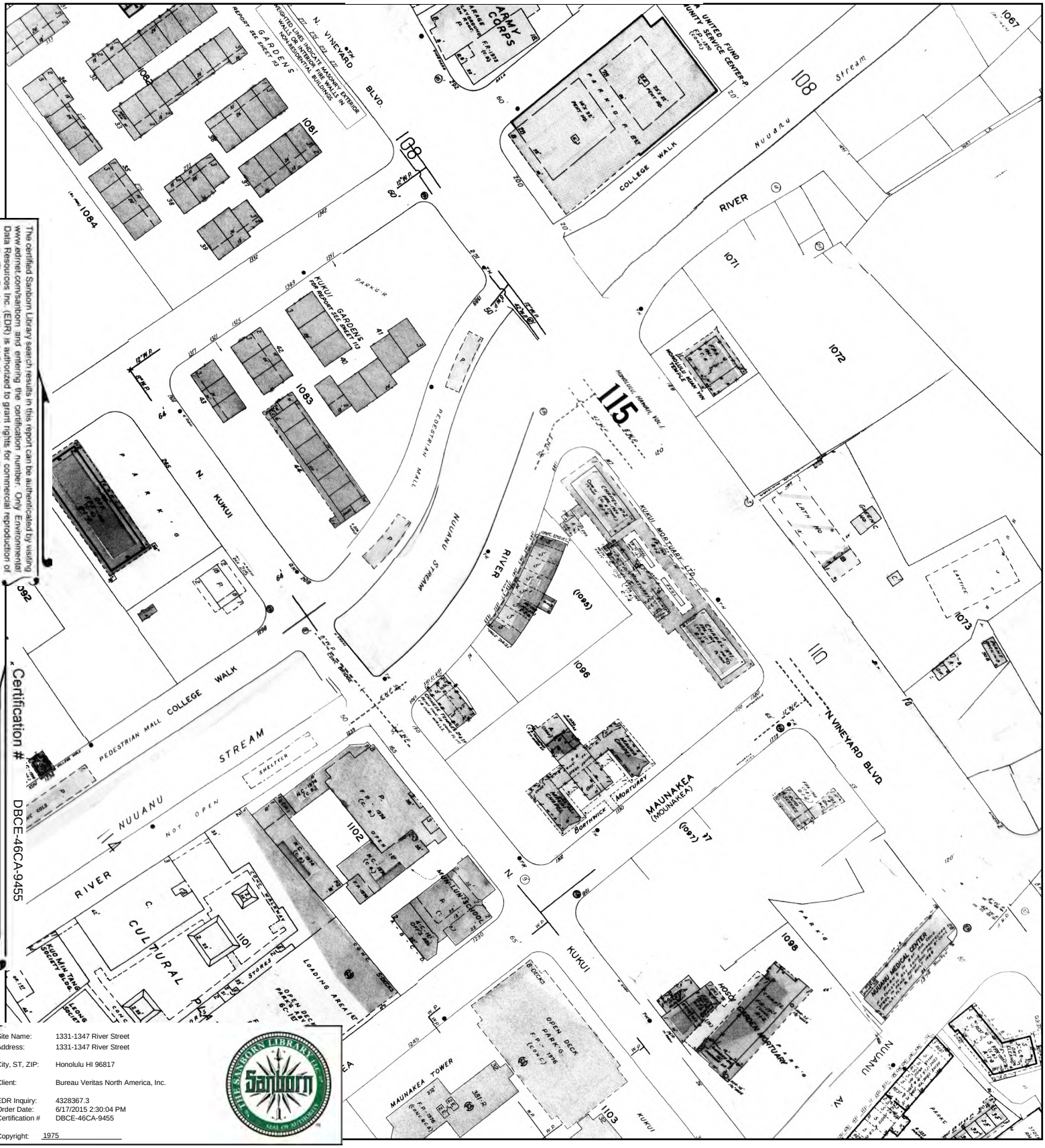
1975 Certified Sanborn Map



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Certification # DBCE-46CA-9455
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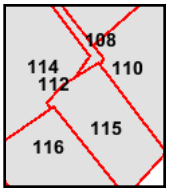

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Volume 1, Sheet 114
Volume 1, Sheet 115
Volume 1, Sheet 116

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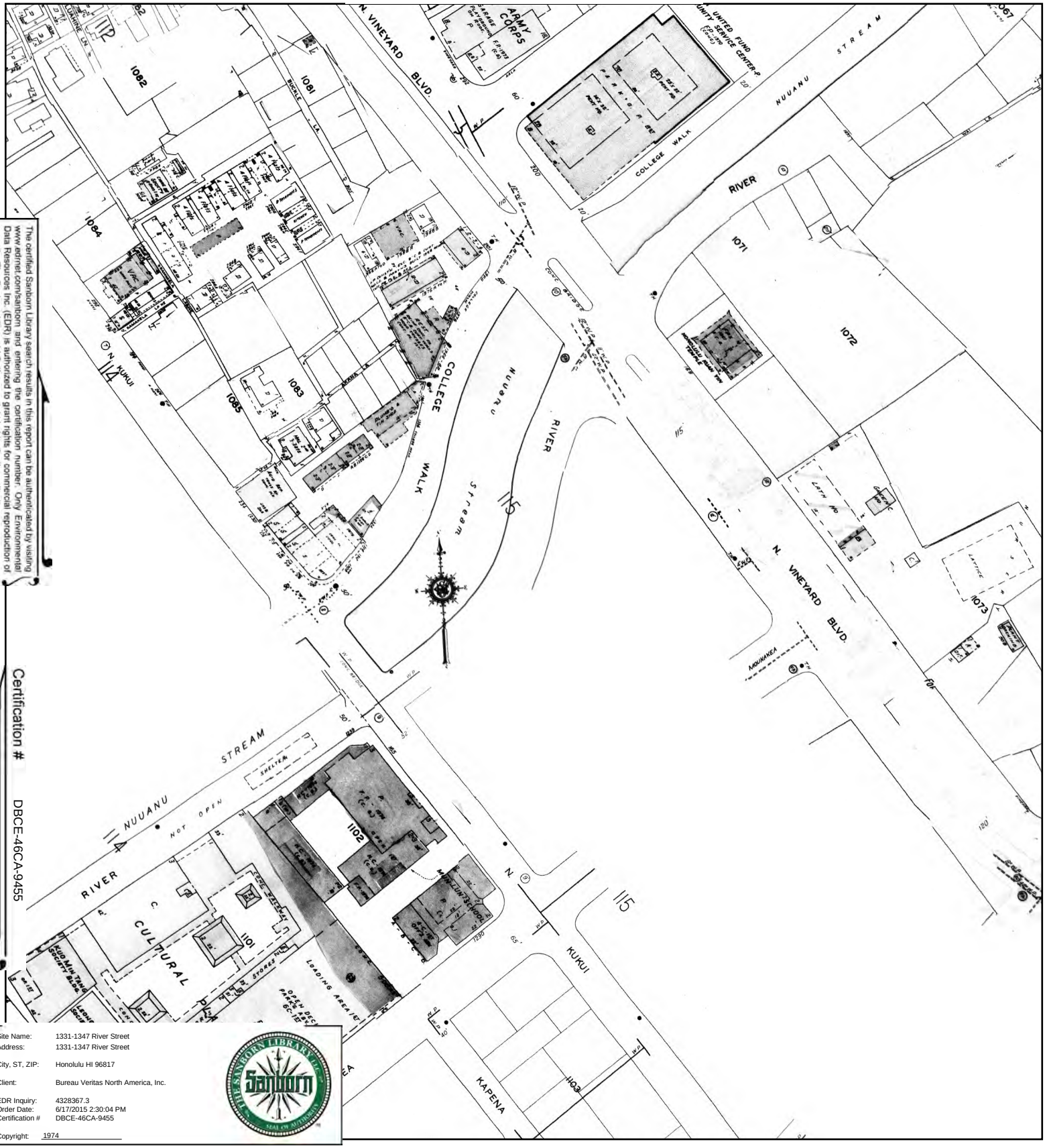
1974 Certified Sanborn Map



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City, ST, ZIP: Honolulu HI 96817

Client: Bureau Veritas North America, Inc.

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Certification # DBCE-46CA-9455

Copyright: 1974

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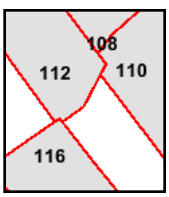

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0 Feet 150 300 600

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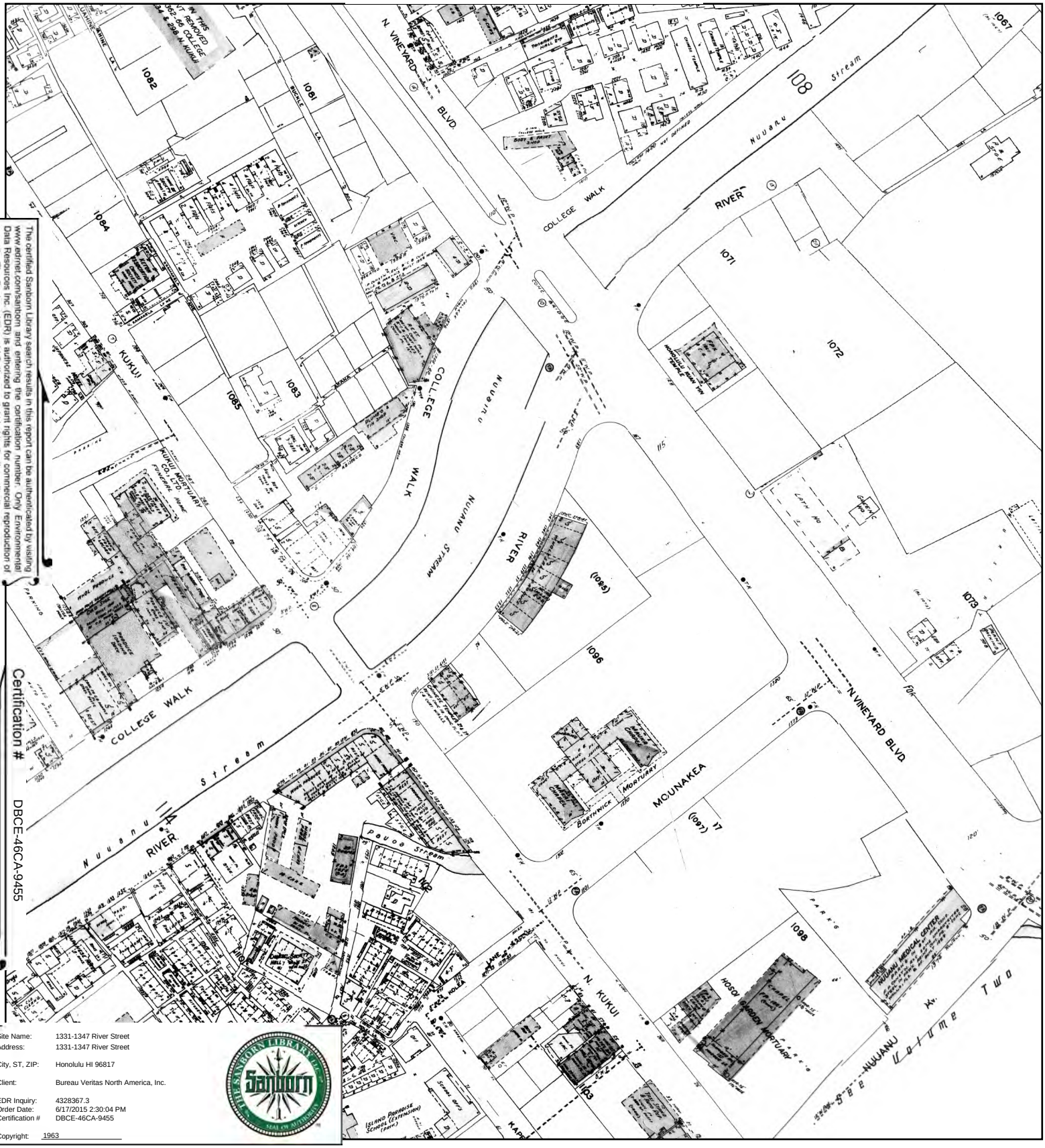
1963 Certified Sanborn Map



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Order Date:	6/17/2015 2:30:04 PM
Certification #	DBCE-46CA-9455
Copyright:	1963

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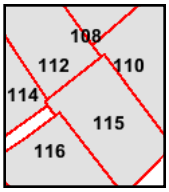

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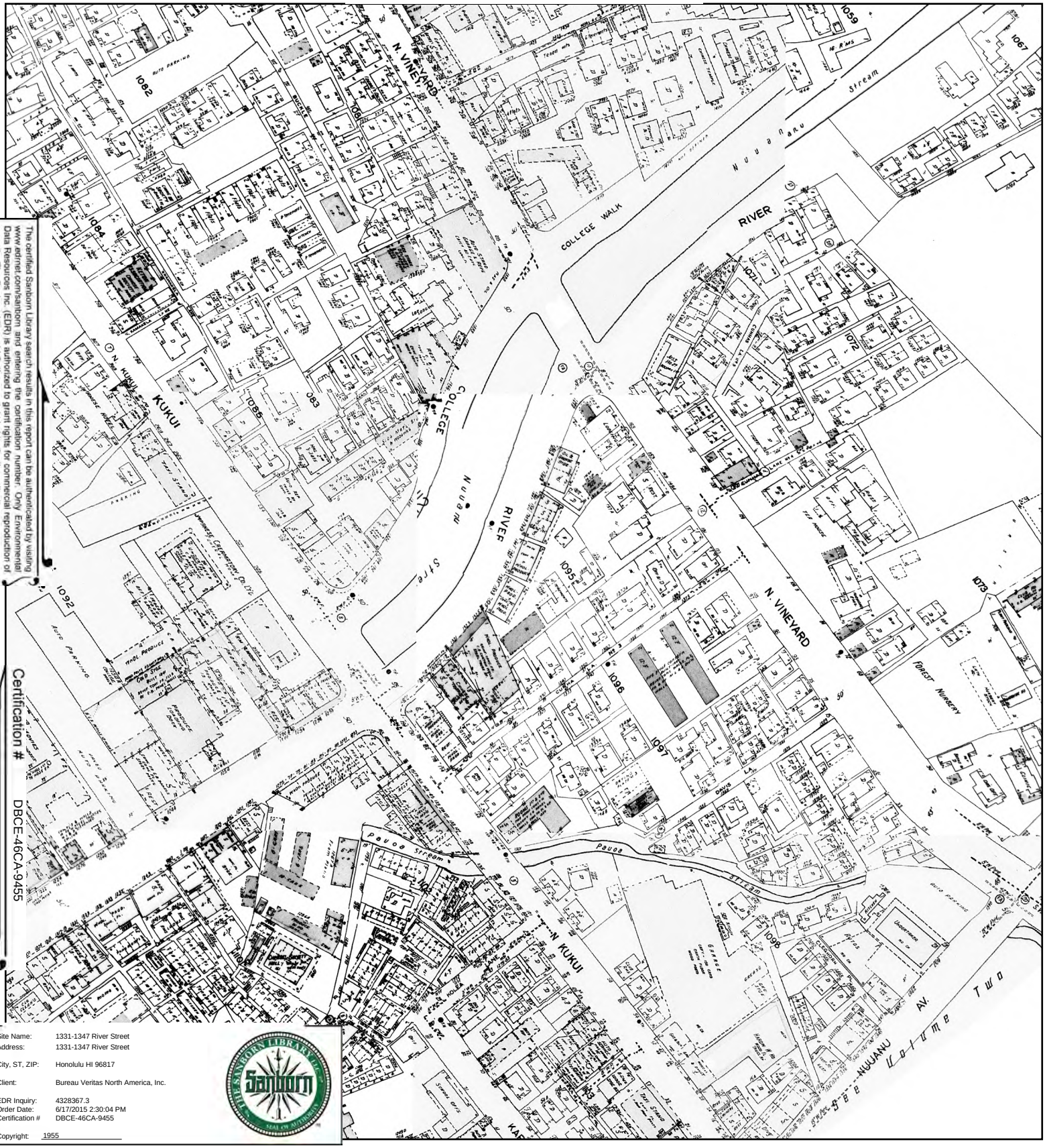
1955 Certified Sanborn Map



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Client: Bureau Veritas North America, Inc.
EDR Inquiry: 4328367.3
Order Date: 6/17/2015 2:30:04 PM
Certification # DBCE-46CA-9455
Copyright: 1955

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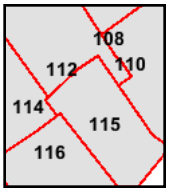

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Volume 1, Sheet 108
Volume 1, Sheet 110
Volume 1, Sheet 112
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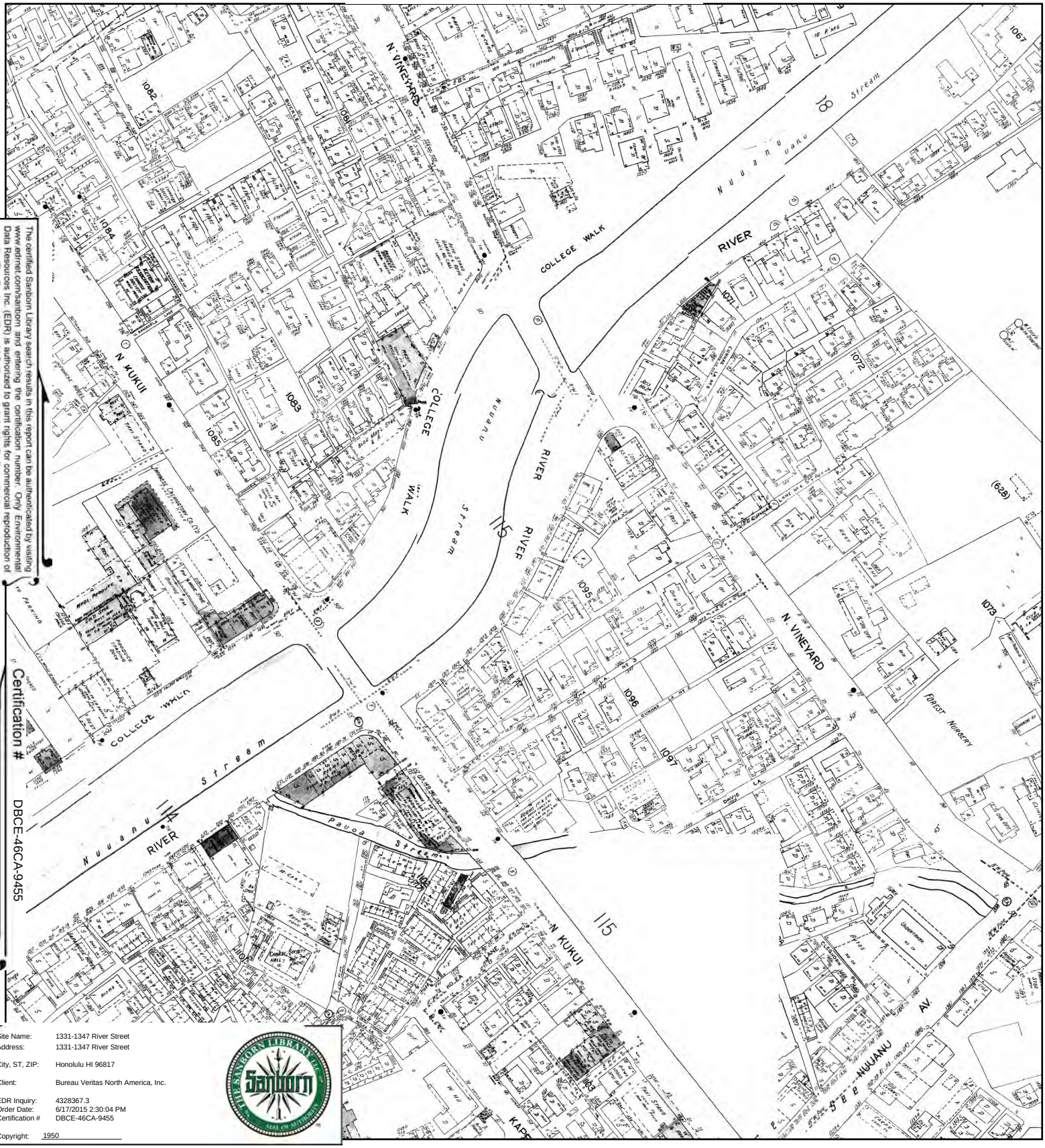
Volume 1, Sheet 115
Volume 1, Sheet 116

N

1950 Certified Sanborn Map



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Order Date: 6/17/2015 2:30:04 PM
Certification # DBCE-46CA-9455
Copyright: 1950

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Volume 1, Sheet 108
Volume 1, Sheet 110
Volume 1, Sheet 112
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Volume 1, Sheet 115
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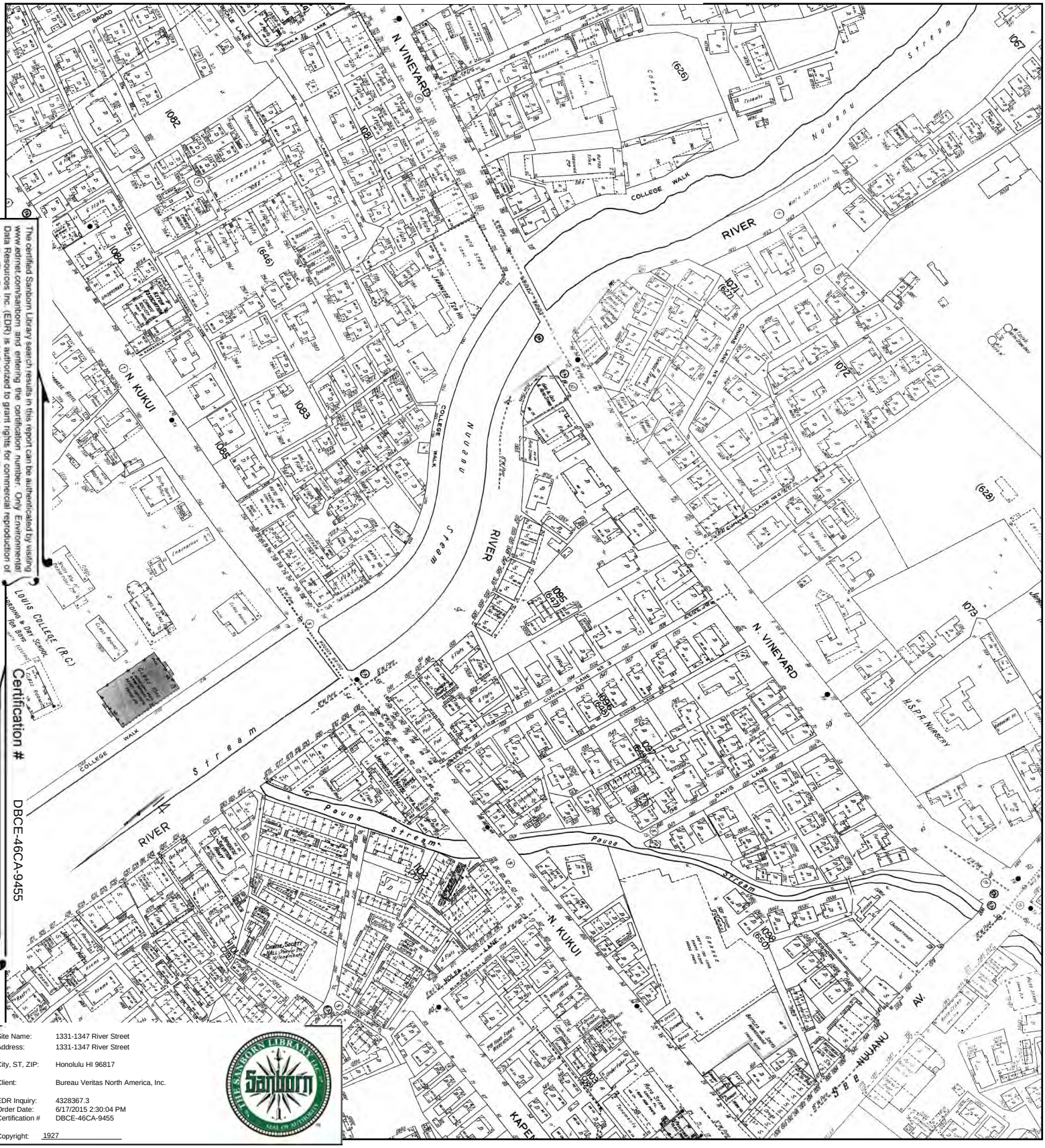
N

1927 Certified Sanborn Map



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Volume 1, Sheet 110
Volume 1, Sheet 112
Volume 1, Sheet 114
Volume 1, Sheet 115
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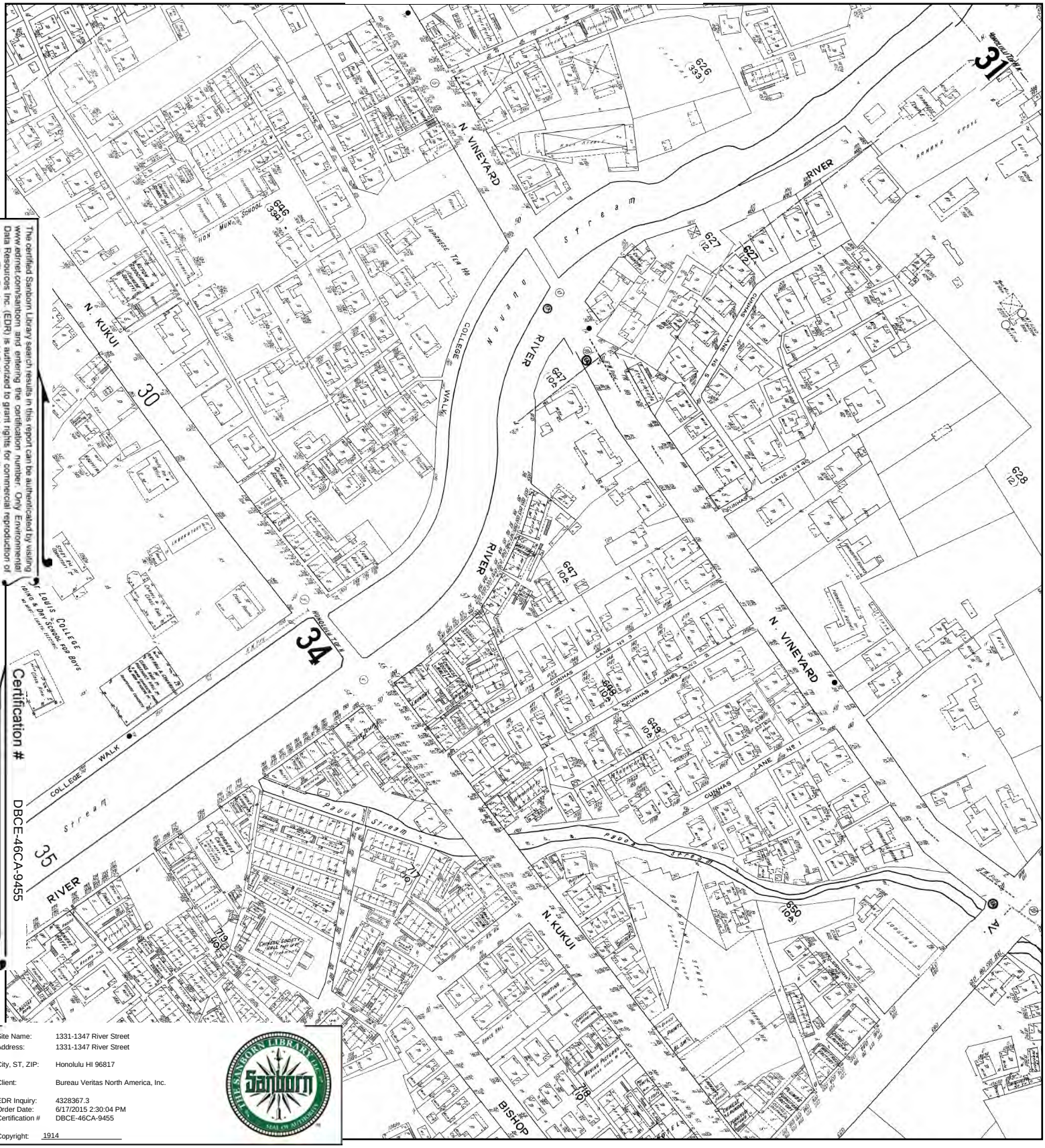
N

1914 Certified Sanborn Map



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Certification #	DBCE-46CA-9455
Copyright:	1914

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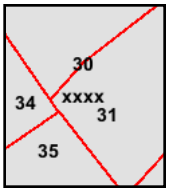

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N

APPENDIX G

CITY DIRECTORIES

1331-1347 River Street
1331-1347 River Street
Honolulu, HI 96817

Inquiry Number: 4328367.5
June 18, 2015

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2013	☑	☑	Cole Information Services
2008	☑	☑	Cole Information Services
2003	☑	☑	Cole Information Services
1999	☑	☑	Cole Information Services
1995	☑	☑	Cole Information Services
1992	☑	☑	Cole Information Services

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FINDINGS

TARGET PROPERTY STREET

1331-1347 River Street
Honolulu, HI 96817

Year	*CD Image*	*Source*
RIVER ST		
2013	pg A7	Cole Information Services
2008	pg A17	Cole Information Services
2003	pg A27	Cole Information Services
1999	pg A37	Cole Information Services
1995	pg A50	Cole Information Services
1992	pg A58	Cole Information Services

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*
MAUNAKEA ST		
2013	pg. A2	Cole Information Services
2008	pg. A9	Cole Information Services
2003	pg. A19	Cole Information Services
1999	pg. A29	Cole Information Services
1995	pg. A39	Cole Information Services
1992	pg. A53	Cole Information Services
N VINEYARD BLVD		
2013	pg. A5	Cole Information Services
2008	pg. A14	Cole Information Services
2003	pg. A24	Cole Information Services
1999	pg. A34	Cole Information Services
1995	pg. A46	Cole Information Services
1992	pg. A57	Cole Information Services

City Directory Images

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2013

1164	SUN FUNG COMPANY LLC
1165	HECTOR BARRIENTOS
	VIOLETS LEI STAND
1167	WONGS MARKET
1168	YI LIANG
1169	WING LOY MARKET
1176	SHIRLEYS FLOWERS
1180	FANNYS CORNER
1182	CUTE CUT INC
1184	T W BEAUTY SALON
1188	DUCS BISTRO
1189	MAUNAKEA STREET FLORIST
1190	LINAS LEIS & FLOWERS
1245	AHN MONG
	ALBERT DELRIO
	ALBERT LEUNG
	ALICE TRAN
	ALINA SON
	ANGELA ZUO
	ANNA TIET
	ANTHONY NGUYEN
	AUSTIN CHOI
	BARRY BESCOS
	BAU BUI
	BEN TRAN
	CHI VONG
	CHIU SZETO
	CHONG LIANG
	CHUN TSANG
	CREIGHTON WONG
	DAI TOM
	DANIEL MORNEAU
	DANNY CHIU
	DEREK YO
	DUC LUONG
	FELIX GARCIA
	FENG FONG
	FONG LIU
	GRACE SHIN
	GUO YU
	HA LE
	HARRY LONG
	HATSU SATOSHIGE
	HOON WONG
	HUE QUAN
	HUNG DO
	HYONG CHIN
	IN KIM
	IN LEE
	JAE WELCH

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2013 (Cont'd)

1245	JIAN LI
	JONG KIM
	JONG LEE
	JONG PARK
	KAM TSUI
	KENNETH MA
	KENNY CHAU
	KIM SO
	KUM KIM
	KWAI KO
	LAN CAPELETTI
	LIAN LU
	LISA LAM
	LIWEN WU
	LIWLIWA GALLANG
	LUCIA ELMALEH
	MAE XU
	MARY FERREIRA
	MARY PHAN
	MAUNAKEA TOWER
	MENG LON
	MERRIDETH CARTER
	MICHELLE PACHECO
	MING YOU
	MOODIE MALEK
	MUI LI
	MYLINH WEBB
	NAM UM
	NHI ONG
	PAN CHU
	PING YANG
	POY LEONG
	PUI CHAN
	QI HONG
	ROBERT CRITCHFIELD
	RONALD TRAN
	RUN HUANG
	SAE PARK
	SALLY FENG
	SANDY FAN
	SAU CHENG
	SAYURI OH
	SHAN LICHUN
	SHAN SU
	SHANTELL PERRY
	SHAO MAO
	SHU LIANG
	SIK NG
	SIU CHOU
	SIU KWOCK

MAUNAKEA ST 2013 (Cont'd)

1245	SO YOUNG
	SONG LIANG
	SOO CHONG
	STEVEN YIP
	SUNG MOON
	TAN MAO
	TEOFISTA DEGUZMAN
	TERESITA HOSTALLERO
	THI PHAM
	THOMAS YI
	TIET STAMP
	TOM TANG
	TONY SHEK
	VALLERIE KANG
	WALTER KOJIRO
	WEN LU
	WENYUN ZHANG
	WINNIE LOURE
	XIENG DEI
	XING LUO
	XING ZAGZHU
	XINGER XIAO
	XIU WAN
	XUEWU XIAO
	YAN LIN
	YAO CHEN
	YASUYOSHI IWATA
	YEUNG LAU
	YING DU
	YONG HA
	YU LIANG
	YU LIN
	YUE HUI
	YUK LI
	YUNCHU KO
	ZI DING
1290	CHEUNG CHAU STORE
	GORGEOUS BEAUTY SALON
	HAWAII PROTECTIVE ASSOCIATION LTD
	MUN LUN SCHOOL
1330	BORTHWICK MORTUARY
	HAWAIIAN MEMORIAL LIFE PLAN LTD

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 2013

31	JANELLE EIS
59	ZIPPYS
170	KUAN YIN TEMPLE
180	FOSTER BOTANICAL GARDEN
	FOSTER GARDEN GIFT SHOP
	FRIENDS OF HONOLULU BOTANICAL GARDEN
200	ACTION WITH ALOHA LLC
	ADOPTION CONNECTION
	ASSISTIVE TECHNOLOGY RESOURCE CENTER
	CHILD & FAMILY SERVICES
	CHILDRENS ALLIANCE OF HAWAII INC TH
	COMMUNITY ASSISTANCE CENTER
	EGLOBAL FAMILY
	FAMILY SUPPORT SERVICES
	HAWAII BENEFIT ADMINISTRATORS INC
	HAWAII CENTER FOR INDEPENDENT LIVING
	HAWAII LITERACY
	UNITED WAY
	WORKLIFE HAWAII
271	GERALD KIM
	KAM CHAN
	SHAWN BROOKS
273	CHARISH MARIANO-TORRES
	JONATHAN NIMI
	ROBERT GUINN
	RUZENA VORISEK
	TRAVIS TRIVETT
275	ELESE MOSLEY
	TUNU TUPUOLA
277	JEAN TUBBALI
	MOEMOE TAUPAU
	PAUL OFARRELL
	THOMAS SPENSER
	XI CHENG
281	BARBARA TOKUDA
	CILIANG XIAO
	KENNETH LAU
	KON KAM
	MALOU RELLANOS
	MATTHEW NEAL
	MICHAEL KWOK
296	MALAMA MAKUA DAY CARE CENTER
	THE SALVATION ARMY
301	DANIEL LI
	DONALD OKAZAKI
	IOANE UGAITAFA
	JAMSIE VIERRA
	JING CHEN
	KALEO RIBUCA
	OSWALD GABONELAS

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 2013 (Cont'd)

301	PING WONG
331	CAROLINE RYOO
	CHRISTINA GRANDINETTI
	CHRISTINE BUCHANAN
	DAVID SHARPERSON
	DELANO JEANPIERRIE
	EDNA BUENAFE
	GWI MIN
	JERRY SIU
	KELVIN LEE
	MEW CHUN
	SAIMON ROBSON
	TAM SALYPHONE
333	AMANDA NOONAN
	CHRISTINE YIP
	DEAN POLLARD
	JONATHAN JOHNSON
	PATRICIA YOUNG
	RYAN SHEA
339	DAVID FISHER
	NORMAN CHANG
	RONNIE CUNNINGHAM
	SHAO WANG
	SPENCER YU
	TRACYLEIGH KANESHIRO
	XINLING YE
357	CHAO LIGUANG
	EDMUND GOO
	GINNY YEUNG
	JASON ANZAI
	KANOE TUVALE
	TALIFAITASI SATELE
359	AMELIA RAMOS
	CHARLES MIU
	DENNIS BURDETTE
	FRANK CROWLEY
	HEIDI DANDREA
	KODY TAM
	MATHEW MARTINEZ
	MELVIE HOWARD-JOHNSON
	OLIVER HAWLEY
	RIDER ANTON
	TRISHA ARASHIRO
	WEITAI ZHOU
366	MALIA RUIZ
	MAUREEN LANGUIT
	RICHARD CHOW
	SEMU POTI

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 2013

941	THE ORCHID ROOM SPA
1007	TO CHAU RESTAURANT
1049	MABUHAY CAFE & RESTAURANT
1051	RIVERSIDE TRAVEL & SERVICES
1055	ALEY MERRIWEATHER
	ALIPIA RAMOS
	BIAGBIDO MACATUMBAS
	BRIAN WENTWORTH
	BRIGIDA BANGAWAN
	CAM NGO
	CARMELITA POBRE
	CHARLES FELICIANO
	CHI CHAN
	DENNIS TONG
	ELEANOR TANNO
	ELWIHNER BILLEN
	ESTILITA ANGELES
	HONG YANG
	JASON NGUYEN
	JIMMY SUYAT
	JOSEFINA PIGAO
	KENNY HEGLAND
	MIKE OVERSON
	OLIVER CADELINIA
	PASQUAL KERRADEL
	PHILIP BANOGON
	REMEDIOS TUMACDER
	SIRIWAN VICENS
	THANH PHAN
	WINSTON HALE APARTMENTS
	XU LIU
	ZORAIDA DEDIOS
1129	CHESTER FIELD
1135	D N D PAWN
1143	KEN VO
	KOMEYA APARTMENTS
1155	BRUCE STEWART
	FILIPINA RIVERA
	HARRY RAMOS
	JOLIANNE MOIKEHA
	JOVELYN SUYAT
	LIN AU
	LINDA VELLES
	LOLITA GRAGASIN
	MARIA LANGCAY
	MAXIMINA PERRERRA
	MICHAEL MARIANO
	MO CHUNG
	OAHU GHOST TOURS
	PAK LEE

RIVER ST 2013 (Cont'd)

1155	RIVER PAUAHI APARTMENTS
	SHE TIN
	STEVEN DOHERTY
	VICTORIANA MANTE
	VIOLET PAHIA
	VIVIANS LIQUOR & GROCERY
	YAN ZHOU
	YU CHEN
	YU WANG
1195	LINA B FLOWERS
1315	LUM SAI HO TONG
1333	UPTOWN CAFE
1335	HONOLULU REALTY
	JUN SHIATSU SEITAI
	NAKASONE LLOYD M CPA
1343	NEW HANAGASA INN CORP
1347	MIKIS FLORIST

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2008

1164	DENON DISTRIBUTORS CO
	LAU WILSON
1165	CHUNG YU
	SHU WU
	VIOLET LEI STAND
1166	SYLVIA ENTERPRISES
	SYLVIAS LEL & FLOWER SHOP
1168	OCCUPANT UNKNOWN
	SEA WAVE HAIR SALON
1169	NEW DALISAY CAFE
1176	SHIRLEYS FLOWERS
1178	OCCUPANT UNKNOWN
1180	DUK SING
1182	CUTE CUT INC
1184	T W BEAUTY SALON
1188	DUCS BISTRO
1189	MAUNAKEA LEI & FLOWERS LLC
1245	AHN MONG
	ALBERT DELRIO
	ALEX ANTONIO
	ANGELA ZUO
	ANTHONY NGUYEN
	BARBARA EMPRON
	BARRY BESCOS
	BAU BUI
	BEN APUNA
	BEN TRAN
	BILL LEE
	CAL CHEN
	CAROL HUI
	CHAU HUA
	CHAUMONT DEVIN
	CHENG XING
	CHIU SZETO
	CHONG LIANG
	CHUN TSANG
	CHUNG IM
	CLARITA MATREO
	CORAZON RAMOS
	CREIGHTON WONG
	DANIEL MORNEAU
	DENA AQUINO
	DIEP PHAN
	DUC LUONG
	EDMUND LUM
	ERNEST TOMITA
	F BAKER
	FELIX GARCIA
	FOOK LAU
	FUJI XING

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2008 (Cont'd)

1245	GEXUAN CHEN
	GUAN CAI
	GUO YU
	HAN KIM
	HARRY LONG
	HATSUICHI SATOSHIGE
	HEE KIM
	HENRY WONG
	HING KO
	HOON WONG
	HUA LIN
	HUAN GAN
	HUE QUAN
	HUI CHEN
	HUI KONG
	HUIYU LI
	HUNG DO
	IN KIM
	IRIS LUCIANO
	J MORTIMORE
	JAE KIM
	JAE WELCH
	JHONG KYONG
	JIAN LI
	JIN CHEN
	JIN TANG
	JINZHI LIN
	JOO LIM
	JOSEPH MCLOUTH
	JUN MA
	JUNE LEE
	JUNG KIM
	JUNGHEE CHUNG
	KALE HASSARD
	KAM LI
	KAM TSUI
	KIM SO
	KIN YU
	KOON YEUNG
	KUM SONG
	KWAI KO
	KWOK CHIU
	KYONG IM
	KYOUNG LEE
	LAM CHIANG
	LAN CAPELETTI
	LAN LIU
	LAPVINH HYUNH
	LAVINA TOM
	LEONG TANG

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2008 (Cont'd)

1245	LIAN LU
	LISA LAM
	LIWLIWA GALLANG
	LORENE SCHULMEISTER
	MAE XU
	MARY FERREIRA
	MAUNAKEA TOWER
	MELISSA LY
	MENG LON
	MICHELLE PACHECO
	MING YOU
	MUI LI
	NALANI COPELAND
	NAM BAIK
	NAM SON UM
	NAM SONG
	NAM UM
	NAN PAK
	NESTOR HEBRON
	NGOC TIET
	NGOC TRAN
	NHAN HUYNH
	NHAN NGUYEN
	NHI ONG
	OK CHA
	OK LIM
	PAMELA LEE
	PAN CHU
	PERLITA CLAY
	PETER SPEIRS
	PING LAM
	PING YANG
	PUI CHAN
	PUI MOW
	QUEN LIN
	QUN TANG
	ROBERT CRITCHFIELD
	RUN HUANG
	SAM PARK
	SAU CHENG
	SHAO LIU
	SHAO MAO
	SHAOQUN YU
	SHIRLEY TERRY
	SHU LIANG
	SHUI LEE
	SIK NG
	SIM MIYAGAWA
	SIU CHOU
	SIU KWOCK

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2008 (Cont'd)

1245	SO YOUNG
	SOM THIPPHAVONG
	SONG LIANG
	SOO CHUNG
	SOON HWANG
	SOON KIM
	SUN HAN
	SUNG MOON
	SUNNY CHENG
	T WONG
	TAE CHOI
	TAM LY
	TANH CHAU
	TEOFISTA DEGUZMAN
	THAI NGUYEN
	THANH VANNGUYEN
	THI PHAM
	THI VAN
	TIET STAMP
	TONG LIU
	TONY CHAU
	TONY LUU
	TONY VO
	V VEGA
	VALLERIE KANG
	W FAN
	WAI HO
	WAI LEE
	WALTER KOJIRO
	WEN LU
	WENYUN ZHANG
	WILLIAM TSE
	WONG ZHANG
	XIAN XIAO
	XIAO LIU
	XIENG DEI
	XING LUO
	XING ZAGZHU
	XINGER XIAO
	XIU WAN
	XUEWU XIAO
	YAN HUANG
	YEON KIM
	YEUNG LAU
	YING DU
	YU LIANG
	YU LIN
	YUAN LIU
	YUE LAU
	YUE LEI

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2008 (Cont'd)

1245	YUN SUNG-TANG
	YUYING ZHOU
	ZHAO LI
	ZHUMAN YE
	ZHUO CHEN
1290	ALOHA MAIL SERVICE
	BILLS SEAFOOD
	CHEUNG CHAU STORE
	GORGEOUS BEAUTY SALON
	HAWAII PROTECTIVE ASSOCIATION
1330	DIGNITY MEMORIALS BORTHWICK MORTU
	HAWAIIAN MEMORIAL LIFE PLAN LTD
	SERVICES INTL HOUSTON TX
1344	MALIA AKUTAGAWA

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 2008

50	CITY & COUNTY OF HONOLULU
59	ZIBBYS RESTAURANT
170	KUAN YIN TEMPLE
180	FOSTER GARDEN GIFT SHOP
	FRIENDS OF HONOLULU BOTANICALS GARDE
200	AWARE
	CATHOLIC CHARITIES DC HONLL
	COMMUNITY ASSISTANCE CENTER
	HAWAII LITERACY INC
	MAXIMUM LEGAL SERVICES CORP
	PARENTS & CHILDREN TOGTHR
	ROMAN CATHOLIC CHURCH STATE
	THE LEARNING DISABILITIES ASSN OF HI
271	JOANNE LE
	JOSEPHINE HOANG
	L & T CLOTHINGS
	LIN LI
	MICHAEL IZUMI
	PATRICK BORGES
	PATRICK CHANG
	YUN HUANG
	ZHI HU
273	DENEEN QUARTERO
	JAMES CHAN
	YONG SONG
275	BIG THUMB HAIR SALON LLC
	EMILIA ALONZO
	JING CHEN
	KIM CHIANG
	LUCIA LIM
	PAUL HELSHAM
	RANDY FALETOI
	SHAO ZHAO
	ZHENG RUAN
277	IWALANI KALEIWAHEA
	JIEHUAN TANG
	KWONG CHAN
	MICHAEL HASJIMOTO
	MOO SUNG
	PEARL STEWART
	WOON CHAN
	YONG CHONG
	YOU LIANG
281	ANNIE KWOK
	CALVIN MIRAFUENTES
	CARLEEN CROWELL
	CHARLES MIU
	CI XIAO
	ERIC PHILPOT
	HAIBIN FANG

281	HING LAU
	JEAN LEE
	JOHN COBURN
	KI YI
	NELSON CHING
	SHUN LIN
	TRUDE TOKUDA
	XIAO MA
	YING MA
	ZI CHEN
296	OHANA KEIKI DAY CARE PRESCHOOL
	OHANA KEIKI PRE SCHOOL
	SALVATION ARMY ADULT DAY HEALTH
301	ANNIE MAR
	CONSTANCIA TOPENIO
	DENNIS SAMBUENO
	HAN ZHANG
	JAY YAHIKU
	JING CHEN
	JOHN NG
	KAM CHAN
	LEWIS LEONG
	MICHAEL NG
	PATRICIA YOUNG
	PUI LAU
	SHUN NG
	YUN LI
	ZI LIN
331	ALBERTA HONDA
	ALVIN SUGAI
	AUGUST AMAY
	BITNA KIM
	FOOK WONG
	GEORGE LIU
	HUO LEI
	JACK CHANG
	JAE SON
	LAI CHUENG
	MEW CHUN
	MIGUANG LI
	MIMI KUOK
	MOSES CHENG
	RANDY CHUNG
	TAM SALYPHONE
	WEI DU
	WILLIAM TU
	WING CHAN
	YEONG JUN
	YONG CHUNG
	ZHONG LU

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 2008 (Cont'd)

333	ANDREW SUZUKI
	CHOR YUNG
	DING HUANG
	ERIC YOO
	MOONS FISHING INC
	PETER KU
	SUNG NA
339	DERJEN SHIAH
	DONALD YIM
	FENG LUO
	HUE LU
	JACQUELYN ANAC
	MICHAEL GREGORY
	QINGLONG ZHANG
	SHAO WANG
	SHUI CHENG
	UT LEE
	XIAN CHEN
357	HENRI CASANOVA
	JIAN ZHENG
	JOHN LAU
	KEITH SHEK
	KIN HUI
	LAM LIU
	LUCIA TAM
	MANDY FANG
	MICHAEL WONG
	WEI XU
	WING LAI
359	CU TSU
	DANIEL LEE
	DANNY CHO
	HO YU
	JIN CHEN
	JIN CHUNG
	JOEL CACHO
	JOSEPH RUTTLE
	LOUIS MCNEELY
	NOREEN CHAMPION
	RONALD YOGI
	TATMAN TAM
	TAYLOR LAM
	WILLIAM KUPAU
	YANYUN RUAN
366	ELAINE MATTSON
	MALIA RUIZ
	MARY CHOW
	THOMAS KAIMULOA

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 2008

1007	TO CHAU RESTAURANT
1049	MABUHAY CAFE & RESTAURANT
1051	RIVERSIDE TRAVEL & SERVICES
1055	ALEY MERRIWEATHER
	ALIPIA RAMOS
	BERT ARNOLD
	BIAG MACATUMBAS
	BRIGIDA BANGAWAN
	CARMELITA POBRE
	CATALINA BANOGON
	CHESTER BURNS
	CHI CHAN
	DAVID KLEIN
	DEMIAN PANG
	EBEN KOKUI
	ELWIHNER BILLEN
	ESTILITA ANGELES
	IRENEA BAQUIEL
	JENNIFER NGUYEN
	JIMMY SUYAT
	JOANNE CHANG
	JOSEFINA PIGAO
	JUAN BAUTISTA
	JUSTIN SHEFFER
	KEITH GARDNER
	KRISTOSSER PARDILLO
	LIONEL COLLAZO
	MANUELA ABAT
	MARVIN LO
	OLIVER CADELINIA
	RAY OZAKI
	REMEDIOS TUMACDER
	REX MEDINA
	SEGUNDINA BAYAG
	SIRIWAN VICENS
	SULPICIO DOMINGO
	WINSTON HALE APARTMENTS
	WYATT JEONG
	XU LIU
	YAN ZHOU
	ZORAIDA DEDIOS
1133	VIETNAM TOURS & TRAVEL INC
1135	D N D PAWN
1137	COLOMAS TRAVEL SERVICE
	PHILAM EXPRESS
1139	PATRICK A TEMPLE
	RIVERSIDE BARBER SHOP
1141	BULOSANS TAILORING
1143	C LOPEZ
	EDMAR AVES

1143	ELTON PIMENTAL
	ISAWO ISA
	JAMES SAKAMOTO
	KOMEYA APARTMENTS
1145	ROSA LOU SHOPPE
1155	ANGIE KWOK
	BRAULIO PARADEZA
	BRUCE STEWART
	CONNIE ANTONIO
	CRESENCIA TACAZON
	CYNTHIA SANCHEZ
	DOROTHY DOHERTY
	EUFROCINA MARIANO
	FEL SON MEDICAL SUPPLY INC
	FILIPINA RIVERA
	IRENEA NACAR
	JOLIANNE MOIKEHA
	JOSE MENDOZA
	LIN AU
	LINDA VELLES
	MARIA LANGCAY
	MAXIMINA PERRERRA
	MICHAEL MARIANO
	MO CHUNG
	PAK LEE
	PAMELA CHUN
	RICARDO IBALE
	RIVER PAUAHI APARTMENTS
	ROBERT RUST
	SHANG LEE
	SHE TIN
	SONG LIANG
	VICTORIANA MANTE
	VIOLET PAHIA
	VIVIANS LIQUOR & GROCERY
	YONG MUN
	YU WANG
1315	LUM SAI HO TONG
	TINHAU TEMPLE
1335	BEAUTY SALON TOYO
	ENVISIONS PLUS INC
	HONOLULU REALTY INC
	JUN SHIATSU SEITAI
	LLOYD M NAKASONE CPA
	LLOYD NAKASONE
	M & M ELECTRIC INC
1343	HANAGASA INN INC
1347	MIKIS FLORIST

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 2003

1164	OCCUPANT UNKNOWN
	WILSON LAU
1165	SHU WU
	VIOLET LEI STAND
	XIU CAI
1167	HAWAII BARBER SHOP
1168	OCCUPANT UNKNOWN
	SEA WAVE HAIR SALON
1169	NEW DALISAY CAFE
	OCCUPANT UNKNOWN
1176	OCCUPANT UNKNOWN
	SHIRLEYS FLOWERS
	SKIPPYS WHOLESALE MARKET
1180	DUK SING
1182	CUTE CUT INC
1184	TW BEAUTY SALON
1188	DUCS BISTRO
	OCCUPANT UNKNOWN
1189	CHARLES CHACKO
	MAUNAKEA STREET FLORIST
1190	SONNY LE
1245	AHN MONG
	ALBERT DELRIO
	ANDREW SAY
	ANTHONY NGUYEN
	BARBARA EMPRON
	BARRY BESCOS
	BAU BUI
	BEN APUNA
	BI LIN
	BICH VANLONG
	BILL LEE
	BING LIANG
	BING TANG
	BOK LEE
	BOK YANG
	BONG AHN
	C MATREO
	CAI CHEN
	CAI XING
	CHAEIK KANG
	CHIU SZETO
	CHONG LIANG
	CHUN TSANG
	CONCEPCION TOME
	CORAZON RAMOS
	CREIGHTON WONG
	CUI YOUNG
	DANIEL MORNEAU
	DE CHEN

MAUNAKEA ST 2003 (Cont'd)

1245 DEBBIE MORALES
DIEP PHAN
DUC LUONG
DUK IM
EDMUND LUM
ERIC LEE
ERNEST KNIGHT
ETHEL LEE
FAU LACHIANG
FELIX GARCIA
FENG HUANG
FOOK LAU
GENG DENG
GEORGE TRAN
GUO YU
HAMILTON GRAY
HARRY LONG
HARUE IWAKI
HATSUICHI SATOSHIGE
HEE KIM
HELEN KELII
HENRY HUYNH
HING KO
HIRAM FERREIRA
HOANG LEANH
HOON WONG
HUAN GAN
IN LEE
JAE WELCH
JHUNG OH
JIE YANG
JIL LEE
JIN LIN
JIN PANG
JIN RUAN
JOE PHOUTTHASACK
JONG LEE
JONG PARK
JOO LIM
JOSEPH MCLOUTH
JUNG KIM
JUNG LIM
KA WONG
KAINANI MEHEULA
KAM LI
KENNY CHAU
KIM IN SUP
KIM SO
KIN YU
KISMET GOULD

MAUNAKEA ST 2003 (Cont'd)

1245
KOK IM
KUM SONG
KUM UM
KWAN SHEK
KWOK CHIU
KWONG LAU
KYOUNG LEE
KYUNG LIM
L CHIANG
L GALLANG
LAI CHAN
LAN CAPELETTI
LAWRENCE TRAN
LI MA
LIEN WANG
LOC PHAM
M LIM
M YOKOTA
MAE XU
MAN WU
MARIA CHAN
MARY SAMPAIO
MASAKO UEHARA
MEI LAM
MICHELLE PACHECO
MING YOU
MUI LI
MUOI LY
MYRA MEATOGA
NAM SONG
NAM UM
NAN PAK
NESTOR HEBRON
NHAN HUYNH
NHAN NGUYEN
PAN CHU
PERLITA CLAY
PING YANG
POY LEONG
PUI CHAN
PUI LEUNG
PUI MOW
QUEN LIN
QUN TANG
ROBERT CRITCHFIELD
RONALD KAM
RUI LI
RUN HUANG
SAU CHEUNG
SB ENTERPRISES INC

MAUNAKEA ST 2003 (Cont'd)

1245	SENGCHANH MIXAPHONE
	SEOK KIM
	SEUNG JOUNG
	SHAO LI
	SHION MONG
	SHIRLEY NGUYEN
	SHU CHAN
	SHU LAI
	SHU LIANG
	SHUI LEE
	SIK NG
	SIM MIYAGAWA
	SIU KWOCK
	SIU LAL
	SIU LAM
	SIU LI
	SO YOUNG
	SOK GOR
	SONG LIANG
	SONG YU
	SOON HWANG
	SOON KIM
	SOON YI
	SOON YOUNG
	STEVEN YIP
	SUK AN
	SUN KIM
	SUNG MOON
	SUNNY CHENG
	TAK LAU
	TAM LY
	TANH CHAU
	TEOFISTA DEGUZMAN
	THAI NGUYEN
	THANH VANNGUYEN
	THI PHAM
	THI VAN
	TIET STAMP
	TONG LIU
	TRIEU ONG
	VAN DO
	W FAN
	WAI HO
	WAI LEE
	WAI MA
	WALTER KOJIRIO
	WILLIAM TSE
	WONG ZHANG
	WUNKAM FUNG
	XIAN XIAO

MAUNAKEA ST 2003 (Cont'd)

1245	XIENG DEI
	XING CAI GUAN
	XING LUO
	YAN HUANG
	YAO CHEN
	YIM HUI
	YING DU
	YIU KWOK
	YIU TSUI
	YOUNG YU
	YU LIANG
	YUE HUI
	YUE LEI
	YUE LI
	YUI TAM
	YUN SUNG-TANG
	ZHAO LI
	ZHUO CHEN
1250	JIAN MAY
	JIAN MAY FAN
	SALLYS BOUTIQUE
1290	ALOHA MAIL SERVICE
	BILLS SEAFOOD
	ENTERTAINMENT UNLIMITED
	GORGEOUS BEAUTY SALON
	KWOK KI
	OMEGA & BEYOND INC
1330	BORTHWICK MEMORIAL SERVICES
	BORTHWICK MORTUARY
	HAWAIIAN MMRL LIFE PLAN LMTD
	R SELLS
	THE BORTHWICK GROUP
1344	MALIA AKUTAGAWA

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 2003

23	NORMA LUKE
50	OCCUPANT UNKNOWN
170	KUAN YIN TEMPLE
	YIN KUAN
180	FOSTER GARDEN GIFT SHOP
	OCCUPANT UNKNOWN
200	ADOPTION CONNECTION
	CHILD & FAMILY SERVICE
	LEARNING DISABILITIES ASCTN
	LYNN CHING
	MAXIMUM LEGAL SERVICES CORP
271	H KAMOKU
	JOEY HUANG
	JOSEPHINE HOANG
	LIN LI
	SOLEDAD SAMORTIN
	SOON KIM
	THI NGUYEN
	YOUNG LEE
273	DENEEN QUARTERO
	SANGWOO OH
	SEUNG SONG
275	ELLEN CHAO
	EMILIA ALONZO
	FELUANI FALETOI
	JING CHEN
	KAM WONG
	LUCIA LIM
	PAUL HELSHAM
	ZHENG RUAN
277	MICHAEL HASHIMOTO
	MICHAEL HASJIMOTO
	MOO SUNG
	RUN LIN
	WING CHAN
	WOON CHAN
	YONG CHONG
	YOU LIANG
281	CHONG KIM
	CI XIAO
	DU LIANG
	HAN MA
	HING LAU
	HYO CHU
	JEAN LEE
	JOHN COBURN
	KEITH SHEK
	KI YI
	MARY MIU
	MAURICE LEE

N VINEYARD BLVD 2003 (Cont'd)

281	NELSON CHING
	SONG KO
	YIU KWOK
296	REGINA LUULOA
301	CARLEEN CROWELL
	JAY YAHIKU
	JEUNG MAR
	JIN HUANG
	KENNETH LEE
	KWOCK PANG
	LEWIS LEONG
	MARCELLA JOSE
	PUI LAU
	SIK CHAN
	T SOEDA
	TAMMY STANCIL
	V HO
331	ALBERTA HONDA
	ALVIN SUGAI
	AUGUST AMAY
	CHUCK WONG
	EUGENE KIM
	FOOK WONG
	GEORGE LIU
	H WONG
	JACK CHANG
	JI MOON-KIM
	JIAN DUWEI
	JUHYUN JUN
	KENNETH TAMANAHA
	LIN TANG
	LIONEL BORGES
	MIMI KUOK
	MOSES CHENG
	NOMI LEE
	SALLY LEONG
	SHIANG KIANG
	THOMAS NAKAYAMA
	TING LAU
	WAI LI
	WILLIAM TU
	YONG CHUNG
333	BEATRICE MORSE
	CHAM LAU
	CHI YUNG
	CHONG KU
	MOONS FISHING INC
	RICHARD LAU
	RUI LIU
	SUNG NA

N VINEYARD BLVD 2003 (Cont'd)

333	YANG MOON
339	BENJAMIN LEE
	DERJEN SHIAH
	EARL WALLACE
	JUDY CHANG
	LIN FENG
	SHAO WANG
	TOM KIM
357	ANNIE LAU
	CLINTON LEN
	JAMES CHING
	JOHN LAU
	KIN HUI
	KYUNG PARK
	LAM LIU
	LUCIA TAM
	PUI LEE
	QUI CHAO
	ROSALINE FREITAS
	TAT WONG
	TOSHIO KOGA
	VIOLET TARA
	WEI XU
	YONG LAI
	ZHONGTAO OU
359	BU CHONG
	FANG CHENG
	JIN CHEN
	JIN CHUNG
	KI LAM
	KULEANA VALVE & FITTING CO
	KWAI LEE
	LOUIS MCNEELY
	N RUTTLE
	NOREEN CHAMPION
	PEI LIU
	RAYMOND YEUNG
	RONALD YOGI
	TSUNG KWONG
	YOOK CHAN

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 2003

1007	TO CHAU RESTAURANT
1049	MABUHAY CAFE
1051	HIEN HO
	RIVERSIDE TRAVEL & SERVICES
1055	ANSELMO LAVARIAS
	BERT ARNOLD
	BRIGIDA BANGAWAN
	CHESTER BURNS
	CHI CHAN
	DAVID SOFTCHIN
	E ANGELES
	IRENEA BAQUIEL
	JIMMY SUYAT
	JOANNE CHANG
	JUAN BAUTISTA
	M WEBB
	MARIE DEORIO
	MARVIN LO
	OLIVER CADELINIA
	PING FU
	RAPHOL AKANA
	RAY OZAKI
	REMEDIO POBRE
	REMEDIOS TUMACDER
	REX MEDINA
	ROBERT FERGUSON
	SHANDELL EAMES
	SONG SO
	TRUONG TRAN
	WALTER HESS
	WINSTON HALE APARTMENTS
	XU LIU
	YAN ZHOU
1133	R KONG
	VIETNAM TOURS & TRAVEL
1135	D ND PAWN
	OCCUPANT UNKNOWN
1137	COLOMAS TRAVEL SERVICE
	OCCUPANT UNKNOWN
	PHILAM EXPRESS
1139	PATRICK A TEMPLE
	RIVERSIDE BARBER SHOP
1141	OCCUPANT UNKNOWN
1143	C LOPEZ
	ELTON PIMENTAL
	ISAWO ISA
	JAMES SAKAMOTO
	KOMEYA TRAVEL SERVICE
1145	ROSA LOU SHOPPE
	ROSALIE CADIZ

RIVER ST 2003 (Cont'd)

1155	ANGIE KWOK
	BRAULIO PARADEZA
	BRUCE STEWART
	CONNIE ANTONIO
	CYNTHIA SANCHEZ
	DOROTHY DOHERTY
	EUFROCINA MARIANO
	IRENEA NACAR
	JOSE MENDOZA
	KAM KOO
	KO LEE
	MADELYNE BARR
	MARIA LANGCAY
	MO CHUNG
	PAK LEE
	PAMELA CHUN
	ROBERT RUST
	SATURNINO TAMAYO
	SEE LEE
	SEONG CHU
	SHE TIN
	SONG LIANG
	VICTORIANA MANTE
	VIOLET PAHIA
	VIVIANS LIQUOR & GROCERY
	XIU LIN
1195	BONIFACIA GALLEO
1197	L & M FASHION INC
	MEI SUN INC
1315	LUM SAI HO TONG
	SAI LUM
1319	EDWIN S UPHOLSTERY
1333	HELENE TOYA
	UPTOWN CAFE
1335	BEAUTY SALON TOYO
	ENVISIONS PLUS INC
	ERIC HILL
	GORDON LORIANN LNDSCP ARCHTCT
	HIRONAKA & ASSOC INC
	HONOLULU REALTY
	HONOLULU REALTY MANAGEMENT
	M & M ELECTRIC INC
	MOCK J REALTY
	RAY KAR COMPUTERS
	SATURNINO TAMAYO
1343	COLLEGE WALK INN
1347	MIKIS FLORIST
	OCCUPANT UNKNOWN

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 1999

1164	DENON DISTRIBUTOR COMPANY
1165	CHINA MARTIAL ARTS & WARES
	VIOLET LEI STAND
1166	BOB & FAN APPAREL
1168	SEA WAVE HAIR SALON
1169	NEW DALISAY CAFE
1176	Q YONG
1180	IMPERIAL JEWELRY INCORPORATED
1182	CUTE CUT INCORPORATED
1184	HAWAII BARBER SHOP
1188	DUCS BISTRO
1189	MAUNAKEA STREET FLORIST
1190	LINAS LEIS & FLOWERS
1225	ELIGIO HERMANO
1242	OCCUPANT UNKNOWN
1245	A DAIRO
	ALEX ANTONIO
	ALFONSO CHAN
	ANDREW SAY
	ASSOCIATION OF OWNERS OF THE BERETANIA NORTH THE SEC DESK
	B EMPRON
	BEN APUNA
	BICH AN
	BING LIANG
	BING TANG
	BINH NGO
	BOBBIE BURKE
	BOK YANG
	BONG AHN
	BYUNG AHN
	C MATREO
	C RAMOS
	C WONG
	CAI CHEN
	CAI LIN
	CHI CHEN
	CHI NG
	CHIANG LAM SHOW
	CHIU SZETO
	CHONG LIANG
	CHUN TSANG
	CHUNG BOK SUN
	CINDY LY
	D ADAY
	DANIEL CAMACHO
	DANIEL MORNEAU
	DIEP PHAN
	DUC LUONG
	DUK IM
	E FREMBD

MAUNAKEA ST 1999 (Cont'd)

1245	ERIC LEE
	ERNEST KNIGHT
	ERNEST LIU
	ETHEL LEE
	EVELYN MA
	F BAKER
	F MANGUBAT
	FENG HUANG
	GEORGE TRAN
	GUANG LIN
	GUO YU
	H ASUNCION
	H GRAY
	H TANAKA
	HAN DUYING
	HAN KIM
	HELEN KELII
	HIEN HUYNH
	HING KO
	HUI GUO
	I VINCENT YONG CHOE
	JAE WELCH
	JANET SHIN
	JIL LEE
	JONG PARK
	JOON PARK
	JUN WANG
	JUNE LEE
	JUNG KIM
	JUNG LEE
	JUNG LIM
	JUNG PACK
	KA WONG
	KAM LI
	KAM TSUI
	KAREN LEE
	KEITH SHEK
	KIM H Y WON
	KIM IN SUP
	KIM SO
	KIN YU
	KUM SONG
	KWOK CHIU
	KWOK YIU MAN
	KWONG LAU
	KYOUNG LEE
	KYUNG LIM
	L GALLANG
	L TRAN
	LE HOANG

MAUNAKEA ST 1999 (Cont'd)

1245 LEONG POY WON
LI HUANG
LI MA
LI ZHENG
LIEN WANG
LOC PHAM
LOK CHEUNG
LORENE SCHULMEISTER
LUK LUM
LUO XING SHENG
M LIM
M MAKAENA
M WONG
M YOKOTA
MAN WU
MASAKO UEHARA
MING YOU
MINH TRAN
MUOI LY
MYRA MEATOGA
MYUNG KIM
NAM UM
NAM WONG
NAN PAK
NESTOR HEBRON
NGUYEN TRI NHAT
NHAN NGUYEN
OSOP SIN
P SILVA
P SUMAMPONG
PEI FENG
PEN CHOU
PING LAM
PING YANG
PUI CHAN
PUI LEUNG
PUI MOW
ROBERT CLAY
RONALD KAM
RUI LI
SADAYO MAEDA
SALINA NG
SAU TSE
SAU WONG
SEOK KIM
SEUNG JOUNG
SEUNG KIM
SHAO LI
SHI XIAO
SHU CHAN

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 1999 (Cont'd)

1245	SHU LAI
	SHU LIANG
	SHUI LEE
	SIU CHENG
	SIU KWOCK
	SIU LI
	SO YOUNG
	SOK GOR
	SONG LEI
	SONG LIANG
	SONG NAM SUN
	SONG YU
	SOO LIM
	SOON HWANG
	SOON YOUNG
	STEVEN YIP
	SUK AN
	SUN TRINH
	SUNG MOON
	TAK HO
	TAK LAU
	TAM LY
	THI PHAM
	TONG LIU
	TRAN TA
	TRIEU ONG
	VAN DO
	WAH KIM
	WAI KWAN
	WAI LEE
	WAI LI
	WAI MA
	WAI MIU
	WAI WONG
	WALTER KOJIRO
	WEI OU
	WILLIAM TSE
	WING CHAN
	WON KANG
	WONG ZHANG
	XING CAI GUAN
	Y CHANG
	Y YIP
	YE PAK
	YEE HO
	YEE LUM
	YI CHONG SUN
	YIM HUI
	YIU TSUI
	YONG LAI

MAUNAKEA ST 1999 (Cont'd)

1245 YOUNG YU
YU LIANG
YUE HUI
YUE LEI
YUI TAM
YUN SUNG-TANG
YUNG KIM
1250 MARILOUS GIFT SHOP STORE
SALLYS BOUTIQUE
1290 ALOHA MAIL SERVICE
CHEUNG CHAU STORE
CULTURAL HAIR DESIGN
GORGEOUS BEAUTY SALON
HAWAII PROTECTIVE ASSOCIATION LIMITED
HOP CHEUNG
MUN LUN SCHOOL
1330 BORTHWICK MEMORIAL LIFE PLAN
BORTHWICK MORTUARY
HAWAIIAN MEMORIAL LIFE PLAN LIMITED SALES OFFICE
1370 AUTO VEHICLES TEST LOCATIONS & ROAD TEST APPOINTM
HONOLULU CITY & COUNTY FINANCE

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 1999

50	HONOLULU CITY & COUNTY PARKS & RECREATION
59	ZIPPYS RESTAURANTS VINEYARD
170	YIN KUAN
180	FOSTER BOTANICAL GARDENS VISITOR INFORMATION
	FOSTER GARDEN GALLERY
	FRIENDS OF HONOLULU BOTANICAL GARDENS
200	ALOHA UNITED WAY
	AWARE
	BIG BROTHERS BIG SISTERS OF HONOLULU INCORPORATED
	CATH CHARITIES CATH CHARITIES FAMILY SERVICES
	FAMILY CENTER PROJECT THE
	HAWAII COMMUNITY SERVICES COUNCIL
	JOHN HOWARD ASSOCIATION OF HAWAII
	LEARNING DISABILITIES ASSOCIATION OF HAWAII
	MENTAL HEALTH ASSOCIATION IN HAWAII
	NEIGHBORHOOD JUSTICE CENTER
271	ANTHONY MORSE
	DAVID OYE
	HING LAU
	HUANG RUN HONG
	KAM LAM
	M JOSE
	TARA HAN
	VINCENT NG
275	GUO XING QUAN
	HECTOR WONG-CHAN
	JING CHEN
	KAM WONG
	ZHI XU
277	ARTHUR SEU
	CHONG PAK
	HUA LIANG
	MOO SUNG
	MYUNG CHANG
	PEARL STEWART
	PUI LAU
	WING CHAN
	YAN CHENG
	YONG CHONG
281	CARLEEN CROWELL
	DU LIANG
	HING LAM
	KI YI
	LEE TAN
	MARY MIU
	NELSON CHING
	SI CHEN
	WEI XU
	YUE MA
	YUI CHING

296 MALAMA MAKUA DAY CARE CENTER
OHANA KEIKI DAY CARE PRESCHOOL
SALVATION ARMY THE DIVISIONAL HEADQUARTERS
SALVATION ARMY THE PROGRAMS
301 CHONG KIM
JACK CHAN
JIN HUANG
LEWIS LEONG
M YOUNG
MAJOR SOEDA
PUI LAU
322 OCCUPANT UNKNOWN
331 ALBERTA HONDA
ALVIN SUGAI
ANA VARGAS
C CHANG
CHOU KIANG
CHUCK WONG
EUGENE KIM
F WONG
GEORGE LIU
H WONG
JACK CHANG
LIN TANG
LIONEL BORGES
MOSES CHENG
NOMI LEE
SALLY LEONG
SOON NAM
THOMAS NAKAYAMA
TING TSANG
WAI LI
WILLIAM TU
ZHAO LEI
333 ALBERT CHEUNG
CHAM LAU
CHI YUNG
FRANCIS TSUI
GRACE FALETOI
N RUTTLE
PETER KU
RUI LIU
SUNG JUN
339 AUGUST AMAY
DONALD YIM
LEE PIL MOON & YOUNG JA
LIN FENG
MO LEUNG
SHAO WANG
349 OCCUPANT UNKNOWN

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 1999 (Cont'd)

357	A GOYA
	C RODRIGUES
	E LEE
	FUNG CHOW GET
	KIN HUI
	KYUNG PARK
	LAM LIU
	T TSUCHIYAMA
	TOSHIO KOGA
	YIN LEONG
	YONG LAI
359	E MCNEELY
	JIN CHEN
	JIN CHUNG
	KI LAM
	LIN LI
	N RUTTLE
	RALPH AMANTE
	RAYMOND YEUNG
	RONALD YOGI
	RUI ZHAO
	TSUNG KWONG
	WILLIAM KUPAU
361	OCCUPANT UNKNOWN
366	MICHAEL SASAKI

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 1999

1007	TO CHAU RESTAURANT
1049	MABUHAY CAFE
1051	HIEN HO
	RIVERSIDE TRAVEL & SERVICES
1055	WINSTON HALE APARTMENTS
1133	OCCUPANT UNKNOWN
	PACIFIC ELECTRONICS
	VIETNAM TOURS & TRAVEL
1135	D N D PAWN
	OCCUPANT UNKNOWN
1137	COLOMAS TRAVEL SERVICE
	PHILAM EXPRESS
1139	RIVERSIDE BARBER SHOP
1141	BULOSANS TAILORING
	DONAH BULOSAN
1143	JAMES SAKAMOTO
	KEN VO
	KOMEYA TRAVEL SERVICE
1145	ROSA LOU SHOPPE
	ROSALIE CADIZ
1147	CATHAY PACIFIC INTERNATIONAL TRAVEL & TOURS
1155	BRAULIO PARADEZA
	CONNIE ANTONIO
	D DOHERTY
	J CHUN
	J H MARKET
	KAM KOO
	KO LEE
	M BARR
	MANUEL LIZARDO
	MICHAEL MARIANO
	MO CHUNG
	PAK LEE
	PAUL MARIANO
	PETER CHIANG
	RIVER PAUAHI APARTMENTS
	ROBERT RUST
	SEE LEE
	SEONG CHU
	SOLEDAD NAVOA
	SONG LIANG
	V MANTE
	VIOLET MAU
	XIU LIN
1189	OCCUPANT UNKNOWN
1195	B GALLEO
1315	SAI LUM
1319	EDWINS UPHOLSTERY
	OCCUPANT UNKNOWN
1333	RIVERSIDE INN

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 1999 (Cont'd)

1335	BEAUTY SALON TOYO
	ERIC HILL
	FIRST MODEL MANAGEMENT INCORPORATED
	GORDON LORIANN LANDSCAPE ARCHITECT
	HIRONAKA & ASSOCIATES INCORPORATED
	LORIANN GORDON
	MOCK J REALTY
	PROPERTY INTERNATIONAL
1341	CHIKARAMOCHI STORE
1343	COLLEGE WALK INN
1347	MIKIS FLORIST

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 1995

1164	DENON DISTRIBUTOR CO
1165	LAM, HING C
	LIN, GUI B
	TANG, BING Z
	VIOLET LEI STAND
	XIE, YONG
	YAN, YAOHUA
	YOUNG, LYE C
	YU, CHUNG F
1166	BOB & FAN APPAREL
1168	MBT CO
	OCCUPANT UNKNOWNN
1169	NEW DALISAY CAFE
1176	MAILES BILLIARD PARLOR
1180	VELASCO, BASILIO
	VELASCOS
1182	CHRISTINAS LEIS & FLOWERS
1184	HAWAII BARBER SHOP
1188	MISS SAIGON
1189	LUM, HOWARD C
	MAUNAKEA LEIS & FLOWERS
1190	VARIETY LEIS & FLOWERS
1245	AHN, BONG K
	AN, BICH
	AN, SUK J
	ANTONIO, ALEX C
	APUNA, M A
	ARRIBA, D
	ASATO, SUZUKO
	ASUNCION, MAURO
	AU, TAI H
	AUSTRIA, V K
	BAHNG, JAMES
	BAKER, F K
	BRADFORD, RACHEL
	BUMANGLAG, TERIO M
	BURKE, GEORGE K
	BYUN, CHANG U
	CANIANES, JAMES
	CARTER, M
	CHAN, JUAN
	CHAN, PUI B
	CHAN, SHU K
	CHAN, WING H
	CHAN, YIT Y
	CHANG, SANG C
	CHANG, YAU C
	CHAU, TANH T
	CHAU, YUE W
	CHENG, SIU Y

MAUNAKEA ST 1995 (Cont'd)

1245	CHEUNG, LOK P
	CHIANG, LAMSHOW
	CHIU, KWOK L
	CHOI, OK N
	CHOI, OK S
	CHUN, S
	CHUNG, BOK S
	CLAY, ROBERT
	CORPUZ, MAXIMO L
	CORTEZ, CESARIO
	CURNOW, KEITH
	CUTRIGHT, SUN T
	DAIRO, A K
	DAOS, EUGENIA C
	DEGUZMAN, T
	DO, VAN H
	DOLING, BURTON I
	DU, YING H
	ECKLUND, POK H
	EMPRON, B J
	FANG, ZONG Y
	FENG, PEIL L
	FO, L H
	FONG, SHUET C
	FREMBD, E A
	FUNG, KING L
	GALLANG, L
	GOR, SOK T
	GRAY, H H
	GREEN, M V
	GUO, HUI J
	HANSEN, KILE O
	HAYME, S B
	HEBRON, JOSE S
	HEBRON, NESTOR
	HENDERSON, FRED
	HIRASUNA, ASAKO
	HO, TAK M
	HO, YEE H
	HONG, I S
	HUANG, LI F
	HUI, YIM C
	HUO, YAN Y
	HWANG, DANNY Y
	IM, DUK H
	IMAMURA, ICHIZO
	IN, S K
	IWAKI, HARUE
	JOUNG, SEUNG S
	KAI, DAVID K JR

MAUNAKEA ST 1995 (Cont'd)

1245	KAMIMURA, SEIKI
	KANG, CHAEIK
	KANG, MARIA
	KANG, WON C
	KELII, HELEN
	KIM, H Y
	KIM, HAN K
	KIM, IN S
	KIM, J
	KIM, JUNG K
	KIM, SEOK J
	KIM, SEUNG
	KIM, SU S
	KIM, UMBONG
	KIM, UYUN I
	KIM, YUNG A
	KNIGHT, ERNEST J
	KO, CHUNG
	KOJIRO, RIOSUKE
	KRISS, H
	KU, CHAE C
	KU, KUM O
	KU, LI Y
	KUA, WONSUN
	KWAN, WAI H
	KWOCK, SIU M
	KWOK, YIU M
	LAI, SEU L
	LAI, SHU Y
	LAI, YONG Q
	LAM, KONG
	LAM, PING S
	LAM, YEE M
	LAU, KWONG P
	LAU, KWONG W
	LAU, TAK
	LAU, TEN H
	LEE, BING W
	LEE, ETHEL K
	LEE, HEE C
	LEE, JIL S
	LEE, JUNE H
	LEE, KYOUNG J
	LEE, SHUI Y
	LEE, SUNG M
	LEE, WAI K
	LEI, SONG P
	LEONG, SHEU H
	LEUNG, LAI Y
	LEUNG, S

MAUNAKEA ST 1995 (Cont'd)

1245 LI, KAM W
LI, SANDRA
LI, SHAO Y
LI, SIU C
LI, WAI L
LIANG, BING R
LIANG, SONG H
LIANG, YU Q
LIM, JUNG J
LIM, KYUNG D
LIM, M T
LIM, ROSE
LIM, SOO Y
LIN, GUANG
LIU, ERNEST L
LIU, TONG H
LOO, WING Y
LOVELL, DORI K
LUM, LUK M
LUNG, WAN M
LY, MUOI
LY, TAM T
MA, EVELYN
MA, KENNETH
MA, LI X
MA, MO K
MA, WAI B
MABINI, SUSIE
MAEDA, SADAYO
MAKAENA, M K
MANGUBAT, F
MANUEL, LOLITA
MASATANI, R
MATREO, C A
MEATOGA, MYRA H
MILITANO, D
MIU, WAI L
MIXAPHONE, S
MONG, S
MORNEAU, DANIEL L
NAKAMOTO, S
NAM, KUNG I
NELSON, JOHN
NG, CHEI Y
NG, MONG Y
NG, SALINA H
NGO, BINH H
NGUYEN, SEN T
NGUYEN, THANH T
NGUYEN, TRI N

MAUNAKEA ST 1995 (Cont'd)

1245
NGUYEN, YEN T
NISHIHARA, N
NO, YU M
OH, JHUNG G
PACK, JUNG K
PAK, NAN S
PAK, YE C
PARK, HAROLD
PARK, JONG S
PARK, JONG Y
PARK, JOON W
PARK, PUAN K
PARK, SAM Y
PELONA, JAMES V
PHAM, LOC H
PHAN, DIEP T
PHOUTTHASACK, MONTHA
PONGPATANANON, ARUNEE
RA, OK Y
RAMOS, C D
RODRIGUS, DENISE
RONQUILLO, ALFONSO
SALAVEA, A
SATOSHIGE, H
SAY, ANDREW
SCHULMEISTER, LORENE
SHEK, KEITH
SHELLY SHOJI
SHIN, JANET
SILVA, P A
SO, KIM K
SONG, KUM O
SONG, NAM S
SUMAMPONG, P
SUNGTANG, YUN S
SZETO, CHIU
TA, TRAN H
TAM, YUI S
TAMANAHA, SHIZU
TANAKA, M
TANG, HUE N
TRAN, CUU T
TRAN, LAWR P
TRAN, MINH T
TRAN, QUOI T
TRINH, SUN S
TSANG, CHUN C
TSE, SAU W
TSE, WILLIAM L
TSUI, YIU W

MAUNAKEA ST 1995 (Cont'd)

1245 TSUKENJO, SADAO
UM, NAM S
VAN, TAI
VO, BA V
WAICHU, CHING
WANG, LIEN F
WELCH, JAE S
WONG, B
WONG, C
WONG, GEORGE S
WONG, J T
WONG, JOHN
WONG, NAM
WONG, S L
WONG, SAU L
WONG, WAI J
WONG, YIN Y
WU, MAN T
YANG, BOK D
YANG, PING Y
YEUNG, KOON P
YI, CHONG S
YI, HEE C
YI, J
YI, MAE J
YIP, STEVEN
YIP, Y
YOU, MING Y
YOUNG, CUI L
YOUNG, SO K
YU, KIN H
YU, SONG N
YU, YOUNG T
1250 ALII JEWELRY PAWN
GAME MONSTERS
MARGARETS GIFT SHOP
ORIENTAL MEDICAL HEALTH CTR
P G FUN TOURS & TRAVEL AGENCY
SALLYS BOUTIQUE
SUN PACIFIC REALTY INC
UNIQUE GIFT SHOP
VIOLETS CLASSIC HAWAIIAN
1290 ALOHA MAIL SVC
BILLS SEAFOOD
CHEUNG CHAU STORE
CHEUNG, FREEMAN
CULTURAL HAIRSTYLING
HAWAII PROTECTIVE ASSN LTD
MUN LUN SCHOOL
1330 BORTHWICK MEMORIAL LIFE PLAN

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 1995 (Cont'd)

1330 BORTHWICK MORTUARY
HONOLULU CITY MOTOR VEHICLE

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 1995

50	FOSTER GARDEN GIFT SHOP
	FRIENDS OF FOSTER GARDEN
	HONOLULU CITY BOTANICAL GARDEN
	HONOLULU CITY FOSTER BOTANICAL
	HONOLULU CITY KOKO CRATER GRDN
59	ZIPPYS RESTAURANT
170	KUAN YIN TEMPLE
180	FOSTER BOTANIC GARDENS
200	ALOHA UNITED WAY
	AMERICAN CANCER SOCIETY
	AWARE
	BIG BROTHERS & BIG SISTERS
	CATHOLIC SERVICES TO FAMILIES
	CHILD & FAMILY SVC
	HAWAII COMMUNITY SVC COUNCIL
	HAWAII LITERACY
	JOHN HOWARD ASSN OF HAWAII
	LEARNING DISABILITIES ASSN
	MENTAL HEALTH ASSN IN HAWAII
	NEIGHBORHOOD JUSTICE CTR
271	FUNG, CHOW Y
	HUANG, RUN H
	JOSE, M
	JUN, JAE W
	KOGA, TOSHIO
	LAU, HING C
	MENDEZPARO, A
	MORSE, ANTHONY K
273	TOKUNAGA, MILDRED
	YEUNG, KEN P
275	CHAN, SHEK S
	CHANG, LORENZO W
	KU, JUNG H
	WONG, KAM Y
	WONGCHAN, JORGE J
	XU, ZHI M
277	CHANG, IKE
	CHONG, YONG K
	LAU, PUI L
	LEUNG, LAI K
	OH, DOO N
	SEU, ARTHUR Y
	SUNG, MOO S
	TSUI, D
	YIP, PAK W
	YUEN, RAYMOND
281	CHING, NELSON K
	CHING, YUI C
	COBURN, B
	CROWELL, CARLEEN

281	FLORES, EDWARD
	FONG, KIN B
	HEINICKE, WAYNE
	KIM, LEIF J
	KO, ANTHONY
	MIU, MARY
	MONARCH PACKAGING INC
	OYE, DAVID Y
	TSUTSUI, TAKENO
	YI, KI H
	YUEN, QUON
296	MALAMA MAKUA DAY CARE CTR
	OHANA KEIKI DAY CARE PRESCHOOL
	SALVATION ARMY
301	CHAN, JACK T
	CHIANG, SIK P
	CHONG, BU N
	CHOY, IN S
	KIM, CHONG S
	LAU, PUI Y
	LEONG, LEWIS
	MAR, JEUNG M
	MIAO, NANCY
	PANG, KWOCK H
	SOEDA, MAJOR T
	TSUI, JANET
	YOUNG, MARY L
329	OCCUPANT UNKNOWNN
331	AN, EDWARD
	BORGES, LIONEL R
	CHANG, C K
	CHANG, JACK Y
	CHUN, VIOLET
	HONDA, ALBERTA
	HUANG, GUOTING
	HUI, YIM M
	IKUMA, M S
	KIANG, CHOU H
	KIM, EUGENE H
	LEE, NOMI
	LEE, SUN Y
	LEONG, SALLY M
	LI, WAI C
	LIU, GEORGE K
	LUM, IRENE P
	NAKAYAMA, THOMAS
	NAM, SOON C
	TANG, LIN S
	TSAI, CHU C
	TSANG, TING L

331	TU, WILLIAM
	WONG, CHING M
	WONG, CHUCK L
	WONG, F W
	WONG, H C
333	CHEUNG, ALBERT Y
	JUN, SUNG A
	KIM, CHU T
	KWAN, HIN H
	LEE, SIU Y
	LEE, YOUNGHO
	LI, GUI Y
	OH, HYON C
	RUTTLE, N H
	ZHENG, ZHONG P
339	AMAY, AUGUST
	CHAN, PHILIP W
	CHAN, SIK D
	CHENG, YAT L
	FENG, LIN Y
	FONG, CHUNG K
	HUI, CHUN P
	LIU, ZONG C
	RUAN, JI X
357	CHEN, SHUSHEN
	CHOW, WUN S
	CHUN, LAN B
	CHUN, MEW H
	FUNG, CHOW G
	GOYA, A
	KOGA, TOSHIO
	LEE, TIN K
	LEONG, YIN C
	LIU, LAM M
	PARK, KYUNG C
	RODRIGUES, C J
	TSUCHIYAMA, T
	YOUNG, SHOO K
	YUEN, DAN
359	AMANTE, RALPH
	CHAN, ALFONSO
	CHAN, YOOK L
	CHEN, JIN
	CHENG, LI
	HWANG, WUNG Y
	KANG, SANGSOO
	KO, CHUN S
	KWONG, TSUNG C
	LAU, UNG G
	LEE, KWAI H

N VINEYARD BLVD 1995 (Cont'd)

359	MCNEELY, LOUIS B
	SUNG, SA Y
	UEMURA, S
	YANG, WEN Q
	YEUNG, ROBERT T
	YOGI, RONALD K
366	CHOW, M M
	MATTSON, E U

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 1995

941	FONG, KA N
	HILO BAY TRADING CO
	PAUL KAMADA & ASSOC INC
	PORTFOLIO
	RUSSELL, A A
1007	TO CHAU RESTAURANT
1021	OCCUPANT UNKNOWNN
1049	MABUHAY CAFE
1051	RIVERSIDE TRAVEL & SVC
1055	ABUEL, M SR
	AGANON, TESSIS D
	ANTONIO, F
	ARRUDA, E
	BALGOS, REMEDIO
	BANGAWAN, BRIGIDA L
	BAQUIEL, YSMAEL
	BAUTISTA, JUAN A
	BURNS, CHESTER K
	CADELINIA, OLIVER R
	CALIXTERIO, LAWR
	CHAN, CHI W
	CRISTOBAL, A
	DEVIN, C
	DUMALANTA, D R
	DUMALANTA, PLACIDO D
	FARMER, DIANA L
	FIDEL, RHEA
	FLORES, CAMILO
	GELACIO, EDWIN
	HEGLAND, KENNY T
	HORINOUCHI, ITSUO
	KIM, ALFRED Y
	KIM, EDWARD
	LAU, HAU H
	LAVARIAS, ANSELMO C
	LOO, ANDREW
	LUM, EDWARD S
	MABINI, MARINO
	NG, WAH Y
	NGUYEN, HOA T
	OMEARA, ANTHONY J
	PAGADUAN, DELIA
	RIBAO, EMERSON U
	SUYAT, JIMMY V
	VICENTE, NICOLAS
	WEBB, M K
1133	PACIFIC ELECTRONICS
1135	OCCUPANT UNKNOWNN
1137	CACATIANS TRAVEL SVC INC
	PHILAM EXPRESS

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 1995 (Cont'd)

1139 RIVERSIDE BARBER SHOP
1141 BULOSANS
1143 ISA, ISAWO
KOMEYA APARTMENTS
KOMEYA TRAVEL SVC
MURATA, K
NGUYEN, DOUG
SAKAMOTO, JAMES K
1145 ROSA LOU SHOPPE
1147 CATHAY PACIFIC INTL TRAVEL
1155 ANTONIO, CONNIE J
BARR, M
CHIANG, PETER S
CHOI, YONG
CHU, SEONG H
CHUN, J F
CHUNG, MO C
DOHERTY, D J
KEAMA, LOUISA
KOO, KAM T
LEE, KO P
LEE, PAK S
LEE, SEE C
LEONG, KAM D
LIANG, SONG B
LIN, XIU Y
MARIANO, PAUL
MAU, VIOLET
MOIKEHA, J
MORALES, C
NAVOA, SOLEDAD M
NG, KAI S
PARADEZA, BRAULIO
RIVERSIDE MARKET
RUST, ROBERT
SINGSON, P M
TIN, SHE K
1195 RINGOR, B
1197 HOP QUAN GARMENT SEWING SVC
KOREAN SENIOR CITIZENS ASSN
MA, PETER
1315 LUM SAI HO TONG
LUM, SAI H
1319 EDWINS UPHOLSTERY
1333 OCCUPANT UNKNOWNN
RIVERSIDE INN
1335 BEAUTY SALON TOYO
CHINEN MASA GRAPHIC DESIGN
ENVISIONS PLUS INC
HIGA, ROWLAND Y

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 1995 (Cont'd)

1335 HILL, ERIC N
HIRONAKA & ASSOC INC
OWEN KOBAYASHI GRAPHIC DESIGN
PROPERTY INTERNATIONAL
1341 CHIKARAMOCHI STORE
1343 COLLEGE WALK DINER
1347 MIKIS FLORIST

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 1992

1165	CHEN, PEI
	LAM, HING C
	LIN, GUI B
	TANG, BING Z
	YOUNG, LYE C
	YU, CHUNG F
1180	VELASCO, BASILIO
1245	AN, BICH
	AN, SUK J
	ANTONIO, ALEX C
	BAHNG, JAMES
	CANIANES, JAMES
	CHAN, JUAN
	CHAN, PUI B
	CHAN, YIT Y
	CHANG, HUI P
	CHANG, SANG C
	CHANG, YAU C
	CHAU, P
	CHAU, TANH T
	CHENG, SIU Y
	CHIANG, LAMSHOW
	CHING, D C
	CHIU, KWOK L
	CHOI, OK N
	CHOI, OK S
	CHU, SHUI T
	CHUN, S
	CHUNG, BOK S
	CORPUZ, MAXIMO L
	CUTRIGHT, SUN T
	DEGUZMAN, M
	DEGUZMAN, T
	EMPRON, BARBARA J
	FONG, SHUET C
	GONZALES, R B
	GRAY, H H
	GUEVARA, H U
	HENDERSON, FRED
	HIRASUNA, ASAKO
	HO, YEE H
	HONG, I S
	HUANG, LI F
	HUO, YAN Y
	IM, DUK H
	IMAMURA, ICHIZO
	JOUNG, SEUNG S
	KAI, DAVID K JR
	KAM, E L
	KAMIMURA, SEIKI

MAUNAKEA ST 1992 (Cont'd)

1245
KANG, MARIA
KANG, WON C
KIM, H Y
KIM, HAN K
KIM, IN S
KIM, J
KIM, SEOK J
KIM, SEUNG
KIM, SU S
KIM, UMBONG
KIM, UYUN I
KIM, YOUNG S
KNIGHT, ERNEST J
KO, TAE H
KU, CHAE C
KU, KUM O
KU, LI Y
KUA, WONSUN
KWAN, WAI H
KWOCK, SIU M
LAM, KONG
LAM, YEE M
LAU, KWONG W
LAU, TAK
LAU, TEN H
LEE, BING W
LEE, DOROTHY
LEE, HEE C
LEE, JIL S
LEE, SUNG M
LEE, WAI K
LEI, SONG P
LEONG, SHEU H
LEUNG, LAI Y
LEUNG, NG F
LEUNG, S
LI, KAM W
LI, RUO Y
LI, SANDRA
LI, SHAO Y
LI, SIU C
LI, WAI L
LIM, JUNG J
LIM, KYUNG D
LIM, LIONEL
LIM, M T
LIM, ROSE
LIM, SOO Y
LLANES, JAIME
LOO, WING Y

MAUNAKEA ST 1992 (Cont'd)

1245
LOUI, A S
LUM, LUK M
LUNG, WAN M
LY, MUOI
LY, TAM T
MA, LI
MA, MO K
MA, WAI B
MANUEL, LOLITA
MEATOGA, MYRA H
MIU, MUN B
MONG, S
NG, CHEI Y
NG, MONG Y
NG, SALINA H
NGUYEN, SEN T
NGUYEN, THANH T
NGUYEN, TRI N
NGUYEN, YEN T
NO, YU M
PAK, NAN S
PAK, YE C
PARK, JONG S
PARK, PUAN K
PARK, SAM Y
PHAN, DIEP T
PHOUTTHASACK, MONTHA
RAMOS, C D
SAY, ANDREW
SCHULMEISTER, LORENE
SONG, KUM O
SZETO, CHIU
TANG, HUE N
TRAN, MINH T
TRAN, QUOI T
TRINH, SUN S
TSANG, CHUN C
VAN, TAI
WANG, LIEN F
WONG, B
WONG, GEORGE S
WONG, J T
WONG, JOHN
WONG, NAM
WONG, S L
WONG, TENG W
WONG, YIN Y
WOODS, SAMUEL
WU, MAN T
YANG, BOK D

Target Street	Cross Street	Source
-	✓	Cole Information Services

MAUNAKEA ST 1992 (Cont'd)

1245	YANG, PING Y
	YEE, EVELYN
	YI, CHONG S
	YI, KYUNG K
	YOUNG, CUI L
	YOUNG, SO K
	YU, SONG N
	YU, YOUNG T
1250	KELLY, NINA

Target Street	Cross Street	Source
-	✓	Cole Information Services

N VINEYARD BLVD 1992

271	KAHANU, BENJ
	LAU, HING C
275	ZHENG, FO X
277	LAU, PUI L
	OH, DOO N
	SEU, ARTHUR Y
281	CHING, NELSON K
	CHING, YUI C
	HEINICKE, WAYNE
	LAU, BUCK W
301	MAR, JEUNG M
	RAPOZA, M L
	TSUI, JANET
	YOUNG, MARY L
331	HONDA, ALBERTA
	LEE, NOMI
	LEE, SUN Y
	LI, WAI C
	MARCIEL, G E
	NG, PU Y
	WONG, F W
333	LEE, YOUNGHO
	LI, GUI Y
	LI, XI L
339	CHAN, SIK D
	LIU, ZONG C
357	CHOW, WUN S
	FUNG, CHOW G
	GOYA, A
	TSUCHIYAMA, T
	YUM, DOK S
359	CHAN, KIM T
	LEI, SHU Q
	LIU, ENGEL W
	WANN, LILY
	WONG, FUK Y
	YANG, WEN Q
366	CHOW, M M
	MATTSON, E U

Target Street	Cross Street	Source
✓	-	Cole Information Services

RIVER ST 1992

941 FONG, KA N
RUSSELL, A A
1055 BALGOS, REMEDIO
BAUTISTA, JUAN A
CALIXTERIO, LAWR
LUM, EDWARD S
MABINI, MARINO
PASCUA, ROSE
PUYAOAN, TOMAS
VICENTE, NICOLAS
1143 ISA, ISAWO
NAKASHIMA, HENRY H
1155 ANTONIO, CONNIE J
ANTONIO, ELLEN A
CHUN, J F
CHUNG, MO C
KEAMA, LOUISA
LEE, PAK S
LIANG, SONG B
MARIANO, PAUL
MAU, VIOLET
NG, KAI S
TIN, SHE K
1195 RINGOR, B
1197 MA, PETER
1315 LUM, SAI H

APPENDIX H

REGULATORY DATABASE REPORT

1331-1347 River Street
1331-1347 River Street
Honolulu, HI 96817

Inquiry Number: 4328367.2s
June 17, 2015

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1331-1347 RIVER STREET
HONOLULU, HI 96817

COORDINATES

Latitude (North):	21.3157000 - 21° 18' 56.52''
Longitude (West):	157.8597000 - 157° 51' 34.92''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	618266.7
UTM Y (Meters):	2357376.8
Elevation:	7 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	21157-C7 HONOLULU, HI
Most Recent Revision:	Not reported
West Map:	21157-C8 PEARL HARBOR, HI
Most Recent Revision:	Not reported

MAPPED SITES SUMMARY

Target Property Address:
1331-1347 RIVER STREET
HONOLULU, HI 96817

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	SAND ISLAND MILITARY		DOD	Same	2603, 0.493, WSW
1	KUKUI TOWER	35 NORTH KUKUI ST	RCRA-CESQG	Higher	632, 0.120, SSE
A2	NUUANU MEDICAL CTR	1374 NUUANU AVE	RCRA-CESQG, FINDS	Higher	771, 0.146, SE
A3		1365 NUUANU AVE	EDR US Hist Cleaners	Higher	802, 0.152, SE
4	UNOCAL 76 SS L 0346	169 BERETANIA ST	RCRA-CESQG, FINDS	Higher	944, 0.179, SW
B5		23 S VINEYARD BLVD	EDR US Hist Cleaners	Higher	956, 0.181, SE
6		100 N BERETANIA ST	EDR US Hist Cleaners	Higher	989, 0.187, SSW
C7	TOWN INN	248-258 N BERETANIA	HI SHWS, HI INST CONTROL, HI VCP	Lower	1006, 0.191, WSW
C8	TYPEHOUSE HAWAII	250 N BERETANIA ST	RCRA NonGen / NLR, FINDS	Lower	1010, 0.191, WSW
B9	UNOCAL 76 SS L 5005	33 S VINEYARD	RCRA-CESQG, FINDS	Higher	1021, 0.193, SE
B10	SASAMOTO UNION SERVI	33 S VINEYARD BLVD	HI LUST, HI UST	Higher	1021, 0.193, SE
D11		1255 NUUANU AVE	EDR US Hist Auto Stat	Higher	1062, 0.201, South
D12	KOKO'S ISLAND CHEVRO	1255 NUUANU AVE	RCRA-CESQG, FINDS	Higher	1062, 0.201, South
13	PRINCE TOWER AT QUEE	1511 NUUANU AVE	RCRA NonGen / NLR	Higher	1068, 0.202, East
14	KAULUWELA ELEMENTARY	1486 AALA ST	RCRA-CESQG, FTTS, HIST FTTS, FINDS	Higher	1094, 0.207, NNE
15		60 N BERETANIA ST	EDR US Hist Cleaners	Higher	1094, 0.207, SSW
16	ENERGY & ENVIRONMENT	55 KUKUI ST	RCRA NonGen / NLR, FINDS	Higher	1294, 0.245, SSE
17	DOWNTOWN CHEVRON	17 S BERETANIA ST	HI LUST	Higher	1366, 0.259, South
18	7-ELEVEN NUUANU PALI	1602 NUUANU AVE	HI LUST, HI UST, HI Financial Assurance	Higher	1381, 0.262, ENE
19	LILIHA CIVIC CENTER	337 N KING ST	HI SHWS	Lower	1550, 0.294, West
20	IWILEI PROJECT SITE	IWILEI RD & N KING S	HI SHWS	Lower	1567, 0.297, West
21	KEKAULIKE DIAMOND HE	163 N HOTEL ST	HI SHWS, HI SPILLS	Higher	1587, 0.301, SW
22	215 NORTH KING STREE	215 N KING ST	HI SHWS	Lower	1617, 0.306, WSW
23	HONOLULU COMMUNITY A	337 & 357 N KING ST	HI LUST, HI UST	Lower	1628, 0.308, West
24	IWILEI FRUIT AND VEG	920 IWILEI ROAD	HI SHWS, HI LUST, HI UST	Lower	1788, 0.339, West
25	HALL MARK DRY CLEANE	1470 LILIHA ST	HI SHWS	Higher	1900, 0.360, NNW
26	SENIOR RESIDENCES AT	888 IWILEI RD	HI SHWS, HI INST CONTROL	Lower	1945, 0.368, West
27	AWA WASTEWATER PUMP	190 N NIMITZ HWY	HI SHWS, HI SPILLS	Lower	1977, 0.374, WSW
E28	TENNEY'S BISHOP UNIO	169 S BERETANIA ST	HI LUST, HI UST	Higher	2077, 0.393, SSE
F29	MAUNAWILI PRODUCE, I	914 KAAAHI PL	HI LUST, HI UST	Lower	2081, 0.394, WNW
30	KINGSGATE PLAZA	516 DILLINGHAM BLVD	HI LUST, HI UST	Higher	2082, 0.394, WNW
F31	MAUNAWILI PRODUCE	906 KAAAHI PL	HI LUST, HI UST	Lower	2091, 0.396, WNW
G32	IMM VINEYARD	215 S VINEYARD BLVD	HI LUST, HI UST, HI Financial Assurance	Higher	2117, 0.401, SE
E33	CAPITOL PLACE DEVELO	1212 QUEEN EMMA ST	HI SHWS	Higher	2126, 0.403, SSE
34	YEE HOP BUILDING MAU	950 MAUNAKEA ST	HI SHWS	Higher	2156, 0.408, SW
G35	MIKE'S AUTOMOTIVE/SU	225 S VINEYARD BLVD	HI LUST, HI UST, HI Financial Assurance	Higher	2167, 0.410, SE
36	LANCE GOYA CHEVRON	504 N SCHOOL ST	HI SHWS, HI LUST, HI UST, HI ENG CONTROLS, HI INST...	Higher	2179, 0.413, North
H37	373 NORTH NIMITZ HIG	373 N NIMITZ HWY	HI SHWS, HI SPILLS	Lower	2217, 0.420, West
H38	STEELTECH INC	373 N NIMITZ HWY	HI LUST, HI UST	Lower	2217, 0.420, West

MAPPED SITES SUMMARY

Target Property Address:
1331-1347 RIVER STREET
HONOLULU, HI 96817

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MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
39	HIRAM'S CHEVRON SERV	140 S. SCHOOL ST	HI LUST, HI UST, HI Financial Assurance	Higher	2263, 0.429, ESE
40	STATE CAPITOL - TMK	235 S BERETANIA ST	HI LUST, HI UST	Higher	2316, 0.439, SSE
I41	VON HAMM TEXTILES	546 KAAAHI ST	HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST...	Higher	2346, 0.444, WNW
42	ISLAND MOVERS, INC.	414 KUWILI STHONOLUL	HI LUST, HI UST, HI Financial Assurance	Lower	2347, 0.445, West
I43	NUUANU AUTO COMPANY	545 KAAAHI ST	HI SHWS	Higher	2352, 0.445, WNW
44	7-11 NUUANU	1755 NUUANU AVE	HI LUST, HI UST, HI Financial Assurance	Higher	2389, 0.452, ENE
J45	YICK LUNG CO., INC.	580 DILLINGHAM BLVD	HI LUST, HI UST	Higher	2390, 0.453, WNW
46	C&CH WATERFRONT FIRE	111 N NIMITZ HWY	HI LUST, HI UST	Lower	2430, 0.460, SW
47	MALULANI HALE	114 N KUAKINI ST	HI LUST, HI UST	Higher	2433, 0.461, NE
J48	YICK LUNG CO., INC.	602 DILLINGHAM BLVD	HI LUST, HI UST	Higher	2500, 0.473, WNW
49	KUAKINI MEDICAL CENT	347 N KUAKINI ST	RCRA-SQG, FINDS, HI SHWS, HI LUST, HI UST, HI...	Higher	2595, 0.491, NNE
50	KING SHELL FOODMART	666 N KING ST	HI LUST, HI UST, HI Financial Assurance	Higher	2603, 0.493, NW
51	420-470 NORTH NIMITZ	420-470 N NIMITZ HWY	HI SHWS, HI ENG CONTROLS	Lower	2756, 0.522, West
52	HAWAIIAN GAS PRODUCT	516-520 KUWILI ST	EDR MGP	Higher	2782, 0.527, WNW
53	HARBOR COURT	66 QUEEN ST	HI SHWS	Higher	2923, 0.554, SSW
54	TRAVEL PLAZA TRANSPO	818 PINE ST	HI SHWS, HI LUST, HI UST, HI Financial Assurance	Higher	2946, 0.558, West
55	MID PAC PETROLEUM LL	540 N NIMITZ HWY	HI SHWS, HI LUST, HI UST, HI Financial Assurance	Lower	3138, 0.594, West
56	QUEEN'S MEDICAL CENT	1301 PUNCHBOWL ST	HI SHWS, HI LUST, HI UST, HI AIRS	Higher	3159, 0.598, SSE
57	RICHARD'S CHEVRON	1909 NUUANU AVE	HI SHWS, HI SPILLS, HI INST CONTROL, HI Financial...	Higher	3188, 0.604, NE
58	DOLE IWILEI	801 DILLINGHAM BLVD	HI SHWS, HI SPILLS, HI INST CONTROL	Higher	3345, 0.634, WNW
59	IWILEI BUSINESS CENT	501 SUMNER ST	HI SHWS, HI SPILLS, HI INST CONTROL	Higher	3391, 0.642, West
K60	580 NORTH NIMITZ HIG	580 N NIMITZ HWY	HI SHWS, HI ENG CONTROLS	Lower	3429, 0.649, West
K61	CITY MILL	660 N NIMITZ HWY	HI SHWS, HI LUST, HI UST, HI INST CONTROL	Lower	3521, 0.667, West
62	1510 FREAR STREET	1510 FREAR ST	HI SHWS, HI SPILLS	Higher	3578, 0.678, SE
63	ZIPPY'S 634 N NIMITZ	634 N NIMITZ HWY	HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST...	Lower	3615, 0.685, WSW
L64	HAWAIIAN GRAIN CORPO	701 N NIMITZ HWY	HI SHWS, HI LUST, HI UST	Lower	3828, 0.725, WSW
65	SAUSE BROTHERS	ALAKEA ST	HI SHWS, HI SPILLS	Lower	3850, 0.729, WSW
66	HAWAIIAN ELECTRIC -	170 ALA MOANA BOULEV	RCRA-TSDF, CERC-NFRAP, CORRACTS, RCRA-CESQG, HI...	Lower	3893, 0.737, SSW
M67	OWNED BY CCI, LEASED	925 DILLINGHAM BLVD	FINDS, HI SHWS, HI ENG CONTROLS, HI INST CONTROL,...	Higher	3914, 0.741, WNW
L68	HAWAIIAN FLOUR MILL	703 N NIMITZ HWY	HI SHWS	Lower	3948, 0.748, WSW
M69	THEO DAVIES CATERPIL	935 DILLINGHAM BLVD	HI SHWS, HI ENG CONTROLS, HI INST CONTROL	Lower	3961, 0.750, WNW
L70	MOANA PAA KAI	705 N NIMITZ HWY	RCRA NonGen / NLR, HI SHWS, HI SPILLS	Lower	3971, 0.752, WSW
M71	HONOLULU COMMUNITY C	874 DILLINGHAM BLVD	HI SHWS	Lower	4039, 0.765, WNW
N72	POLYNESIAN HOSPITALI	330 PACIFIC ST	RCRA-CESQG, FINDS, HI SHWS, HI LUST, HI UST, HI...	Lower	4046, 0.766, West
N73	BREWER ENVIRONMENTAL	311 PACIFIC ST	HI SHWS, HI SPILLS, HI VCP	Lower	4070, 0.771, West
N74	356 PACIFIC STREET B	356 PACIFIC ST	HI SHWS, HI SPILLS	Lower	4086, 0.774, West
75	BHP GASCO BENZENE SI	616 IWILEI RD	HI SHWS, HI SPILLS, HI INST CONTROL, HI AIRS	Lower	4164, 0.789, West
O76	UNOCAL 76 HONOLULU L	411 PACIFIC ST	RCRA NonGen / NLR, FINDS, HI SHWS, HI UST, HI...	Lower	4170, 0.790, West
77	700 N NIMITZ IDPP RE	700 N NIMITZ HWY	HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST...	Lower	4171, 0.790, West

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MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
O78	BHP GASCO	432 PACIFIC STREET	EDR MGP	Lower	4207, 0.797, West
P79	BHP PIER 29	739 N NIMITZ HWY	HI SHWS	Lower	4236, 0.802, WSW
P80	755 N NIMITZ HWY	755 N NIMITZ HWY	HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST...	Lower	4372, 0.828, WSW
Q81	COSTCO WAREHOUSE	525 ALAKAWA ST	HI SHWS, HI ENG CONTROLS, HI INST CONTROL, HI VCP	Lower	4382, 0.830, WNW
Q82	COSTCO GAS STATION	520 ALAKAWA ST	HI SHWS, HI ENG CONTROLS, HI INST CONTROL, HI VCP	Lower	4424, 0.838, WNW
83	HONOLULU SAKE BREWER	2150 BOOTH RD	HI SHWS, HI LUST, HI UST, HI SPILLS	Higher	4543, 0.860, ENE
R84	775 NORTH NIMITZ HIG	775 N NIMITZ HWY	HI SHWS, HI ENG CONTROLS, HI INST CONTROL	Lower	4567, 0.865, West
85	JBL HAWAII, LTD	905 KOKEA ST	HI SHWS, HI ENG CONTROLS, HI INST CONTROL	Lower	4569, 0.865, NW
R86	EQUILON ENTERPRISES	789 N NIMITZ HWY	HI SHWS	Lower	4676, 0.886, West
87	PAULEY PETROLEUM	795 N NIMITZ HWY	HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST...	Lower	4711, 0.892, West
88	SAKE BREWERY & ICE C		FUDS	Higher	4718, 0.894, NE
89	HOME DEPOT	421 ALAKAWA ST	HI SHWS, HI ENG CONTROLS, HI INST CONTROL	Lower	4742, 0.898, West
90	PIER 30 TUG BOAT FUE	777 N NIMITZ HWY	HI SHWS, HI SPILLS	Lower	4748, 0.899, WSW
91	GTE-HAWAIIAN TEL EMP	1138 N KING ST	HI SHWS, HI ENG CONTROLS, HI INST CONTROL	Higher	4834, 0.916, NW
92	QUEEN EMMALANI TOWER	600 QUEEN ST	CERC-NFRAP, RCRA NonGen / NLR, FINDS, HI SHWS, HI...	Higher	4853, 0.919, South
S93	HAWAII NEWSPAPER AGE	605 KAPIOLANI BLVD	HI SHWS, HI LUST, HI UST, HI SPILLS, HI ENG...	Higher	4863, 0.921, SSE
T94	WEYERHAEUSER	900 N NIMITZ HWY	HI SHWS, HI SPILLS	Lower	4970, 0.941, West
S95	HECO PAD-MOUNTED #65	650 KAPIOLANI BLVD	HI SHWS, HI SPILLS, HI INST CONTROL	Higher	4974, 0.942, SSE
T96	HAWAIIAN ELECTRIC CO	855 N NIMITZ HWY	HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST...	Lower	4977, 0.943, West
T97	861-869 NORTH NIMITZ	861-869 N NIMITZ HWY	HI SHWS, HI ENG CONTROLS, HI INST CONTROL	Lower	4998, 0.947, West
98	BEST BUY	ALAKAWA ST & NIMITZ	HI SHWS, HI SPILLS	Lower	5051, 0.957, West
U99	CHEVRON HONOLULU TRA	933 N NIMITZ HWY	HI SHWS, HI ENG CONTROLS, HI Financial Assurance	Lower	5140, 0.973, West
U100	HAWAII STEVEDORES	965 N NIMITZ HWY	HI SHWS, HI SPILLS, HI ENG CONTROLS	Lower	5212, 0.987, West
101	801 SOUTH HOTEL STRE	801 S HOTEL ST	HI SHWS	Higher	5242, 0.993, SSE
102	CLASSIC BOWL	1190 DILLINGHAM BLVD	HI SHWS	Lower	5252, 0.995, WNW
103	SAINT FRANCIS HOSPIT	2230 LILIHA ST	HI SHWS, HI LUST, HI UST, HI SPILLS	Higher	5274, 0.999, NNE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls
LUCIS ---------- Land Use Control Information System

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

HI SWF/LF ---------- Permitted Landfills in the State of Hawaii

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

INDIAN UST ---------- Underground Storage Tanks on Indian Land

FEMA UST ---- Underground Storage Tank Listing

State and tribal voluntary cleanup sites

INDIAN VCP ---- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

HI BROWNFIELDS ---- Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---- Clandestine Drug Labs
HI CDL ---- Clandestine Drug Lab Listing
US HIST CDL ---- National Clandestine Laboratory Register

Local Land Records

LIENS 2 ---- CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
HI SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

DOT OPS ---- Incident and Accident Data
CONSENT ---- Superfund (CERCLA) Consent Decrees
ROD ---- Records Of Decision
UMTRA ---- Uranium Mill Tailings Sites
US MINES ---- Mines Master Index File
TRIS ---- Toxic Chemical Release Inventory System
TSCA ---- Toxic Substances Control Act
SSTS ---- Section 7 Tracking Systems
ICIS ---- Integrated Compliance Information System
PADS ---- PCB Activity Database System
MLTS ---- Material Licensing Tracking System
RADINFO ---- Radiation Information Database
RAATS ---- RCRA Administrative Action Tracking System
RMP ---- Risk Management Plans
HI UIC ---- Underground Injection Wells Listing

HI DRYCLEANERS ---------- Permitted Drycleaner Facility Listing
INDIAN RESERV ---------- Indian Reservations
SCRD DRYCLEANERS ---------- State Coalition for Remediation of Drycleaners Listing
LEAD SMELTERS ---------- Lead Smelter Sites
US AIRS ---------- Aerometric Information Retrieval System Facility Subsystem
EPA WATCH LIST ---------- EPA WATCH LIST
US FIN ASSUR ---------- Financial Assurance Information
COAL ASH EPA ---------- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---------- PCB Transformer Registration Database
COAL ASH DOE ---------- Steam-Electric Plant Operation Data
PRP ---------- Potentially Responsible Parties

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

HI RGA LF ---------- Recovered Government Archive Solid Waste Facilities List
HI RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank
HI RGA HWS ---------- Recovered Government Archive State Hazardous Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 03/10/2015 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HAWAIIAN ELECTRIC -	***170 ALA MOANA BOULEV***	***SSW 1/2 - 1 (0.737 mi.)***	***66***	***97***

EXECUTIVE SUMMARY

Federal RCRA generators list

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 03/10/2015 has revealed that there are 6 RCRA-CESQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KUKUI TOWER	35 NORTH KUKUI ST	SSE 0 - 1/8 (0.120 mi.)	1	7
NUUANU MEDICAL CTR	***1374 NUUANU AVE***	***SE 1/8 - 1/4 (0.146 mi.)***	***A2***	***8***
UNOCAL 76 SS L 0346	***169 BERETANIA ST***	***SW 1/8 - 1/4 (0.179 mi.)***	***4***	***10***
UNOCAL 76 SS L 5005	***33 S VINEYARD***	***SE 1/8 - 1/4 (0.193 mi.)***	***B9***	***14***
KOKO'S ISLAND CHEVRO	***1255 NUUANU AVE***	***S 1/8 - 1/4 (0.201 mi.)***	***D12***	***17***
KAULUWELA ELEMENTARY	***1486 AALA ST***	***NNE 1/8 - 1/4 (0.207 mi.)***	***14***	***20***

State- and tribal - equivalent CERCLIS

HI SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the HI SHWS list, as provided by EDR, and dated 12/02/2014 has revealed that there are 66 HI SHWS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
KEKAULIKE DIAMOND HE	***163 N HOTEL ST***	***SW 1/4 - 1/2 (0.301 mi.)***	***21***	***28***
HALL MARK DRY CLEANE	1470 LILIHA ST	NNW 1/4 - 1/2 (0.360 mi.)	25	32
CAPITOL PLACE DEVELO	1212 QUEEN EMMA ST	SSE 1/4 - 1/2 (0.403 mi.)	E33	41
YEE HOP BUILDING MAU	950 MAUNAKEA ST	SW 1/4 - 1/2 (0.408 mi.)	34	41
LANCE GOYA CHEVRON	***504 N SCHOOL ST***	***N 1/4 - 1/2 (0.413 mi.)***	***36***	***44***
VON HAMM TEXTILES	***546 KAAAHI ST***	***WNW 1/4 - 1/2 (0.444 mi.)***	***I41***	***55***
NUUANU AUTO COMPANY	545 KAAAHI ST	WNW 1/4 - 1/2 (0.445 mi.)	I43	58
KUAKINI MEDICAL CENT	***347 N KUAKINI ST***	***NNE 1/4 - 1/2 (0.491 mi.)***	***49***	***63***
HARBOR COURT	66 QUEEN ST	SSW 1/2 - 1 (0.554 mi.)	53	70
TRAVEL PLAZA TRANSPO	***818 PINE ST***	***W 1/2 - 1 (0.558 mi.)***	***54***	***71***
QUEEN'S MEDICAL CENT	***1301 PUNCHBOWL ST***	***SSE 1/2 - 1 (0.598 mi.)***	***56***	***79***
RICHARD'S CHEVRON	***1909 NUUANU AVE***	***NE 1/2 - 1 (0.604 mi.)***	***57***	***81***
DOLE IWILEI	***801 DILLINGHAM BLVD***	***WNW 1/2 - 1 (0.634 mi.)***	***58***	***83***
IWILEI BUSINESS CENT	***501 SUMNER ST***	***W 1/2 - 1 (0.642 mi.)***	***59***	***86***
1510 FREAR STREET	***1510 FREAR ST***	***SE 1/2 - 1 (0.678 mi.)***	***62***	***91***
OWNED BY CCI, LEASED	***925 DILLINGHAM BLVD***	***WNW 1/2 - 1 (0.741 mi.)***	***M67***	***110***
HONOLULU SAKE BREWER	***2150 BOOTH RD***	***ENE 1/2 - 1 (0.860 mi.)***	***83***	***144***
GTE-HAWAIIAN TEL EMP	***1138 N KING ST***	***NW 1/2 - 1 (0.916 mi.)***	***91***	***155***
QUEEN EMMALANI TOWER	***600 QUEEN ST***	***S 1/2 - 1 (0.919 mi.)***	***92***	***156***
HAWAII NEWSPAPER AGE	***605 KAPIOLANI BLVD***	***SSE 1/2 - 1 (0.921 mi.)***	***S93***	***159***
HECO PAD-MOUNTED #65	***650 KAPIOLANI BLVD***	***SSE 1/2 - 1 (0.942 mi.)***	***S95***	***164***
801 SOUTH HOTEL STRE	801 S HOTEL ST	SSE 1/2 - 1 (0.993 mi.)	101	172
SAINT FRANCIS HOSPIT	***2230 LILIHA ST***	***NNE 1/2 - 1 (0.999 mi.)***	***103***	***174***

Lower Elevation	Address	Direction / Distance	Map ID	Page
TOWN INN	***248-258 N BERETANIA***	***WSW 1/8 - 1/4 (0.191 mi.)***	***C7***	***12***
LILIHA CIVIC CENTER	337 N KING ST	W 1/4 - 1/2 (0.294 mi.)	19	27
IWILEI PROJECT SITE	IWILEI RD & N KING S	W 1/4 - 1/2 (0.297 mi.)	20	27
215 NORTH KING STREE	215 N KING ST	WSW 1/4 - 1/2 (0.306 mi.)	22	29
IWILEI FRUIT AND VEG	***920 IWILEI ROAD***	***W 1/4 - 1/2 (0.339 mi.)***	***24***	***31***
SENIOR RESIDENCES AT	***888 IWILEI RD***	***W 1/4 - 1/2 (0.368 mi.)***	***26***	***33***
AWA WASTEWATER PUMP	***190 N NIMITZ HWY***	***WSW 1/4 - 1/2 (0.374 mi.)***	***27***	***34***
373 NORTH NIMITZ HIG	***373 N NIMITZ HWY***	***W 1/4 - 1/2 (0.420 mi.)***	***H37***	***50***
420-470 NORTH NIMITZ	***420-470 N NIMITZ HWY***	***W 1/2 - 1 (0.522 mi.)***	***51***	***69***
MID PAC PETROLEUM LL	***540 N NIMITZ HWY***	***W 1/2 - 1 (0.594 mi.)***	***55***	***74***
580 NORTH NIMITZ HIG	***580 N NIMITZ HWY***	***W 1/2 - 1 (0.649 mi.)***	***K60***	***88***
CITY MILL	***660 N NIMITZ HWY***	***W 1/2 - 1 (0.667 mi.)***	***K61***	***89***
ZIPPY'S 634 N NIMITZ	***634 N NIMITZ HWY***	***WSW 1/2 - 1 (0.685 mi.)***	***63***	***92***
HAWAIIAN GRAIN CORPO	***701 N NIMITZ HWY***	***WSW 1/2 - 1 (0.725 mi.)***	***L64***	***93***
SAUSE BROTHERS	***ALAKEA ST***	***WSW 1/2 - 1 (0.729 mi.)***	***65***	***95***
HAWAIIAN ELECTRIC -	***170 ALA MOANA BOULEV***	***SSW 1/2 - 1 (0.737 mi.)***	***66***	***97***
HAWAIIAN FLOUR MILL	703 N NIMITZ HWY	WSW 1/2 - 1 (0.748 mi.)	L68	111
THEO DAVIES CATERPIL	***935 DILLINGHAM BLVD***	***WNW 1/2 - 1 (0.750 mi.)***	***M69***	***112***
MOANA PAA KAI	***705 N NIMITZ HWY***	***WSW 1/2 - 1 (0.752 mi.)***	***L70***	***113***
HONOLULU COMMUNITY C	874 DILLINGHAM BLVD	WNW 1/2 - 1 (0.765 mi.)	M71	119
POLYNESIAN HOSPITALI	***330 PACIFIC ST***	***W 1/2 - 1 (0.766 mi.)***	***N72***	***120***
BREWER ENVIRONMENTAL	***311 PACIFIC ST***	***W 1/2 - 1 (0.771 mi.)***	***N73***	***126***
356 PACIFIC STREET B	***356 PACIFIC ST***	***W 1/2 - 1 (0.774 mi.)***	***N74***	***128***
BHP GASCO BENZENE SI	***616 IWILEI RD***	***W 1/2 - 1 (0.789 mi.)***	***75***	***130***
UNOCAL 76 HONOLULU L	***411 PACIFIC ST***	***W 1/2 - 1 (0.790 mi.)***	***O76***	***132***
700 N NIMITZ IDPP RE	***700 N NIMITZ HWY***	***W 1/2 - 1 (0.790 mi.)***	***77***	***138***
BHP PIER 29	739 N NIMITZ HWY	WSW 1/2 - 1 (0.802 mi.)	P79	139
755 N NIMITZ HWY	***755 N NIMITZ HWY***	***WSW 1/2 - 1 (0.828 mi.)***	***P80***	***140***
COSTCO WAREHOUSE	***525 ALAKAWA ST***	***WNW 1/2 - 1 (0.830 mi.)***	***Q81***	***141***
COSTCO GAS STATION	***520 ALAKAWA ST***	***WNW 1/2 - 1 (0.838 mi.)***	***Q82***	***143***
775 NORTH NIMITZ HIG	***775 N NIMITZ HWY***	***W 1/2 - 1 (0.865 mi.)***	***R84***	***146***
JBL HAWAII, LTD	***905 KOKEA ST***	***NW 1/2 - 1 (0.865 mi.)***	***85***	***147***
EQUILON ENTERPRISES	789 N NIMITZ HWY	W 1/2 - 1 (0.886 mi.)	R86	148
PAULEY PETROLEUM	***795 N NIMITZ HWY***	***W 1/2 - 1 (0.892 mi.)***	***87***	***148***
HOME DEPOT	***421 ALAKAWA ST***	***W 1/2 - 1 (0.898 mi.)***	***89***	***151***
PIER 30 TUG BOAT FUE	***777 N NIMITZ HWY***	***WSW 1/2 - 1 (0.899 mi.)***	***90***	***152***
WEYERHAEUSER	***900 N NIMITZ HWY***	***W 1/2 - 1 (0.941 mi.)***	***T94***	***162***
HAWAIIAN ELECTRIC CO	***855 N NIMITZ HWY***	***W 1/2 - 1 (0.943 mi.)***	***T96***	***165***
861-869 NORTH NIMITZ	***861-869 N NIMITZ HWY***	***W 1/2 - 1 (0.947 mi.)***	***T97***	***167***
BEST BUY	***ALAKAWA ST & NIMITZ***	***W 1/2 - 1 (0.957 mi.)***	***98***	***168***
CHEVRON HONOLULU TRA	***933 N NIMITZ HWY***	***W 1/2 - 1 (0.973 mi.)***	***U99***	***169***
HAWAII STEVEDORES	***965 N NIMITZ HWY***	***W 1/2 - 1 (0.987 mi.)***	***U100***	***170***
CLASSIC BOWL	1190 DILLINGHAM BLVD	WNW 1/2 - 1 (0.995 mi.)	102	173

State and tribal leaking storage tank lists

HI LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Health's Active Leaking Underground Storage Tank Log Listing.

A review of the HI LUST list, as provided by EDR, and dated 03/02/2015 has revealed that there are 23

EXECUTIVE SUMMARY

HI LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SASAMOTO UNION SERVI	***33 S VINEYARD BLVD***	***SE 1/8 - 1/4 (0.193 mi.)***	***B10***	***16***
Release ID: 920138 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-100022				
DOWNTOWN CHEVRON	17 S BERETANIA ST	S 1/4 - 1/2 (0.259 mi.)	17	24
Release ID: 910002 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101100				
7-ELEVEN NUUANU PALI	***1602 NUUANU AVE***	***ENE 1/4 - 1/2 (0.262 mi.)***	***18***	***25***
Release ID: 050030 Release ID: 980151 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101725				
TENNEY'S BISHOP UNIO	***169 S BERETANIA ST***	***SSE 1/4 - 1/2 (0.393 mi.)***	***E28***	***35***
Release ID: 910092 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-100015				
KINGSGATE PLAZA	***516 DILLINGHAM BLVD***	***WNW 1/4 - 1/2 (0.394 mi.)***	***30***	***37***
Release ID: 900030 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-102172				
IMM VINEYARD	***215 S VINEYARD BLVD***	***SE 1/4 - 1/2 (0.401 mi.)***	***G32***	***39***
Release ID: 980150 Release ID: 050025 Facility Status: Site Cleanup Completed (NFA) Facility Status: Monitored Natural Attenuation Facility Id: 9-100343				
MIKE'S AUTOMOTIVE/SU	***225 S VINEYARD BLVD***	***SE 1/4 - 1/2 (0.410 mi.)***	***G35***	***42***
Release ID: 880026 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101034				
LANCE GOYA CHEVRON	***504 N SCHOOL ST***	***N 1/4 - 1/2 (0.413 mi.)***	***36***	***44***
Release ID: 980240 Release ID: 030004 Release ID: 030003 Facility Status: Site Cleanup Completed (NFA) Facility Status: Site Cleanup Completed with EHMP Facility Id: 9-101259				
HIRAM'S CHEVRON SERV	***140 S. SCHOOL ST***	***ESE 1/4 - 1/2 (0.429 mi.)***	***39***	***52***
Release ID: 880013 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101229				
STATE CAPITOL - TMK	***235 S BERETANIA ST***	***SSE 1/4 - 1/2 (0.439 mi.)***	***40***	***54***
Release ID: 930076 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-102692				
7-11 NUUANU	***1755 NUUANU AVE***	***ENE 1/4 - 1/2 (0.452 mi.)***	***44***	***58***
Release ID: 900065 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101196				

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
YICK LUNG CO., INC.	***580 DILLINGHAM BLVD***	***WNW 1/4 - 1/2 (0.453 mi.)***	***J45***	***61***
Release ID: 910068 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101500				
MALULANI HALE	***114 N KUAKINI ST***	***NE 1/4 - 1/2 (0.461 mi.)***	***47***	***62***
Release ID: 940161 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-102930				
YICK LUNG CO., INC.	***602 DILLINGHAM BLVD***	***WNW 1/4 - 1/2 (0.473 mi.)***	***J48***	***62***
Release ID: 940084 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101499				
KUAKINI MEDICAL CENT	***347 N KUAKINI ST***	***NNE 1/4 - 1/2 (0.491 mi.)***	***49***	***63***
Release ID: 100019 Release ID: 910061 Release ID: 980098 Facility Status: Site Cleanup Completed with EHE/EHMP Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-100264				
KING SHELL FOODMART	***666 N KING ST***	***NW 1/4 - 1/2 (0.493 mi.)***	***50***	***67***
Release ID: 020033 Release ID: 080030 Release ID: 030030 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101026				

Lower Elevation	Address	Direction / Distance	Map ID	Page
HONOLULU COMMUNITY A	***337 & 357 N KING ST***	***W 1/4 - 1/2 (0.308 mi.)***	***23***	***30***
Release ID: 940111 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101814				
IWILEI FRUIT AND VEG	***920 IWILEI ROAD***	***W 1/4 - 1/2 (0.339 mi.)***	***24***	***31***
Release ID: 020031 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-103747				
MAUNAWILI PRODUCE, I	***914 KAAAHI PL***	***WNW 1/4 - 1/2 (0.394 mi.)***	***F29***	***36***
Release ID: 930022 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-100272				
MAUNAWILI PRODUCE	***906 KAAAHI PL***	***WNW 1/4 - 1/2 (0.396 mi.)***	***F31***	***38***
Release ID: 990177 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-101518				
STEELTECH INC	***373 N NIMITZ HWY***	***W 1/4 - 1/2 (0.420 mi.)***	***H38***	***51***
Release ID: 940156 Release ID: 060004 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-102947				
ISLAND MOVERS, INC.	***414 KUWILI STHONOLUL***	***W 1/4 - 1/2 (0.445 mi.)***	***42***	***56***
Release ID: 010005 Facility Status: Site Cleanup Completed (NFA) Facility Id: 9-100936				

Lower Elevation	Address	Direction / Distance	Map ID	Page
C&CH WATERFRONT FIRE	***111 N NIMITZ HWY***	***SW 1/4 - 1/2 (0.460 mi.)***	***46***	***61***
Release ID: 910027				
Facility Status: Site Cleanup Completed (NFA)				
Facility Id: 9-100097				

State and tribal registered storage tank lists

HI UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Health's Listing of Underground Storage Tanks.

A review of the HI UST list, as provided by EDR, and dated 03/02/2015 has revealed that there is 1 HI UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SASAMOTO UNION SERVI	***33 S VINEYARD BLVD***	***SE 1/8 - 1/4 (0.193 mi.)***	***B10***	***16***
Date Closed: 05/12/1992				
Date Closed: 12/30/1987				
Date Closed: 05/13/1992				
Tank Status: Permanently Out of Use				
Facility Id: 9-100022				

State and tribal institutional control / engineering control registries

HI ENG CONTROLS: A listing of sites with engineering controls in place.

A review of the HI ENG CONTROLS list, as provided by EDR, and dated 12/02/2014 has revealed that there are 2 HI ENG CONTROLS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LANCE GOYA CHEVRON	***504 N SCHOOL ST***	***N 1/4 - 1/2 (0.413 mi.)***	***36***	***44***
VON HAMM TEXTILES	***546 KAAAHI ST***	***WNW 1/4 - 1/2 (0.444 mi.)***	***I41***	***55***

Voluntary Remediation Program and Brownfields sites with institutional controls in place.

A review of the HI INST CONTROL list, as provided by EDR, and dated 12/02/2014 has revealed that there are 4 HI INST CONTROL sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LANCE GOYA CHEVRON	***504 N SCHOOL ST***	***N 1/4 - 1/2 (0.413 mi.)***	***36***	***44***
VON HAMM TEXTILES	***546 KAAAHI ST***	***WNW 1/4 - 1/2 (0.444 mi.)***	***I41***	***55***

Lower Elevation	Address	Direction / Distance	Map ID	Page
TOWN INN	***248-258 N BERETANIA***	***WSW 1/8 - 1/4 (0.191 mi.)***	***C7***	***12***
SENIOR RESIDENCES AT	***888 IWILEI RD***	***W 1/4 - 1/2 (0.368 mi.)***	***26***	***33***

State and tribal voluntary cleanup sites

HI VCP: Voluntary Response Program Sites.

A review of the HI VCP list, as provided by EDR, and dated 12/02/2014 has revealed that there is 1 HI VCP site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
TOWN INN	***248-258 N BERETANIA***	***WSW 1/8 - 1/4 (0.191 mi.)***	***C7***	***12***

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/10/2015 has revealed that there are 3 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRINCE TOWER AT QUEE	1511 NUUANU AVE	E 1/8 - 1/4 (0.202 mi.)	13	19
ENERGY & ENVIRONMENT	***55 KUKUI ST***	***SSE 1/8 - 1/4 (0.245 mi.)***	***16***	***23***

Lower Elevation	Address	Direction / Distance	Map ID	Page
TYPEHOUSE HAWAII	***250 N BERETANIA ST***	***WSW 1/8 - 1/4 (0.191 mi.)***	***C8***	***13***

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SAND ISLAND MILITARY		WSW 1/4 - 1/2 (0.493 mi.)	0	7

FUDS: The Listing includes locations of Formerly Used Defense Sites Properties where the US Army Corps Of Engineers is actively working or will take necessary cleanup actions.

A review of the FUDS list, as provided by EDR, and dated 06/06/2014 has revealed that there is 1 FUDS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SAKE BREWERY & ICE C		NE 1/2 - 1 (0.894 mi.)	88	150

EXECUTIVE SUMMARY

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

A review of the EDR MGP list, as provided by EDR, has revealed that there are 2 EDR MGP sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HAWAIIAN GAS PRODUCT	516-520 KUWILI ST	WNW 1/2 - 1 (0.527 mi.)	52	70

Lower Elevation	Address	Direction / Distance	Map ID	Page
BHP GASCO	432 PACIFIC STREET	W 1/2 - 1 (0.797 mi.)	O78	139

EDR US Hist Auto Stat: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there is 1 EDR US Hist Auto Stat site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	1255 NUUANU AVE	S 1/8 - 1/4 (0.201 mi.)	D11	17

EDR US Hist Cleaners: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR US Hist Cleaners list, as provided by EDR, has revealed that there are 4 EDR US Hist Cleaners sites within approximately 0.25 miles of the target property.

EXECUTIVE SUMMARY

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	1365 NUUANU AVE	SE 1/8 - 1/4 (0.152 mi.)	A3	10
Not reported	23 S VINEYARD BLVD	SE 1/8 - 1/4 (0.181 mi.)	B5	11
Not reported	100 N BERETANIA ST	SSW 1/8 - 1/4 (0.187 mi.)	6	12
Not reported	60 N BERETANIA ST	SSW 1/8 - 1/4 (0.207 mi.)	15	22

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 9 records.

Site Name	Database(s)
1339 SCHOOL STREET	HI SHWS, HI ENG CONTROLS, HI INST CONTROL
HONOLULU SEAWATER AIR CONDITIONING	HI SHWS, HI ENG CONTROLS, HI INST CONTROL
CITIZENS ENERGY SERVICES PIER 38	HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST CONTROL
ALA WAI HARBOR BOAT REPAIR YARD	HI SHWS
KAKAAKO MAKAI GATEWAY	HI SHWS
CANNON CLUB	HI SHWS, HI BROWNFIELDS
FORMER KAPALAMA MILITARY RESERVATI	HI SHWS
NIMITZ HIGHWAY WATER IMPROVEMENT P	HI SHWS
PACIFIC RESOURCES, INCORPORATED (G	CERC-NFRAP

OVERVIEW MAP - 4328367.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 1331-1347 River Street	CLIENT: Bureau Veritas North America, Inc.
ADDRESS: 1331-1347 River Street Honolulu HI 96817	CONTACT: Nicole Okino
LAT/LONG: 21.3157 / 157.8597	INQUIRY #: 4328367.2s DATE: June 17, 2015 1:44 pm

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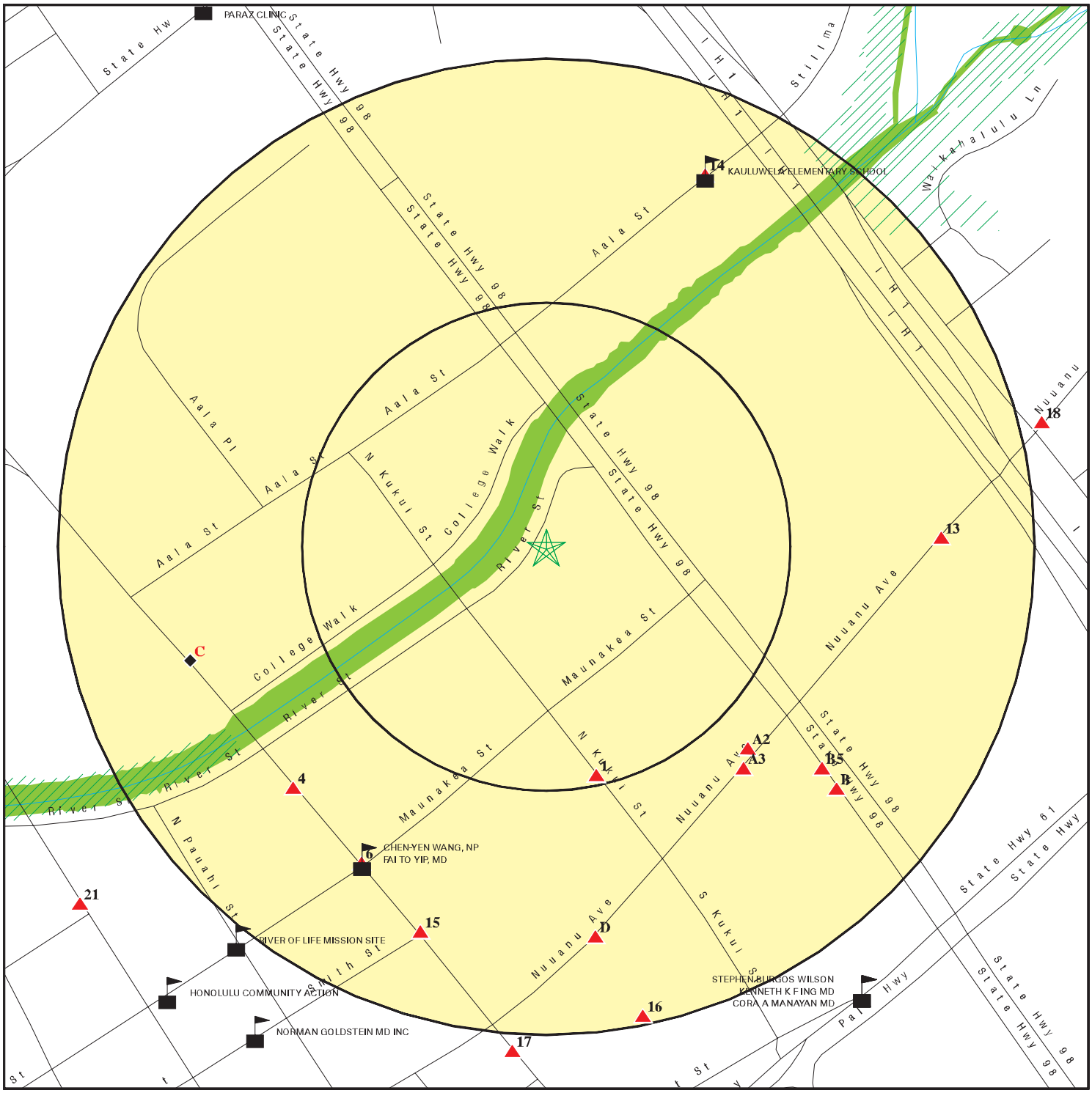
DETAIL MAP - 4328367.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

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SITE NAME: 1331-1347 River Street	CLIENT: Bureau Veritas North America, Inc.
ADDRESS: 1331-1347 River Street Honolulu HI 96817	CONTACT: Nicole Okino INQUIRY #: 4328367.2s
LAT/LONG: 21.3157 / 157.8597	DATE: June 17, 2015 1:46 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	1	NR	1
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		1	5	NR	NR	NR	6
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
HI SHWS	1.000		0	1	15	50	NR	66
State and tribal landfill and/or solid waste disposal site lists								
HI SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
HI LUST	0.500		0	1	22	NR	NR	23
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
HI UST	0.250		0	1	NR	NR	NR	1

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
HI ENG CONTROLS	0.500		0	0	2	NR	NR	2
HI INST CONTROL	0.500		0	1	3	NR	NR	4
State and tribal voluntary cleanup sites								
HI VCP	0.500		0	1	0	NR	NR	1
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
HI BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
HI CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
HI SPILLS	TP		NR	NR	NR	NR	NR	0
HI SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	3	NR	NR	NR	3
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	1	0	NR	1
FUDS	1.000		0	0	0	1	NR	1
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
HI UIC	TP		NR	NR	NR	NR	NR	0
HI DRYCLEANERS	0.250		0	0	NR	NR	NR	0
CA HAZNET	TP		NR	NR	NR	NR	NR	0
HI AIRS	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
HI Financial Assurance	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	2	NR	2
EDR US Hist Auto Stat	0.250		0	1	NR	NR	NR	1
EDR US Hist Cleaners	0.250		0	4	NR	NR	NR	4
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
HI RGA LF	TP		NR	NR	NR	NR	NR	0
HI RGA LUST	TP		NR	NR	NR	NR	NR	0
HI RGA HWS	TP		NR	NR	NR	NR	NR	0
- Totals --		0	1	18	43	54	0	116

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

DOD **SAND ISLAND MILITARY RESERVATION** **DOD** **CUSA147757**
Region **N/A**
WSW
1/4-1/2
2603 ft. **SAND ISLAND MILITARY RESE (County), HI**

DOD:
Feature 1: Army DOD
Feature 2: Not reported
Feature 3: Not reported
URL: Not reported
Name 1: Sand Island Military Reservation
Name 2: Not reported
Name 3: Not reported
State: HI
DOD Site: Yes
Tile name: HIHONOLULU

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1 **KUKUI TOWER** **RCRA-CESQG** **1012178250**
SSE **35 NORTH KUKUI ST** **HIR000139055**
< 1/8 **HONOLULU, HI 96817**
0.120 mi.
632 ft.

Relative:
Higher

Actual:
10 ft.

RCRA-CESQG:
Date form received by agency: 01/23/2009
Facility name: KUKUI TOWER
Facility address: 35 NORTH KUKUI ST
HONOLULU, HI 96817
EPA ID: HIR000139055
Contact: KIRK D HOLTO
Contact address: 35 NORTH KUKUI ST
HONOLULU, HI 96817
Contact country: US
Contact telephone: (808) 537-4935
Contact email: KT-AM@EAHHOUSING.ORG
EPA Region: 09
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: EAH, INC.
Owner/operator address: 2169 E FRANCISCO BLVD SUITE B
SAN RAFAEL, CA 94901
Owner/operator country: Not reported
Owner/operator telephone: Not reported

KUKUI TOWER (Continued) **1012178250**

Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 03/15/1999
Owner/Op end date: Not reported

Owner/operator name: KUKUI KAUHALE, INC.
Owner/operator address: C/O 841 BISHOP ST. SUITE 2208
HONOLULU, HI 96813
Owner/operator country: Not reported
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 09/16/1996
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D009
. Waste name: MERCURY

Violation Status: No violations found

A2 **NUUANU MEDICAL CTR** **RCRA-CESQG** **1004688767**
SE **1374 NUUANU AVE** **FINDS** **HI0000961201**
1/8-1/4 **HONOLULU, HI 96819**
0.146 mi.
771 ft. **Site 1 of 2 in cluster A**

Relative:
Higher

Actual:
13 ft.

RCRA-CESQG:
Date form received by agency: 12/02/1994
Facility name: NUUANU MEDICAL CTR
Facility address: 1374 NUUANU AVE
HONOLULU, HI 96819
EPA ID: HI0000961201
Contact: WAYNE NAKASHIMA
Contact address: 615 PIIKOI ST STE 701
HONOLULU, HI 96814
Contact country: US
Contact telephone: 808594700
Contact email: Not reported
EPA Region: 09
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar

NUUANU MEDICAL CTR (Continued) **1004688767**

month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	QUEENS HEALTH SYSTEM THE
Owner/operator address:	201 MEERCHANT ST STE 2450 HONOLULU, HI 96813
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 532-6100
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110005722717

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

A3
SE
1/8-1/4
0.152 mi.
802 ft.

1365 NUUANU AVE
HONOLULU, HI 96817

Site 2 of 2 in cluster A

EDR US Hist Cleaners **1014990250**
N/A

Relative:
Higher

Actual:
13 ft.

EDR Historical Cleaners:

Name:	YOUNG LAUNDRY & DRY CLEANING
Year:	2010
Address:	1365 NUUANU AVE
Name:	YOUNG LAUNDRY & DRY CLEANING
Year:	2011
Address:	1365 NUUANU AVE
Name:	YOUNG LAUNDRY & DRY CLEANING
Year:	2012
Address:	1365 NUUANU AVE

4
SW
1/8-1/4
0.179 mi.
944 ft.

UNOCAL 76 SS L 0346
169 BERETANIA ST
HONOLULU, HI 96817

RCRA-CESQG **1004688900**
FINDS **HID984468751**

Relative:
Higher

Actual:
13 ft.

RCRA-CESQG:

Date form received by agency:	08/30/1993
Facility name:	UNOCAL 76 SS L 0346
Facility address:	169 BERETANIA ST HONOLULU, HI 96817
EPA ID:	HID984468751
Mailing address:	PO BOX 659 HONOLULU, HI 96809
Contact:	A FRITZ
Contact address:	PO BOX 659 HONOLULU, HI 96809
Contact country:	US
Contact telephone:	(808) 522-7657
Contact email:	Not reported
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	UNOCAL 76
Owner/operator address:	911 WILSHIRE BLVD STE 1010

UNOCAL 76 SS L 0346 (Continued) **1004688900**

LOS ANGELES, CA 90017
Owner/operator country: Not reported
Owner/operator telephone: (213) 977-7600
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110055381929

Environmental Interest/Information System
STATE MASTER

Registry ID: 110005728150

Environmental Interest/Information System
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STATE MASTER

B5 **EDR US Hist Cleaners** **1015022876**
SE **23 S VINEYARD BLVD** **N/A**
1/8-1/4 **HONOLULU, HI 96813**
0.181 mi.
956 ft. **Site 1 of 3 in cluster B**

Relative:
Higher

Actual:
16 ft.

EDR Historical Cleaners:
Name: YOUNG LAUNDRY & DRY CLEANING
Year: 2007
Address: 23 S VINEYARD BLVD

6
SSW
1/8-1/4
0.187 mi.
989 ft.

100 N BERETANIA ST
HONOLULU, HI 96817

EDR US Hist Cleaners **1014966387**
N/A

Relative:
Higher

Actual:
14 ft.

EDR Historical Cleaners:

Name:	QUALITY CLEANERS
Year:	1999
Address:	100 N BERETANIA ST

C7
WSW
1/8-1/4
0.191 mi.
1006 ft.

TOWN INN
248-258 N BERETANIA ST
HONOLULU, HI 96817
Site 1 of 2 in cluster C

HI SHWS **1006819555**
HI INST CONTROL **N/A**
HI VCP

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Town Inn
HID Number:	Not reported
Facility Registry Identifier:	110013773755
Lead Agency:	HEER
Program:	Voluntary Response Program
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Town Inn
HID Number:	Not reported
Facility Registry Identifier:	110013773755
Lead Agency:	HEER
Progran Name:	Voluntary Response Program
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: TPH-D, BTEX, PAHs, and free product in soil and groundwater.
Nature of Residual Contamination:	No (TPH-D, BTEX, PAHs, and free product in soil and groundwater) contamination left on site is above EALs.
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Letter of Completion - Restricted Use
Document Date:	08/18/2004
Document Number:	Not reported
Document Subject:	Letter of Completion, Town Inn/Town Square VRP Project
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported

TOWN INN (Continued) **1006819555**

Zip Suffix: Not reported
Island: Oahu
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

VCP:
Program: Voluntary Response Program
Zip Suffix: Not reported
Supplemental Location: Not reported
Island: Oahu

C8 **TYPEHOUSE HAWAII** **RCRA NonGen / NLR** **1000202883**
WSW **250 N BERETANIA ST** **FINDS** **HID981162647**
1/8-1/4 **HONOLULU, HI 96817**
0.191 mi.
1010 ft. **Site 2 of 2 in cluster C**

Relative:
Lower

Actual:
3 ft.

RCRA NonGen / NLR:
Date form received by agency: 12/10/1993
Facility name: TYPEHOUSE HAWAII
Facility address: 250 N BERETANIA ST
HONOLULU, HI 96817
EPA ID: HID981162647
Mailing address: STE SECOND HUNDRED FIRST
HONOLULU, HI 96817
Contact: ENVIRONMENTAL MANAGER
Contact address: 250 N BERETANIA ST
HONOLULU, HI 96817
Contact country: US
Contact telephone: (808) 841-4231
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: EDWARD ENTERPRISES, INC
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:

TYPEHOUSE HAWAII (Continued) **1000202883**

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110005723486

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

B9 **UNOCAL 76 SS L 5005** **RCRA-CESQG 1004688905**
SE **33 S VINEYARD** **FINDS HID984468835**
1/8-1/4 **HONOLULU, HI 96813**
0.193 mi.
1021 ft. **Site 2 of 3 in cluster B**

Relative:
Higher

Actual:
17 ft.

RCRA-CESQG:

Date form received by agency:	08/27/1993
Facility name:	UNOCAL 76 SS L 5005
Facility address:	33 S VINEYARD HONOLULU, HI 96813
EPA ID:	HID984468835
Mailing address:	PO BOX 659 HONOLULU, HI 96809
Contact:	A FRITZ
Contact address:	PO BOX 659 HONOLULU, HI 96809
Contact country:	US
Contact telephone:	(808) 522-7657
Contact email:	Not reported
EPA Region:	09
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or

UNOCAL 76 SS L 5005 (Continued) **1004688905**

other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: UNOCAL 76
Owner/operator address: 911 WILSHIRE BLVD STE 1010
LOS ANGELES, CA 90017
Owner/operator country: Not reported
Owner/operator telephone: (213) 977-7600
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110005728230

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

B10
SE
1/8-1/4
0.193 mi.
1021 ft.

SASAMOTO UNION SERVICE L-5005
33 S VINEYARD BLVD
HONOLULU, HI 96813

Site 3 of 3 in cluster B

HI LUST **U003221548**
HI UST **N/A**

Relative:
Higher

Actual:
17 ft.

LUST:

Facility ID:	9-100022
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	10/21/1996
Release ID:	920138
Project Officer:	Not Assigned

UST:

Facility ID:	9-100022
Owner:	UNOCAL CORPORATION
Owner Address:	3915 Mission Avenue #7416
Owner City,St,Zip:	Honolulu, 96813 96813
Latitude:	21.313649
Longitude:	-157.857429
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching

Tank ID:	R-1
Date Installed:	04/02/1963
Tank Status:	**Permanently Out of Use**
Date Closed:	12/30/1987
Tank Capacity:	6000
Substance:	Gasoline

Tank ID:	R-2
Date Installed:	04/02/1962
Tank Status:	**Permanently Out of Use**
Date Closed:	12/30/1987
Tank Capacity:	6000
Substance:	Gasoline

Tank ID:	R-3
Date Installed:	04/02/1962
Tank Status:	**Permanently Out of Use**
Date Closed:	12/30/1987
Tank Capacity:	280
Substance:	Used Oil

Tank ID:	R-4
Date Installed:	08/21/1987
Tank Status:	**Permanently Out of Use**
Date Closed:	05/13/1992
Tank Capacity:	12000
Substance:	Gasoline

Tank ID:	R-5
Date Installed:	08/21/1987
Tank Status:	**Permanently Out of Use**
Date Closed:	05/12/1992

SASAMOTO UNION SERVICE L-5005 (Continued) **U003221548**

Tank Capacity: 12000
Substance: Gasoline

Tank ID: R-6
Date Installed: 08/21/1987
Tank Status: **Permanently Out of Use**
Date Closed: 05/12/1992
Tank Capacity: 550
Substance: Used Oil

D11 **EDR US Hist Auto Stat** **1015193958**
South **1255 NUUANU AVE** **N/A**
1/8-1/4 **HONOLULU, HI 96817**
0.201 mi.
1062 ft. **Site 1 of 2 in cluster D**

Relative:
Higher

Actual:
16 ft.

EDR Historical Auto Stations:
Name: AFFORDABLE MOBILE AUTO REPAIR
Year: 2004
Address: 1255 NUUANU AVE

D12 **KOKO'S ISLAND CHEVRON** **RCRA-CESQG** **1004688930**
South **1255 NUUANU AVE** **FINDS** **HID984470179**
1/8-1/4 **HONOLULU, HI 96813**
0.201 mi.
1062 ft. **Site 2 of 2 in cluster D**

Relative:
Higher

Actual:
16 ft.

RCRA-CESQG:
Date form received by agency: 07/27/1993
Facility name: KUKUI PLAZA
Facility address: 1255 NUUANU AVE
HONOLULU, HI 96813
EPA ID: HID984470179
Mailing address: NUUANU AVE
HONOLULU, HI 96813
Contact: DAVID NAPOLEON
Contact address: 1255 NUUANU AVE
HONOLULU, HI 96813
Contact country: US
Contact telephone: (808) 524-1255
Contact email: Not reported
EPA Region: 09
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from

KOKO'S ISLAND CHEVRON (Continued) **1004688930**

the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	ASSOCIATION OF OWNERS
Owner/operator address:	1255 NUUANU AVE HONOLULU, HI 96813
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 524-1255
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110005729033

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

13
East
1/8-1/4
0.202 mi.
1068 ft.

PRINCE TOWER AT QUEEN EMMA GARDENS LLC
1511 NUUANU AVE
HONOLULU, HI 96817

RCRA NonGen / NLR

1012178204
HIP000129858

Relative:
Higher

Actual:
36 ft.

RCRA NonGen / NLR:

Date form received by agency:	08/28/2009
Facility name:	PRINCE TOWER AT QUEEN EMMA GARDENS LLC
Facility address:	1511 NUUANU AVE HONOLULU, HI 96817
EPA ID:	HIP000129858
Contact:	BARRY KAPLAN
Contact address:	1511 NUUANU AVE HONOLULU, HI 96817
Contact country:	US
Contact telephone:	808-864-1500
Contact email:	Not reported
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	PRINCE TOWER AT QUEEN EMMA GARDENS LLC
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	10/18/2002
Owner/Op end date:	Not reported

Owner/operator name:	PRINCE TOWER AT QUEEN EMMA GARDENS LLC
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	10/18/2002
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No

PRINCE TOWER AT QUEEN EMMA GARDENS LLC (Continued) **1012178204**

Used oil transporter: No

Historical Generators:
Date form received by agency: 11/13/2002
Site name: PRINCE TOWER AT QUEEN EMMA GARDENS LLC
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

14
NNE
1/8-1/4
0.207 mi.
1094 ft.

KAULUWELA ELEMENTARY SCHOOL
1486 AALA ST
HONOLULU, HI 96817

RCRA-CESQG **1004688951**
FTTS **HIR000001024**
HIST FTTS
FINDS

Relative:
Higher

Actual:
35 ft.

RCRA-CESQG:
Date form received by agency: 09/18/1996
Facility name: KAULUWELA ELEMENTARY SCHOOL
Facility address: 1486 AALA ST
HONOLULU, HI 96817
EPA ID: HIR000001024
Mailing address: AALA ST
HONOLULU, HI 96817
Contact: ARNOLD CHING
Contact address: 1486 AALA ST
HONOLULU, HI 96817
Contact country: US
Contact telephone: (808) 587-4447

KAULUWELA ELEMENTARY SCHOOL (Continued) **1004688951**

Contact email: Not reported
EPA Region: 09
Classification: Conditionally Exempt Small Quantity Generator
Description: Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: STATE OF HAWAII
Owner/operator address: 1486 AALA ST
HONOLULU, HI 96817
Owner/operator country: Not reported
Owner/operator telephone: (808) 587-4447
Legal status: State
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FTTS INSP:
Inspection Number: 20010927HI08 1
Region: 09
Inspection Date: 09/27/01
Inspector: K CHANG
Violation occurred: Yes
Investigation Type: AHERA, Enforcement, State Conducted
Investigation Reason: Neutral Scheme, State
Legislation Code: TSCA

KAULUWELA ELEMENTARY SCHOOL (Continued) **1004688951**

Facility Function: User

HIST FTTS INSP:
Inspection Number: 20010927HI08 1
Region: 09
Inspection Date: Not reported
Inspector: K CHANG
Violation occurred: Yes
Investigation Type: AHERA, Enforcement, State Conducted
Investigation Reason: Neutral Scheme, State
Legislation Code: TSCA
Facility Function: User

FINDS:

Registry ID: 110005729729

Environmental Interest/Information System

NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.

US EPA Air Quality System (AQS) contains ambient air pollution data collected by EPA, State, Local, and Tribal air pollution control agencies from thousands of monitoring stations.

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STATE MASTER

15
SSW
1/8-1/4
0.207 mi.
1094 ft.

60 N BERETANIA ST
HONOLULU, HI 96817

EDR US Hist Cleaners **1015078890**
N/A

Relative:
Higher

Actual:
21 ft.

EDR Historical Cleaners:
Name: ALOHA PARADISE CARPET CLEANING
Year: 2007
Address: 60 N BERETANIA ST

Name: ALOHA PARADISE CARPET CLEANERS LLC
Year: 2008
Address: 60 N BERETANIA ST

Name: ALOHA PARADISE CARPET CLEANING
Year: 2009

(Continued) **1015078890**

Address: 60 N BERETANIA ST

Name: ALOHA PARADISE CARPET CLEANING
Year: 2010
Address: 60 N BERETANIA ST

Name: ALOHA PARADISE CARPET CLEANING
Year: 2011
Address: 60 N BERETANIA ST

Name: ALOHA PARADISE CARPET CLEANING
Year: 2012
Address: 60 N BERETANIA ST

16
SSE
1/8-1/4
0.245 mi.
1294 ft.

ENERGY & ENVIRONMENT RESEARCH GROUP INC **RCRA NonGen / NLR** **1000357999**
55 KUKUI ST **FINDS** **HID053417820**
HONOLULU, HI 96814

Relative:
Higher

Actual:
20 ft.

RCRA NonGen / NLR:
Date form received by agency: 12/10/1993
Facility name: ENERGY & ENVIRONMENT RESEARCH GROUP INC
Facility address: 55 KUKUI ST
HONOLULU, HI 96814
EPA ID: HID053417820
Mailing address: PO BOX 30842
HONOLULU, HI 96820
Contact: ENVIRONMENTAL MANAGER
Contact address: 55 KUKUI ST
HONOLULU, HI 96814
Contact country: US
Contact telephone: (808) 531-1581
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported

ENERGY & ENVIRONMENT RESEARCH GROUP INC (Continued) **1000357999**

Owner/Op end date: Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID: 110005284423

Environmental Interest/Information System

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17
South
1/4-1/2
0.259 mi.
1366 ft.

DOWNTOWN CHEVRON **HI LUST** **U003221646**
17 S BERETANIA ST **N/A**
HONOLULU, HI 96813

Relative:
Higher

Actual:
20 ft.

LUST:

Facility ID:	9-101100
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	12/02/1992
Release ID:	910002
Project Officer:	Sheila Mackenzie

18
ENE
1/4-1/2
0.262 mi.
1381 ft.

7-ELEVEN NUUANU PALI
1602 NUUANU AVE
HONOLULU, HI 96817

HI LUST **U001235570**
HI UST **N/A**
HI Financial Assurance

Relative:
Higher

Actual:
41 ft.

LUST:

Facility ID:	9-101725
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	11/09/2006
Release ID:	050030
Project Officer:	Darren Park

Facility ID:	9-101725
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	06/30/2000
Release ID:	980151
Project Officer:	Darren Park

UST:

Facility ID:	9-101725
Owner:	ALOHA PETROLEUM, LTD.
Owner Address:	1132 Bishop Street, Suite 1700
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.316937
Longitude:	-157.855809
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS

Tank ID:	87
Date Installed:	09/30/1988
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	89
Date Installed:	09/30/1988
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	92
Date Installed:	09/30/1988
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

HI Financial Assurance:

Alt Facility ID:	9-101725
Tank Id:	87
Tank Status:	Currently in Use
FRTYPE:	Surety Bond
Expiration Date:	Not reported

7-ELEVEN NUUANU PALI (Continued) **U001235570**

Alt Facility ID: 9-101725
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Surety Bond
Expiration Date: Not reported

Alt Facility ID: 9-101725
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-101725
Tank Id: 89
Tank Status: Currently in Use
FRTYPE: Surety Bond
Expiration Date: Not reported

Alt Facility ID: 9-101725
Tank Id: 87
Tank Status: Currently in Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-101725
Tank Id: 89
Tank Status: Currently in Use
FRTYPE: Not reported
Expiration Date: Not reported

Alt Facility ID: 9-101725
Tank Id: 89
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

Alt Facility ID: 9-101725
Tank Id: 87
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

Alt Facility ID: 9-101725
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

19
West
1/4-1/2
0.294 mi.
1550 ft.

LILIHA CIVIC CENTER
337 N KING ST
HONOLULU, HI 96817

HI SHWS **1006819345**
N/A

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Liliha Civic Center
HID Number:	Not reported
Facility Registry Identifier:	110013771365
Lead Agency:	HEER
Program:	State
Project Manager:	Bryce Hataoka
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Liliha Civic Center
HID Number:	Not reported
Facility Registry Identifier:	110013771365
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	04/10/1997
Document Number:	1997-136-01-BH
Document Subject:	Liliha Civic Center
Project Manager:	Bryce Hataoka
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

20
West
1/4-1/2
0.297 mi.
1567 ft.

IWILEI PROJECT SITE (IWILEI BROWNFIELDS)
IWILEI RD & N KING ST
HONOLULU, HI 96817

HI SHWS **S107022564**
N/A

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Iwilei Project Site
HID Number:	Not reported
Facility Registry Identifier:	110013788516
Lead Agency:	HEER
Program:	State
Project Manager:	Melody Calisay

IWILEI PROJECT SITE (IWILEI BROWNFIELDS) (Continued) **S107022564**

Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Iwilei Project Site
HID Number:	Not reported
Facility Registry Identifier:	110013788516
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: PAHs, VOCs, lead, and other metals in soil.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Melody Calisay
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

21
SW
1/4-1/2
0.301 mi.
1587 ft.

KEKAULIKE DIAMOND HEAD BLOCK REVITALIZATION **HI SHWS** **1006819184**
163 N HOTEL ST **HI SPILLS** **N/A**
HONOLULU, HI 96817

Relative:
Higher

Actual:
12 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Hotel St & Kekaulike St
Island:	Oahu
Environmental Interest:	Kekaulike Diamond Head Block Revitalization
HID Number:	Not reported
Facility Registry Identifier:	110013769564
Lead Agency:	HEER
Program:	State
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Hotel St & Kekaulike St
SDAR Environmental Interest Name:	Kekaulike Diamond Head Block Revitalization
HID Number:	Not reported
Facility Registry Identifier:	110013769564
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete

KEKAULIKE DIAMOND HEAD BLOCK REVITALIZATION (Continued) **1006819184**

Nature of Contamination:	Not reported
Nature of Residual Contamination:	Petroleum contaminated soil
Use Restrictions:	No Hazard Present for Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Letter of Completion - Unrestricted Residential Use
Document Date:	03/23/2005
Document Number:	2005-150-MS
Document Subject:	NFA of Kekaulike Diamond Head Block
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Hotel St & Kekaulike St
Case Number:	19941215-0915
HID Number:	Not reported
Facility Registry Id:	110013769564
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Kekaulike Diamond Head Block
Substances:	oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Mike Cripps
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	City and County of Honolulu, Department of Housing and Community Development

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22 **215 NORTH KING STREET CONSTRUCTION SITE, TANKS 1 & 2** **HI SHWS** **S106815334**
WSW **215 N KING ST** **N/A**
1/4-1/2 **HONOLULU, HI 96814**
0.306 mi.
1617 ft.

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	215 North King Street Construction Site, Tanks 1 & 2
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Ukris Wongse-Ont
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	215 North King Street Construction Site, Tanks 1 & 2
HID Number:	Not reported

215 NORTH KING STREET CONSTRUCTION SITE, TANKS 1 & 2 (Continued) **S106815334**

Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Fuel oil contaminated soil
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	12/10/2004
Document Number:	2004-509-UW
Document Subject:	Additional justifications for NFA accepted for Tank No. 1 & 2
Project Manager:	Ukris Wongse-Ont
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

23
West
1/4-1/2
0.308 mi.
1628 ft.

HONOLULU COMMUNITY ACTION PROGRAM **HI LUST U001235598**
337 & 357 N KING ST **HI UST N/A**
HONOLULU, HI 96817

Relative:
Lower

Actual:
3 ft.

LUST:

Facility ID:	9-101814
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	08/12/2005
Release ID:	940111
Project Officer:	Chad Pritchard

UST:

Facility ID:	9-101814
Owner:	STATE DLNR
Owner Address:	Not reported
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.316126
Longitude:	-157.864462
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-01
Date Installed:	09/20/1964
Tank Status:	**Permanently Out of Use**
Date Closed:	10/01/1993
Tank Capacity:	4000
Substance:	Gasoline
Tank ID:	R-02
Date Installed:	09/20/1964
Tank Status:	**Permanently Out of Use**
Date Closed:	09/30/1993
Tank Capacity:	4000

HONOLULU COMMUNITY ACTION PROGRAM (Continued) **U001235598**

Substance:	Diesel
Tank ID:	R-03
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	10/04/1993
Tank Capacity:	2000
Substance:	Not Listed
Tank ID:	R-04
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	500
Substance:	Other

---

24 West 1/4-1/2 0.339 mi. 1788 ft. **IWILEI FRUIT AND VEGETABLE WAREHOUSE** **HI SHWS** **U003858603**
920 IWILEI ROAD **HI LUST** **N/A**
HONOLULU, HI 96813 **HI UST**

Relative: Lower

Actual: 3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Iwilei Fruits and Produce
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Melody Calisay
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Iwilei Fruits and Produce
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Petroleum in soil.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Downtown Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported

IWILEI FRUIT AND VEGETABLE WAREHOUSE (Continued) **U003858603**

Document Subject: Not reported
Project Manager: Melody Calisay
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:
Facility ID: 9-103747
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 10/11/2002
Release ID: 020031
Project Officer: Jose Ruiz

UST:
Facility ID: 9-103747
Owner: STATE DLNR
Owner Address: Not reported
Owner City,St,Zip: Honolulu, 96813 96813
Latitude: 21.315525
Longitude: -157.865408
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 05/20/2002
Tank Capacity: 2000
Substance: Not Listed

25
NNW
1/4-1/2
0.360 mi.
1900 ft.

HALL MARK DRY CLEANERS **HI SHWS** **S104534167**
1470 LILIHA ST **N/A**
HONOLULU, HI 96814

Relative:
Higher

Actual:
38 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Hall Mark Dry Cleaners
HID Number: Not reported
Facility Registry Identifier: 110013790503
Lead Agency: HEER
Program: State
Project Manager: Not reported
Hazard Priority: Low
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Hall Mark Dry Cleaners
HID Number: Not reported
Facility Registry Identifier: 110013790503
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: Low
Assessment: Not reported

HALL MARK DRY CLEANERS (Continued) **S104534167**

Response:	Not reported
Nature of Contamination:	Found: Diesel contamination from heating oil tank.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Closed - Documentation Inadequate to Evaluate Risk
Document Date:	10/08/1998
Document Number:	2009-670-RP
Document Subject:	ISST Site Screening Sheet
Project Manager:	Not reported
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

26
West
1/4-1/2
0.368 mi.
1945 ft.

Relative:
Lower

Actual:
3 ft.

SENIOR RESIDENCES AT IWILEI **HI SHWS S111704855**
888 IWILEI RD **HI INST CONTROL N/A**
HONOLULU, HI 96813

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Senior Residences at Iwilei
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Melody Calisay
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Senior Residences at Iwilei
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Presumed: Contamination from Honolulu Harbor Iwilei.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	No Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	04/11/2012
Document Number:	2012-234-MGC
Document Subject:	No Further Action Determination for the Senior Residence at Iwilei-888 Iwilei Road
Project Manager:	Melody Calisay

SENIOR RESIDENCES AT IWILEI (Continued) **S111704855**

Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

INST CONTROL:
Potential hazards and controls: Hazard Managed With Controls
Supplemental Location: Not reported
Zip Suffix: Not reported
Island: Oahu
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

---

27 **AWA WASTEWATER PUMP STATION** **HI SHWS** **S105262868**
WSW **190 N NIMITZ HWY** **HI SPILLS** **N/A**
1/4-1/2 **HONOLULU, HI 96817**
0.374 mi.
1977 ft.

Relative:
Lower

Actual:
2 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Awa Street Wastewater Pump Station and Force Main Improvements
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Program: State
Project Manager: Melody Calisay
Hazard Priority: Low
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Awa Street Wastewater Pump Station and Force Main Improvements
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: Low
Assessment: Assessment Ongoing
Response: Not reported
Nature of Contamination: Not reported
Nature of Residual Contamination: Not reported
Use Restrictions: Undetermined
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: Not reported
Document Date: Not reported
Document Number: Not reported
Document Subject: Not reported
Project Manager: Melody Calisay
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:
Island: Oahu
Supplemental Loc. Text: Not reported
Case Number: 19930826

AWA WASTEWATER PUMP STATION (Continued) **S105262868**

HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Awa Wastewater Pump Station
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Okahara and Associates, Inc.

E28 **TENNEY'S BISHOP UNION** **HI LUST U001235003**
SSE **169 S BERETANIA ST** **HI UST N/A**
1/4-1/2 **HONOLULU, HI 96813**
0.393 mi.
2077 ft. **Site 1 of 2 in cluster E**

Relative:
Higher

Actual:
21 ft.

LUST:

Facility ID:	9-100015
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	03/08/1995
Release ID:	910092
Project Officer:	Roger Brewer

UST:

Facility ID:	9-100015
Owner:	UNOCAL CORPORATION
Owner Address:	3915 Mission Avenue #7416
Owner City,St,Zip:	Honolulu, 96813 96813
Latitude:	21.310227
Longitude:	-157.858592
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching

Tank ID:	R-4
Date Installed:	01/01/1954
Tank Status:	**Permanently Out of Use**
Date Closed:	01/01/1983
Tank Capacity:	7500
Substance:	Not Listed

Tank ID:	R-4
Date Installed:	04/02/1983
Tank Status:	**Permanently Out of Use**
Date Closed:	05/19/1992
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	R-5
Date Installed:	01/01/1954
Tank Status:	**Permanently Out of Use**

TENNEY'S BISHOP UNION (Continued) **U001235003**

Date Closed: 01/01/1983
Tank Capacity: 5000
Substance: Not Listed

Tank ID: R-5
Date Installed: 12/31/1983
Tank Status: **Permanently Out of Use**
Date Closed: 05/19/1992
Tank Capacity: 10000
Substance: Gasoline

Tank ID: R-6
Date Installed: 04/01/1954
Tank Status: **Permanently Out of Use**
Date Closed: 12/30/1987
Tank Capacity: 550
Substance: Used Oil

Tank ID: R-6
Date Installed: 01/01/1987
Tank Status: **Permanently Out of Use**
Date Closed: 05/19/1992
Tank Capacity: 550
Substance: Used Oil

F29 **MAUNAWILI PRODUCE, INC.** **HI LUST** **U001235127**
WNW **914 KAAAHI PL** **HI UST** **N/A**
1/4-1/2 **HONOLULU, HI 96817**
0.394 mi.
2081 ft. **Site 1 of 2 in cluster F**

Relative:
Lower

Actual:
3 ft.

LUST:
Facility ID: 9-100272
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 10/11/1993
Release ID: 930022
Project Officer: Sheila Mackenzie

UST:
Facility ID: 9-100272
Owner: MAUNAWILI PRODUCE, INC.
Owner Address: 914 KAAAHI PL
Owner City,St,Zip: Honolulu, 96817 96817
Latitude: 21.317077
Longitude: -157.865509
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: 05/06/1983
Tank Status: **Permanently Out of Use**
Date Closed: 11/09/1992
Tank Capacity: 2000
Substance: Gasoline

MAUNAWILI PRODUCE, INC. (Continued) **U001235127**

Tank ID: R-2
Date Installed: 05/06/1983
Tank Status: **Permanently Out of Use**
Date Closed: 11/09/1992
Tank Capacity: 1000
Substance: Diesel

30
WNW
1/4-1/2
0.394 mi.
2082 ft.

KINGSGATE PLAZA
516 DILLINGHAM BLVD
HONOLULU, HI 96817

HI LUST **U001235760**
HI UST **N/A**

Relative:
Higher

Actual:
7 ft.

LUST:
Facility ID: 9-102172
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 03/15/1995
Release ID: 900030
Project Officer: Roger Brewer

UST:
Facility ID: 9-102172
Owner: MERTIN LAU
Owner Address: 195 S KING ST 7 TH FLR
Owner City,St,Zip: Honolulu, 96817 96817
Latitude: 21.318560
Longitude: -157.865048
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: Not reported
Tank Capacity: 1000
Substance: Not Listed

Tank ID: R-2
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: Not reported
Tank Capacity: 1000
Substance: Not Listed

Tank ID: R-3
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: Not reported
Tank Capacity: 1000
Substance: Not Listed

Tank ID: R-4
Date Installed: Not reported
Tank Status: **Permanently Out of Use**

KINGSGATE PLAZA (Continued) **U001235760**

Date Closed: Not reported
Tank Capacity: 2000
Substance: Not Listed

Tank ID: R-5
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: Not reported
Tank Capacity: 6000
Substance: Not Listed

Tank ID: R-6
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: Not reported
Tank Capacity: 10000
Substance: Not Listed

F31 **MAUNAWILI PRODUCE** **HI LUST** **U001235527**
WNW **906 KAAAHI PL** **HI UST** **N/A**
1/4-1/2 **HONOLULU, HI 96817**
0.396 mi.
2091 ft. **Site 2 of 2 in cluster F**

Relative:
Lower

Actual:
3 ft.

LUST:
Facility ID: 9-101518
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 05/03/1999
Release ID: 990177
Project Officer: Jeffrey Ung

UST:
Facility ID: 9-101518
Owner: RICHARD Y. SAKIHAMA TRUST
Owner Address: 1051 ALA LILIKOI ST
Owner City,St,Zip: Honolulu, 96817 96817
Latitude: 21.317017
Longitude: -157.865684
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: 05/07/1971
Tank Status: **Permanently Out of Use**
Date Closed: 07/17/1989
Tank Capacity: 1000
Substance: Gasoline

G32 **IMM VINEYARD** **HI LUST** **U001235169**
SE **215 S VINEYARD BLVD** **HI UST** **N/A**
1/4-1/2 **HONOLULU, HI 96813** **HI Financial Assurance**
0.401 mi.
2117 ft. **Site 1 of 2 in cluster G**

Relative:
Higher

Actual:
30 ft.

LUST:

Facility ID:	9-100343
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	05/08/2000
Release ID:	980150
Project Officer:	Josh Nagashima

Facility ID:	9-100343
Facility Status:	Monitored Natural Attenuation
Facility Status Date:	09/04/2007
Release ID:	050025
Project Officer:	Josh Nagashima

UST:

Facility ID:	9-100343
Owner:	ALOHA PETROLEUM, LTD.
Owner Address:	1132 BISHOP STREET, SUITE 1700
Owner City,St,Zip:	Honolulu, 96813 96813
Latitude:	21.310820
Longitude:	-157.855360
Horizontal Reference Datum Name:	NAD27
Horizontal Collection Method Name:	GPS

Tank ID:	87-1
Date Installed:	02/06/1985
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	87-1
Date Installed:	02/06/1985
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	87-2
Date Installed:	02/06/1985
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	87-2
Date Installed:	02/06/1985
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

IMM VINEYARD (Continued) **U001235169**

Tank ID: 92
Date Installed: 02/06/1985
Tank Status: **Currently in Use**
Date Closed: Not reported
Tank Capacity: 10000
Substance: Gasoline

Tank ID: 92
Date Installed: 02/06/1985
Tank Status: **Currently in Use**
Date Closed: Not reported
Tank Capacity: 10000
Substance: Gasoline

HI Financial Assurance:
Alt Facility ID: 9-100343
Tank Id: 87-2
Tank Status: Currently in Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-100343
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-100343
Tank Id: 87-1
Tank Status: Currently in Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-100343
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

Alt Facility ID: 9-100343
Tank Id: 87-2
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

Alt Facility ID: 9-100343
Tank Id: 87-1
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

E33
SSE
1/4-1/2
0.403 mi.
2126 ft.

CAPITOL PLACE DEVELOPMENT PROJECT
1212 QUEEN EMMA ST
HONOLULU, HI 96813

Site 2 of 2 in cluster E

HI SHWS **S108008488**
N/A

Relative:
Higher

Actual:
23 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Capitol Place Development Project
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Capitol Place Development Project
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Diesel, lead
Nature of Residual Contamination:	Lead contaminated soil
Use Restrictions:	No Hazard Present for Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	11/15/2005
Document Number:	2005-583-MS
Document Subject:	NFA letter for Capitol Development Project 1212 Queen Emma St
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

34
SW
1/4-1/2
0.408 mi.
2156 ft.

YEE HOP BUILDING MAUNAKEA STREET
950 MAUNAKEA ST
HONOLULU, HI

HI SHWS **S106821168**
N/A

Relative:
Higher

Actual:
12 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Yee Hop Building Maunakea Street
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Mark Sutterfield

YEE HOP BUILDING MAUNAKEA STREET (Continued) **S106821168**

Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Yee Hop Building Maunakea Street
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Diesel in soil
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

G35 **MIKE'S AUTOMOTIVE/SUPPLY INC** **HI LUST U001235351**
SE **225 S VINEYARD BLVD** **HI UST N/A**
1/4-1/2 **HONOLULU, HI 96813** **HI Financial Assurance**
0.410 mi.
2167 ft. **Site 2 of 2 in cluster G**

Relative:
Higher

Actual:
30 ft.

LUST:

Facility ID:	9-101034
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	02/16/2006
Release ID:	880026
Project Officer:	Richard Takaba

UST:

Facility ID:	9-101034
Owner:	EQUILON ENTERPRISES, LLC DBA SHELL OIL PRODUCTS US
Owner Address:	2555 13TH AVE, SW
Owner City,St,Zip:	Honolulu, 96813 96813
Latitude:	21.310663
Longitude:	-157.855145
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS
Tank ID:	R-1
Date Installed:	04/19/1971
Tank Status:	**Permanently Out of Use**
Date Closed:	09/18/1995
Tank Capacity:	6000
Substance:	Gasoline

MIKE'S AUTOMOTIVE/SUPPLY INC (Continued) **U001235351**

Tank ID: R-2
Date Installed: 04/18/1966
Tank Status: **Permanently Out of Use**
Date Closed: 09/18/1995
Tank Capacity: 7000
Substance: Gasoline

Tank ID: R-3
Date Installed: 04/18/1966
Tank Status: **Permanently Out of Use**
Date Closed: 09/18/1995
Tank Capacity: 6000
Substance: Gasoline

Tank ID: R-4
Date Installed: 04/18/1966
Tank Status: **Permanently Out of Use**
Date Closed: 09/18/1995
Tank Capacity: 4000
Substance: Gasoline

Tank ID: R-5
Date Installed: 04/18/1966
Tank Status: **Permanently Out of Use**
Date Closed: 09/20/1995
Tank Capacity: 550
Substance: Used Oil

Tank ID: R-6
Date Installed: 09/26/1995
Tank Status: **Permanently Out of Use**
Date Closed: 12/17/2001
Tank Capacity: 12000
Substance: Gasoline

Tank ID: R-7
Date Installed: 09/26/1995
Tank Status: **Permanently Out of Use**
Date Closed: 12/17/2001
Tank Capacity: 12000
Substance: Gasoline

HI Financial Assurance:
Alt Facility ID: 9-101034
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101034
Tank Id: R-2
Tank Status: Permanently Out of Use

MIKE'S AUTOMOTIVE/SUPPLY INC (Continued) **U001235351**

FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101034
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101034
Tank Id: R-4
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101034
Tank Id: R-5
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101034
Tank Id: R-6
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101034
Tank Id: R-7
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

36
North
1/4-1/2
0.413 mi.
2179 ft.

Relative:
Higher

Actual:
44 ft.

LANCE GOYA CHEVRON **U003402822**
504 N SCHOOL ST **N/A**
HONOLULU, HI 96817

HI SHWS
HI LUST
HI UST
HI ENG CONTROLS
HI INST CONTROL
HI Financial Assurance

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Lance Goya's Chevron Service (Tom Tomita's Chevron)
HID Number: Not reported
Facility Registry Identifier: 110013772541
Lead Agency: HEER
Program: State
Project Manager: John Peard
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Managed With Controls
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Lance Goya's Chevron Service (Tom Tomita's Chevron)
HID Number: Not reported
Facility Registry Identifier: 110013772541

LANCE GOYA CHEVRON (Continued) **U003402822**

Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Lead and TPH in soil and groundwater.
Nature of Residual Contamination:	Deeper soils are suspected to be contaminated above unrestricted useenvironmental action levels.
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	02/23/2012
Document Number:	2012-135-JP
Document Subject:	No Further Action with Institutional Control Determination for Area 1 at the Former Lance Goya's Che
Project Manager:	John Peard
Contact Information:	(808) 933-9921 Environmental Health Bldg, 1582 Kamehameha Ave, Hilo, HI 96720

LUST:

Facility ID:	9-101259
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	02/15/2002
Release ID:	980240
Project Officer:	Shunsheng Fu

Facility ID:	9-101259
Facility Status:	Site Cleanup Completed with EHMP
Facility Status Date:	03/27/2012
Release ID:	030004
Project Officer:	Shunsheng Fu

Facility ID:	9-101259
Facility Status:	Site Cleanup Completed with EHMP
Facility Status Date:	03/27/2012
Release ID:	030003
Project Officer:	Shunsheng Fu

UST:

Facility ID:	9-101259
Owner:	CHEVRON PRODUCTS COMPANY
Owner Address:	91-480 MALAKOLE ST.
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.321804
Longitude:	-157.859969
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS

Tank ID:	R-1
Date Installed:	05/01/1961
Tank Status:	**Permanently Out of Use**
Date Closed:	01/01/1982

LANCE GOYA CHEVRON (Continued) **U003402822**

Tank Capacity: 7000
Substance: Gasoline

Tank ID: R-2
Date Installed: 05/01/1961
Tank Status: **Permanently Out of Use**
Date Closed: 01/01/1982
Tank Capacity: 5000
Substance: Gasoline

Tank ID: R-3
Date Installed: 05/01/1961
Tank Status: **Permanently Out of Use**
Date Closed: 01/01/1982
Tank Capacity: 2000
Substance: Gasoline

Tank ID: R-4A
Date Installed: 05/01/1961
Tank Status: **Permanently Out of Use**
Date Closed: 01/01/1982
Tank Capacity: 550
Substance: Used Oil

Tank ID: R-4B
Date Installed: 12/01/1981
Tank Status: **Permanently Out of Use**
Date Closed: 07/01/1997
Tank Capacity: 1000
Substance: Used Oil

Tank ID: R-87
Date Installed: 12/01/1981
Tank Status: **Permanently Out of Use**
Date Closed: 10/06/2002
Tank Capacity: 10000
Substance: Gasoline

Tank ID: R-89
Date Installed: 12/01/1981
Tank Status: **Permanently Out of Use**
Date Closed: 10/06/2002
Tank Capacity: 10000
Substance: Gasoline

Tank ID: R-92
Date Installed: 12/01/1981
Tank Status: **Permanently Out of Use**
Date Closed: 10/06/2002
Tank Capacity: 10000

LANCE GOYA CHEVRON (Continued) **U003402822**

Substance: Gasoline

Tank ID: R-T4
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 10/06/2002
Tank Capacity: 1000
Substance: Used Oil

Tank ID: R-T5
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 10/06/2002
Tank Capacity: 550
Substance: Gasoline

Tank ID: R-T6
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 10/06/2002
Tank Capacity: 550
Substance: Gasoline

ENG CONTROLS:
Supplemental Location Text: Not reported
Zip Suffix: Not reported
Island: Oahu
Potential Hazards And Controls: Hazard Managed With Controls
Engineering Control: Engineering Control Required

INST CONTROL:
Potential hazards and controls: Hazard Managed With Controls
Supplemental Location: Not reported
Zip Suffix: Not reported
Island: Oahu
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

HI Financial Assurance:
Alt Facility ID: 9-101259
Tank Id: R-89
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-87
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-T6
Tank Status: Permanently Out of Use

LANCE GOYA CHEVRON (Continued) **U003402822**

FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-T5
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-T5
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-T4
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-T4
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-92
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-89
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-T6
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-4B
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

LANCE GOYA CHEVRON (Continued) **U003402822**

Alt Facility ID: 9-101259
Tank Id: R-4B
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-4A
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-4A
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-87
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101259
Tank Id: R-92
Tank Status: Permanently Out of Use

LANCE GOYA CHEVRON (Continued) **U003402822**

FRTYPE: Other
Expiration Date: Not reported

H37 **373 NORTH NIMITZ HIGHWAY** **HI SHWS** **S106815507**
West **373 N NIMITZ HWY** **HI SPILLS** **N/A**
1/4-1/2 **HONOLULU, HI 96817**
0.420 mi.
2217 ft. **Site 1 of 2 in cluster H**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	373 North Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	110014030903
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	373 North Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	110014030903
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contaminationin soil and groundwater.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20051025-1618
HID Number:	Not reported
Facility Registry Id:	110014030903
Lead and Program:	HEER EP&R
ER:	No
Units:	Bunker-C Saturated Sand
Substances:	Oil

373 NORTH NIMITZ HIGHWAY (Continued) **S106815507**

Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Unknown
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2005-10-25 00:00:00
Result:	SOSC NFA
File Under:	Harry and Jeanette Weinberg Foundation
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20000914-0905
HID Number:	Not reported
Facility Registry Id:	110014030903
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Abandoned pipeline release
Substances:	Not reported
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Mike Cripps
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Harry and Jeanette Weinberg Foundation

H38 **STEELTECH INC** **HI LUST U003154735**
West **373 N NIMITZ HWY** **HI UST N/A**
1/4-1/2 **HONOLULU, HI 96817**
0.420 mi.
2217 ft. **Site 2 of 2 in cluster H**

Relative:
Lower

Actual:
3 ft.

LUST:

Facility ID:	9-102947
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	03/08/2006
Release ID:	940156
Project Officer:	Richard Takaba
Facility ID:	9-102947
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	03/08/2006
Release ID:	060004
Project Officer:	Richard Takaba

UST:

Facility ID:	9-102947
Owner:	HARRY & JEANETTE WEINBERG FOUNDATION
Owner Address:	3660 WAIALAE AVE, SUITE 400
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.314661
Longitude:	-157.866723
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1

STEELTECH INC (Continued) **U003154735**

Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 06/08/1994
Tank Capacity: 1000
Substance: Gasoline

39
ESE
1/4-1/2
0.429 mi.
2263 ft.

HIRAM'S CHEVRON SERVICE
140 S. SCHOOL ST
HONOLULU, HI 96813

HI LUST **1000150007**
HI UST **N/A**
HI Financial Assurance

Relative:
Higher

Actual:
73 ft.

LUST:
Facility ID: 9-101229
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 12/27/1994
Release ID: 880013
Project Officer: Raymond Seid

UST:
Facility ID: 9-101229
Owner: CHEVRON PRODUCTS COMPANY
Owner Address: Attn Permit Desk PO Box 6004
Owner City,St,Zip: Honolulu, 96813 96813
Latitude: 21.313860
Longitude: -157.853240
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: GPS

Tank ID: 4
Date Installed: 06/01/1982
Tank Status: **Currently in Use**
Date Closed: Not reported
Tank Capacity: 1000
Substance: Used Oil

Tank ID: 87
Date Installed: 06/01/1982
Tank Status: **Currently in Use**
Date Closed: Not reported
Tank Capacity: 10000
Substance: Gasoline

Tank ID: 87
Date Installed: 06/01/1982
Tank Status: **Currently in Use**
Date Closed: Not reported
Tank Capacity: 10000
Substance: Gasoline

Tank ID: 92
Date Installed: 06/01/1982
Tank Status: **Currently in Use**
Date Closed: Not reported

HIRAM'S CHEVRON SERVICE (Continued) **1000150007**

Tank Capacity: 10000
Substance: Gasoline

HI Financial Assurance:
Alt Facility ID: 9-101229
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 4
Tank Status: Currently in Use
FRTYPE: Guarantee
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Trust Fund
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Guarantee
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 87
Tank Status: Currently in Use
FRTYPE: Trust Fund
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 87
Tank Status: Currently in Use
FRTYPE: Guarantee
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 4
Tank Status: Currently in Use
FRTYPE: Trust Fund
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 4
Tank Status: Currently in Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101229
Tank Id: 87
Tank Status: Currently in Use
FRTYPE: Other
Expiration Date: Not reported

HIRAM'S CHEVRON SERVICE (Continued) **1000150007**

Alt Facility ID: 9-101229
Tank Id: 87
Tank Status: Currently in Use
FRTYPE: Self Insured
Expiration Date: 05/03/2012

Alt Facility ID: 9-101229
Tank Id: 4
Tank Status: Currently in Use
FRTYPE: Self Insured
Expiration Date: 05/03/2012

Alt Facility ID: 9-101229
Tank Id: 92
Tank Status: Currently in Use
FRTYPE: Self Insured
Expiration Date: 05/03/2012

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40 **STATE CAPITOL - TMK 2-1-33:25** **HI LUST U003154612**
SSE **235 S BERETANIA ST** **HI UST N/A**
1/4-1/2 **HONOLULU, HI 96813**
0.439 mi.
2316 ft.

Relative:
Higher

Actual:
23 ft.

LUST:
Facility ID: 9-102692
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 11/26/1999
Release ID: 930076
Project Officer: David Hodges

UST:
Facility ID: 9-102692
Owner: STATE DAGS - PROJECT MANAGEMENT BRANCH
Owner Address: 1151 PUNCHBOWL ST, RM 427
Owner City,St,Zip: Honolulu, 96813 96813
Latitude: 21.309447
Longitude: -157.858020
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: 12/30/1972
Tank Status: **Permanently Out of Use**
Date Closed: 03/03/1993
Tank Capacity: 1000
Substance: Diesel

Tank ID: R-2
Date Installed: 12/30/1972
Tank Status: **Permanently Out of Use**
Date Closed: 03/03/1993
Tank Capacity: 1000
Substance: Not Listed

I41 **VON HAMM TEXTILES** **HI SHWS** **S106820929**
WNW **546 KAAAHI ST** **HI SPILLS** **N/A**
1/4-1/2 **HONOLULU, HI 96817** **HI ENG CONTROLS**
0.444 mi. **HI INST CONTROL**
2346 ft. **Site 1 of 2 in cluster I**

Relative:
Higher

Actual:
7 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Von Hamm Textiles
HID Number:	Not reported
Facility Registry Identifier:	110013773309
Lead Agency:	HEER
Program:	State
Project Manager:	Eric Sadoyama
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Von Hamm Textiles
HID Number:	Not reported
Facility Registry Identifier:	110013773309
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Lead contamination in soil
Nature of Residual Contamination:	Lead in soil
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Excavation
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	03/10/2006
Document Number:	2006-141-ES
Document Subject:	Determination of "no further action" for Release ID 19960521-40
Project Manager:	Eric Sadoyama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19901023
HID Number:	Not reported
Facility Registry Id:	110013773309
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Kaaahi Street and Kaamahu Place, off Dillingham
Substances:	reported as chemicals
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Terry Corpus

VON HAMM TEXTILES (Continued) **S106820929**

Assignment End Date:	Not reported
Result:	Not reported
File Under:	G. Von Hamm Textiles, Inc.
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19960521-40
HID Number:	Not reported
Facility Registry Id:	110013773309
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	546 Kaaahi St
Substances:	Lead
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Mike Cripps
Assignment End Date:	Not reported
Result:	Not reported
File Under:	G. Von Hamm Textiles, Inc.

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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42 **ISLAND MOVERS, INC.** **HI LUST U003221626**
West **414 KUWILI STHONOLULU HARBOR PIER 42** **HI UST N/A**
1/4-1/2 **HONOLULU, HI 96817** **HI Financial Assurance**
0.445 mi.
2347 ft.

Relative:
Lower

Actual:
3 ft.

LUST:

Facility ID:	9-100936
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	07/24/2003
Release ID:	010005
Project Officer:	Shunsheng Fu

UST:

Facility ID:	9-100936
Owner:	ISLAND MOVERS, INC.
Owner Address:	P.O. BOX 17865414 KUWILI ST
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.316230
Longitude:	-157.866575

ISLAND MOVERS, INC. (Continued) **U003221626**

Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: 05/28/1971
Tank Status: **Permanently Out of Use**
Date Closed: 10/26/2000
Tank Capacity: 1000
Substance: Not Listed

Tank ID: R-2
Date Installed: 05/28/1971
Tank Status: **Permanently Out of Use**
Date Closed: 10/26/2001
Tank Capacity: 1000
Substance: Gasoline

Tank ID: R-3
Date Installed: 05/28/1971
Tank Status: **Permanently Out of Use**
Date Closed: 10/26/2000
Tank Capacity: 1000
Substance: Gasoline

Tank ID: R-4
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 10/26/2001
Tank Capacity: 1000
Substance: Not Listed

HI Financial Assurance:
Alt Facility ID: 9-100936
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-100936
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-100936
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: Not reported

Alt Facility ID: 9-100936
Tank Id: R-4
Tank Status: Permanently Out of Use
FRTYPE: Insurance

ISLAND MOVERS, INC. (Continued) **U003221626**

Expiration Date: Not reported

I43 **NUUANU AUTO COMPANY LTD** **HI SHWS** **S111704825**
WNW **545 KAAAHI ST** **N/A**
1/4-1/2 **HONOLULU, HI 96817**
0.445 mi.
2352 ft. **Site 2 of 2 in cluster I**

Relative:
Higher

Actual:
7 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Nuuanu Auto Company LTD
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Jordan Nakayama
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Nuuanu Auto Company LTD
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Jordan Nakayama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

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44 **7-11 NUUANU** **HI LUST** **U001235410**
ENE **1755 NUUANU AVE** **HI UST** **N/A**
1/4-1/2 **HONOLULU, HI 96817** **HI Financial Assurance**
0.452 mi.
2389 ft.

Relative:
Higher

Actual:
63 ft.

LUST:

Facility ID:	9-101196
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	11/12/1999

7-11 NUUANU (Continued) **U001235410**

Release ID: 900065
Project Officer: Jose Ruiz

UST:

Facility ID:	9-101196
Owner:	Mid Pac Petroleum LLC
Owner Address:	1100 Alakea Street, 8th floor
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.318900
Longitude:	-157.853160
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS

Tank ID:	87
Date Installed:	10/01/1993
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	92
Date Installed:	10/01/1993
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	R-1
Date Installed:	04/04/1968
Tank Status:	**Permanently Out of Use**
Date Closed:	10/06/1993
Tank Capacity:	4000
Substance:	Gasoline

Tank ID:	R-2
Date Installed:	04/04/1968
Tank Status:	**Permanently Out of Use**
Date Closed:	10/06/1993
Tank Capacity:	6000
Substance:	Gasoline

Tank ID:	R-3
Date Installed:	01/01/1970
Tank Status:	**Permanently Out of Use**
Date Closed:	10/06/1993
Tank Capacity:	8000
Substance:	Gasoline

HI Financial Assurance:

Alt Facility ID:	9-101196
Tank Id:	92
Tank Status:	Currently In Use

7-11 NUUANU (Continued) **U001235410**

FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101196
Tank Id: 87
Tank Status: Currently In Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101196
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101196
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101196
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101196
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 03/31/2015

Alt Facility ID: 9-101196
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 03/31/2015

Alt Facility ID: 9-101196
Tank Id: 92
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 03/31/2015

Alt Facility ID: 9-101196
Tank Id: 87
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 03/31/2015

Alt Facility ID: 9-101196
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 03/31/2015

J45
WNW
1/4-1/2
0.453 mi.
2390 ft.

YICK LUNG CO., INC.
580 DILLINGHAM BLVD
HONOLULU, HI 96817

HI LUST **U001235520**
HI UST **N/A**

Site 1 of 2 in cluster J

Relative:
Higher

Actual:
8 ft.

LUST:

Facility ID:	9-101500
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	11/17/1993
Release ID:	910068
Project Officer:	Raymond Seid

UST:

Facility ID:	9-101500
Owner:	YICK LUNG CO., INC.
Owner Address:	580 DILLINGHAM BLVD
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.318526
Longitude:	-157.866137
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	01/01/1960
Tank Status:	**Permanently Out of Use**
Date Closed:	Not reported
Tank Capacity:	1000
Substance:	Gasoline

46
SW
1/4-1/2
0.460 mi.
2430 ft.

C&CH WATERFRONT FIRE STATION
111 N NIMITZ HWY
HONOLULU, HI 96817

HI LUST **U001235045**
HI UST **N/A**

Relative:
Lower

Actual:
3 ft.

LUST:

Facility ID:	9-100097
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	02/07/1995
Release ID:	910027
Project Officer:	Eric Sadoyama

UST:

Facility ID:	9-100097
Owner:	C&C OF HNL - HONOLULU FIRE DEPARATMENT
Owner Address:	636 South Street
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.311303
Longitude:	-157.865284
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	01/30/1956
Tank Status:	**Permanently Out of Use**
Date Closed:	06/30/1991
Tank Capacity:	1000
Substance:	Diesel

47
NE
1/4-1/2
0.461 mi.
2433 ft.

MALULANI HALE
114 N KUAKINI ST
HONOLULU, HI 96800

HI LUST **U003154727**
HI UST **N/A**

Relative:
Higher

Actual:
59 ft.

LUST:

Facility ID:	9-102930
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	08/23/2005
Release ID:	940161
Project Officer:	Richard Takaba

UST:

Facility ID:	9-102930
Owner:	MALULANI HALE
Owner Address:	114 N KUAKINI ST
Owner City,St,Zip:	Honolulu, 96800 96800
Latitude:	21.320213
Longitude:	-157.854231
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	06/24/1994
Tank Capacity:	150
Substance:	Diesel

J48
WNW
1/4-1/2
0.473 mi.
2500 ft.

YICK LUNG CO., INC.
602 DILLINGHAM BLVD
HONOLULU, HI 96817

Site 2 of 2 in cluster J

HI LUST **U001235519**
HI UST **N/A**

Relative:
Higher

Actual:
9 ft.

LUST:

Facility ID:	9-101499
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	02/08/1994
Release ID:	940084
Project Officer:	Raymond Seid

UST:

Facility ID:	9-101499
Owner:	YICK LUNG CO., INC.
Owner Address:	580 DILLINGHAM BLVD
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.318518
Longitude:	-157.866417
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	12/30/1958
Tank Status:	**Permanently Out of Use**
Date Closed:	06/27/1991
Tank Capacity:	3000
Substance:	Gasoline

YICK LUNG CO., INC. (Continued) **U001235519**

Tank ID:	R-2
Date Installed:	12/30/1958
Tank Status:	**Permanently Out of Use**
Date Closed:	06/28/1991
Tank Capacity:	2000
Substance:	Gasoline

Tank ID:	R-3
Date Installed:	12/30/1958
Tank Status:	**Permanently Out of Use**
Date Closed:	06/28/1991
Tank Capacity:	5000
Substance:	Gasoline

Tank ID:	R-4
Date Installed:	12/30/1958
Tank Status:	**Permanently Out of Use**
Date Closed:	06/28/1991
Tank Capacity:	280
Substance:	Used Oil

---

49 **KUAKINI MEDICAL CENTER#** **RCRA-SQG** **1000270690**
NNE **347 N KUAKINI ST** **FINDS** **HID077701613**
1/4-1/2 **HONOLULU, HI 96817** **HI SHWS**
0.491 mi. **HI LUST**
2595 ft. **HI UST**
HI SPILLS
Relative: **HI Financial Assurance**
Higher

Actual: RCRA-SQG:
70 ft.

Date form received by agency:	08/19/1980
Facility name:	KUAKINI MEDICAL CENTER#
Facility address:	347 N KUAKINI ST HONOLULU, HI 96817
EPA ID:	HID077701613
Contact:	STEPHEN S THOMAS
Contact address:	347 N KUAKINI ST HONOLULU, HI 96817
Contact country:	US
Contact telephone:	(808) 547-9299
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	KUAKINI MEDICAL CENTER CORPORATION
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(415) 555-1212

KUAKINI MEDICAL CENTER# (Continued) **1000270690**

Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 08/08/1980
Site name: KUAKINI MEDICAL CENTER#
Classification: Small Quantity Generator

Violation Status: No violations found

FINDS:

Registry ID: 110046154790

Environmental Interest/Information System
STATE MASTER

SHWS:
Organization: Not reported
Supplemental Location: Kuakini Medical Center
Island: Oahu
Environmental Interest: Kuakini Medical Center
HID Number: Not reported
Facility Registry Identifier: 110005723262
Lead Agency: HEER
Program: State

KUAKINI MEDICAL CENTER# (Continued) **1000270690**

Project Manager:	Paul Chong
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Kuakini Medical Center
SDAR Environmental Interest Name:	Kuakini Medical Center
HID Number:	Not reported
Facility Registry Identifier:	110005723262
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Assessment Ongoing
Response:	Response Ongoing
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Paul Chong
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-100264
Facility Status:	Site Cleanup Completed with EHE/EHMP
Facility Status Date:	03/21/2014
Release ID:	100019
Project Officer:	Shaobin Li

Facility ID:	9-100264
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	07/31/1997
Release ID:	910061
Project Officer:	Shaobin Li

Facility ID:	9-100264
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	09/22/1998
Release ID:	980098
Project Officer:	Shaobin Li

UST:

Facility ID:	9-100264
Owner:	KUAKINI MEDICAL CENTER
Owner Address:	347 NORTH KUAKINI ST
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.321500
Longitude:	-157.856950
Horizontal Reference Datum Name:	NAD83

KUAKINI MEDICAL CENTER# (Continued) **1000270690**

Horizontal Collection Method Name: GPS

Tank ID: M-1
Date Installed: 05/01/1998
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 2500
Substance: Diesel

Tank ID: M-2
Date Installed: 02/21/1999
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 600
Substance: Diesel

Tank ID: R-3
Date Installed: 03/20/1980
Tank Status: **Permanently Out of Use**
Date Closed: 03/07/1991
Tank Capacity: 550
Substance: Diesel

Tank ID: R-M-1
Date Installed: 03/20/1980
Tank Status: **Permanently Out of Use**
Date Closed: Not reported
Tank Capacity: 5000
Substance: Diesel

Tank ID: R-M-2
Date Installed: 03/20/1982
Tank Status: **Permanently Out of Use**
Date Closed: 04/15/1998
Tank Capacity: 1000
Substance: Diesel

HI SPILLS:
Island: Oahu
Supplemental Loc. Text: Kuakini Medical Center
Case Number: 20100430-0840
HID Number: Not reported
Facility Registry Id: 110005723262
Lead and Program: HEER EP&R
ER: None
Units: Kuakini Medical Center contaminated soil
Substances: Diesel Fuel
Less Or Greater Than: Not reported
Numerical Quantity: 0
Units: Unknown
Activity Type: Response
Activity Lead: Liz Galvez
Assignment End Date: 2010-05-04 00:00:00

KUAKINI MEDICAL CENTER# (Continued) **1000270690**

Result: Refer to SHWB
File Under: Kuakini Health System

HI Financial Assurance:
Alt Facility ID: 9-100264
Tank Id: M-1
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 10/01/2010

Alt Facility ID: 9-100264
Tank Id: M-2
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 10/01/2010

Alt Facility ID: 9-100264
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 10/01/2010

Alt Facility ID: 9-100264
Tank Id: R-M-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 10/01/2010

Alt Facility ID: 9-100264
Tank Id: R-M-2
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 10/01/2010

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50 NW 1/4-1/2 0.493 mi. 2603 ft. **KING SHELL FOODMART** **HI LUST U001235340**
666 N KING ST **HI UST N/A**
HONOLULU, HI 96817 **HI Financial Assurance**

Relative: Higher

Actual: 13 ft.

LUST:
Facility ID: 9-101026
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 11/01/2002
Release ID: 020033
Project Officer: Shaobin Li

Facility ID: 9-101026
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 07/08/2011
Release ID: 080030
Project Officer: Shaobin Li

Facility ID: 9-101026
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 11/07/2003
Release ID: 030030

KING SHELL FOODMART (Continued) **U001235340**

Project Officer: Shaobin Li

UST:

Facility ID:	9-101026
Owner:	ALOHA PETROLEUM, LTD.
Owner Address:	1132 BISHOP STREET, SUITE 1700
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.320274
Longitude:	-157.865711
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS

Tank ID:	87
Date Installed:	04/18/1984
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

Tank ID:	89
Date Installed:	04/18/1984
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Diesel

Tank ID:	92
Date Installed:	04/18/1984
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Gasoline

HI Financial Assurance:

Alt Facility ID:	9-101026
Tank Id:	87
Tank Status:	Currently In Use
FRTYPE:	Other
Expiration Date:	Not reported

Alt Facility ID:	9-101026
Tank Id:	92
Tank Status:	Currently In Use
FRTYPE:	Other
Expiration Date:	Not reported

Alt Facility ID:	9-101026
Tank Id:	89
Tank Status:	Currently In Use
FRTYPE:	Other
Expiration Date:	Not reported

Alt Facility ID:	9-101026
Tank Id:	92

KING SHELL FOODMART (Continued) **U001235340**

Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

Alt Facility ID: 9-101026
Tank Id: 87
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

Alt Facility ID: 9-101026
Tank Id: 89
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 04/01/2014

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51 **420-470 NORTH NIMITZ HIGHWAY** **HI SHWS** **S106815536**
West **420-470 N NIMITZ HWY** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI 96817**
0.522 mi.
2756 ft.

Relative:
Lower

Actual:
3 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: 420-470 North Nimitz Highway
HID Number: Not reported
Facility Registry Identifier: 110013783511
Lead Agency: HEER
Program: State
Project Manager: Steve Mow
Hazard Priority: Low
Potential Hazards And Controls: Hazard Managed With Controls
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: 420-470 North Nimitz Highway
HID Number: Not reported
Facility Registry Identifier: 110013783511
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Managed With Controls
Priority: Low
Assessment: Response Necessary
Response: Response Ongoing
Nature of Contamination: Found: Subsurface petroleum contamination in soil.
Nature of Residual Contamination: Not reported
Use Restrictions: Controls Required to Manage Contamination
Engineering Control: Engineering Control Required
Description of Restrictions: Prohibit Any Activity That May Disturb the Integrity of the Capping System and prohibit disturbance of the soil.
Institutional Control: Not reported
Within Designated Areawide Contamination: Honolulu Harbor Iwilei Unit
Site Closure Type: Not reported
Document Date: Not reported
Document Number: Not reported
Document Subject: Not reported

420-470 NORTH NIMITZ HIGHWAY (Continued) **S106815536**

Project Manager: Steve Mow
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:
Supplemental Location Text: Not reported
Zip Suffix: Not reported
Island: Oahu
Potential Hazards And Controls: Hazard Managed With Controls
Engineering Control: Engineering Control Required

52
WNW
1/2-1
0.527 mi.
2782 ft.

HAWAIIAN GAS PRODUCTS LTD **EDR MGP** **1008409006**
516-520 KUWILI ST **N/A**
HONOLULU, HI 96817

Relative:
Higher

Actual:
7 ft.

Manufactured Gas Plants:
Alternate Name:GASPRO LTD. No additional information available

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53
SSW
1/2-1
0.554 mi.
2923 ft.

HARBOR COURT **HI SHWS** **1006820894**
66 QUEEN ST **N/A**
HONOLULU, HI 96813

Relative:
Higher

Actual:
7 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Harbor Court
HID Number: Not reported
Facility Registry Identifier: 110013789212
Lead Agency: Not reported
Program: State
Project Manager: Unassigned
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Harbor Court
HID Number: Not reported
Facility Registry Identifier: 110013789212
Lead Agency: Not reported
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: NFA
Assessment: Assessment Ongoing
Response: Not reported
Nature of Contamination: Not reported
Nature of Residual Contamination: Not reported
Use Restrictions: Undetermined
Engineering Control: Not reported
Description of Restrictions: Not reported

HARBOR COURT (Continued) **1006820894**

Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action - Type Undetermined
Document Date:	12/21/1994
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Unassigned
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

54
West
1/2-1
0.558 mi.
2946 ft.

Relative:
Higher

Actual:
7 ft.

TRAVEL PLAZA TRANSPORTATION, LLC **HI SHWS** **U003154753**
818 PINE ST **HI LUST** **N/A**
HONOLULU, HI 96817 **HI UST**
HI Financial Assurance

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Travel Plaza Transportation, LLC
HID Number:	Not reported
Facility Registry Identifier:	110005728061
Lead Agency:	HEER
Program:	State
Project Manager:	Richard Palmer
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Travel Plaza Transportation, LLC
HID Number:	Not reported
Facility Registry Identifier:	110005728061
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: petroleum products from leaking UST
Nature of Residual Contamination:	Not reported
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	05/22/2006
Document Number:	2006-315-CAC
Document Subject:	No Further Action letter
Project Manager:	Richard Palmer
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-102991
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	07/31/1997

TRAVEL PLAZA TRANSPORTATION, LLC (Continued) **U003154753**

Release ID: 960094
Project Officer: Jose Ruiz

Facility ID: 9-102991
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 07/31/1997
Release ID: 950040
Project Officer: Jose Ruiz

UST:
Facility ID: 9-102991
Owner: TRAVEL PLAZA TRANSPORTATION, LLC
Owner Address: 818 PINE ST
Owner City,St,Zip: Honolulu, 96817 96817
Latitude: 21.317262
Longitude: -157.868230
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Map

Tank ID: 1A
Date Installed: 09/01/1996
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 8000
Substance: Diesel

Tank ID: 1B
Date Installed: 09/01/1996
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 2000
Substance: Gasoline

Tank ID: 2
Date Installed: 09/01/1995
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 750
Substance: Used Oil

Tank ID: R-1
Date Installed: 02/01/1986
Tank Status: **Permanently Out of Use**
Date Closed: 12/27/1994
Tank Capacity: 550
Substance: Used Oil

Tank ID: R-2
Date Installed: 02/01/1986
Tank Status: **Permanently Out of Use**
Date Closed: 09/02/1996
Tank Capacity: 3000
Substance: Gasoline

TRAVEL PLAZA TRANSPORTATION, LLC (Continued) **U003154753**

Tank ID: R-3
Date Installed: 02/01/1986
Tank Status: **Permanently Out of Use**
Date Closed: 09/02/1996
Tank Capacity: 5000
Substance: Diesel

HI Financial Assurance:
Alt Facility ID: 9-102991
Tank Id: 2
Tank Status: Currently In Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-102991
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-102991
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-102991
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-102991
Tank Id: 1B
Tank Status: Currently In Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-102991
Tank Id: 1A
Tank Status: Currently In Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-102991
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 07/01/2015

Alt Facility ID: 9-102991
Tank Id: 1B
Tank Status: Currently In Use
FRTYPE: Insurance
Expiration Date: 07/01/2015

Alt Facility ID: 9-102991

TRAVEL PLAZA TRANSPORTATION, LLC (Continued) **U003154753**

Tank Id:	R-2
Tank Status:	Permanently Out of Use
FRTYPE:	Insurance
Expiration Date:	07/01/2015
Alt Facility ID:	9-102991
Tank Id:	R-3
Tank Status:	Permanently Out of Use
FRTYPE:	Insurance
Expiration Date:	07/01/2015
Alt Facility ID:	9-102991
Tank Id:	1A
Tank Status:	Currently In Use
FRTYPE:	Insurance
Expiration Date:	07/01/2015
Alt Facility ID:	9-102991
Tank Id:	2
Tank Status:	Currently In Use
FRTYPE:	Insurance
Expiration Date:	07/01/2015

55
West
1/2-1
0.594 mi.
3138 ft.

MID PAC PETROLEUM LLC 2705958
540 N NIMITZ HWY
HONOLULU, HI 96817

HI SHWS **U001235004**
HI LUST **N/A**
HI UST
HI Financial Assurance

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Omega
Island:	Oahu
Environmental Interest:	Alii #3282
HID Number:	Not reported
Facility Registry Identifier:	110009360093
Lead Agency:	SHWB/HEER
Program:	State
Project Manager:	Kelton Otsuka
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Omega
SDAR Environmental Interest Name:	Alii #3282
HID Number:	Not reported
Facility Registry Identifier:	110009360093
Lead Agency:	SHWB/HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported

MID PAC PETROLEUM LLC 2705958 (Continued) **U001235004**

Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Kelton Otsuka
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-100017
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	07/07/2000
Release ID:	970015
Project Officer:	Shunsheng Fu

Facility ID:	9-100017
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	01/12/2011
Release ID:	920166
Project Officer:	Shunsheng Fu

Facility ID:	9-100017
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	02/09/2009
Release ID:	080018
Project Officer:	Shunsheng Fu

Facility ID:	9-100017
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	11/25/2008
Release ID:	070010
Project Officer:	Shunsheng Fu

UST:

Facility ID:	9-100017
Owner:	Mid Pac Petroleum LLC
Owner Address:	677 Ala Moana Blvd Suite 625
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.314051
Longitude:	-157.868452
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	GPS

Tank ID:	R-3
Date Installed:	06/01/1989
Tank Status:	**Permanently Out of Use**
Date Closed:	06/18/2001
Tank Capacity:	6000
Substance:	Diesel

Tank ID:	R-3282-1
Date Installed:	04/15/1969
Tank Status:	**Permanently Out of Use**
Date Closed:	06/01/1990

MID PAC PETROLEUM LLC 2705958 (Continued) **U001235004**

Tank Capacity: 10000
Substance: Gasoline

Tank ID: R-3282-2
Date Installed: 04/15/1969
Tank Status: **Permanently Out of Use**
Date Closed: 06/01/1990
Tank Capacity: 10000
Substance: Gasoline

Tank ID: R-3282-4
Date Installed: 04/01/1969
Tank Status: **Permanently Out of Use**
Date Closed: 06/01/1990
Tank Capacity: 1000
Substance: Used Oil

Tank ID: R-3282-7
Date Installed: 06/18/1990
Tank Status: **Permanently Out of Use**
Date Closed: 10/01/1996
Tank Capacity: 520
Substance: Used Oil

Tank ID: R-4
Date Installed: 06/01/1989
Tank Status: **Permanently Out of Use**
Date Closed: 06/18/2001
Tank Capacity: 6000
Substance: Diesel

Tank ID: r-1
Date Installed: Not reported
Tank Status: **Permanently out of Use**
Date Closed: 04/07/2008
Tank Capacity: 2000
Substance: Gasoline

Tank ID: r-2
Date Installed: Not reported
Tank Status: **Permanently out of Use**
Date Closed: 04/07/2008
Tank Capacity: 2000
Substance: Gasoline

Tank ID: r-3
Date Installed: Not reported
Tank Status: **Permanently out of Use**
Date Closed: 04/07/2008
Tank Capacity: 5000

MID PAC PETROLEUM LLC 2705958 (Continued) **U001235004**

Substance: Diesel

Tank ID: r-4
Date Installed: Not reported
Tank Status: **Permanently out of Use**
Date Closed: 04/07/2008
Tank Capacity: 2000
Substance: Gasoline

Tank ID: r-5
Date Installed: Not reported
Tank Status: **Permanently out of Use**
Date Closed: 04/07/2008
Tank Capacity: 2000
Substance: Gasoline

Tank ID: r-5
Date Installed: Not reported
Tank Status: **Permanently out of Use**
Date Closed: 04/08/2008
Tank Capacity: 2000
Substance: Not reported

Tank ID: r-87
Date Installed: 06/18/1990
Tank Status: **Permanently out of Use**
Date Closed: 01/29/2007
Tank Capacity: 12000
Substance: Gasoline

Tank ID: r-92
Date Installed: 06/18/1990
Tank Status: **Permanently out of Use**
Date Closed: 01/29/2007
Tank Capacity: 12000
Substance: Gasoline

HI Financial Assurance:
Alt Facility ID: 9-100017
Tank Id: r-87
Tank Status: Permanently out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: r-92
Tank Status: Permanently out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: r-5

MID PAC PETROLEUM LLC 2705958 (Continued) **U001235004**

Tank Status: Permanently out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: R-4
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: R-3282-7
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: R-3282-2
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: R-3282-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: r-1
Tank Status: Permanently out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: r-2
Tank Status: Permanently out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

Alt Facility ID: 9-100017
Tank Id: R-3282-4
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 09/01/2006

56
SSE
1/2-1
0.598 mi.
3159 ft.

QUEEN'S MEDICAL CENTER
1301 PUNCHBOWL ST
HONOLULU, HI 96813

HI SHWS **1000490311**
HI LUST **N/A**
HI UST
HI AIRS

Relative:
Higher

Actual:
20 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Queen's Medical Center UST
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Eric Sadoyama
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Queen's Medical Center UST
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	NFA
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: Petroleum in soil
Nature of Residual Contamination:	No (petroleum in soil) contamination left on site is above EALs.
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action - Type Undetermined
Document Date:	08/11/2006
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Eric Sadoyama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-100901
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	09/24/1999
Release ID:	990096
Project Officer:	Richard Takaba

UST:

Facility ID:	9-100901
Owner:	QUEEN'S Medical Center
Owner Address:	1301 Punchbowl St.
Owner City,St,Zip:	Honolulu, 96813 96813
Latitude:	21.309010
Longitude:	-157.853940

QUEEN'S MEDICAL CENTER (Continued) **1000490311**

Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: GPS

Tank ID: M-1
Date Installed: 04/09/1985
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 14000
Substance: Diesel

Tank ID: M-1
Date Installed: 04/09/1985
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 14000
Substance: Diesel

Tank ID: R-4
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 12/17/1998
Tank Capacity: 1000
Substance: Not Listed

Tank ID: R-4
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 12/17/1998
Tank Capacity: 1000
Substance: Not Listed

Tank ID: m-2-Mauka
Date Installed: 12/22/2006
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 20000
Substance: Diesel

Tank ID: m-2-Mauka
Date Installed: 12/22/2006
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 20000
Substance: Diesel

Tank ID: m-3-Makai
Date Installed: 12/22/2006
Tank Status: **Currently In Use**
Date Closed: Not reported
Tank Capacity: 20000
Substance: Diesel

QUEEN'S MEDICAL CENTER (Continued) **1000490311**

Tank ID:	m-3-Makai
Date Installed:	12/22/2006
Tank Status:	**Currently In Use**
Date Closed:	Not reported
Tank Capacity:	20000
Substance:	Diesel

AIRS:

Facility ID:	0353-02-C
Island:	Oahu
Mailing Address:	1301 Punchbowl Street
Locale:	Not reported
Business Phone:	808-691-4426
Mailing City,St,Zip:	Honolulu, HI 96813
Contact Name:	Bob Laube
Contact Title:	Facility Engineer
Description:	Four (4) 3,286 bhp Diesel Engine Generators and Two (2) 8.2 MMBtu/hr Steam BoilersAttachment IIAThis attachment encompasses the following equipment and associated appurtenances:a. One (1) 3,286 bhp Caterpillar Diesel Engine Generator set, model no. 3516B, serial no. PBR00266, manufactured in November 2006, unit no. U-1;b. One (1) 3,286 bhp Caterpillar Diesel Engine Generator set, model no. 3516B, serial no. PBR00267, manufactured in November 2006, unit no. U-2;c. One (1) 3,286 bhp Caterpillar Diesel Engine Generator set, model no. 3516B, serial no. PBR00268, manufactured in November 2006, unit no. U-3; andd. One (1) 3,286 bhp Caterpillar Diesel Engine Generator set, model no. 3516B, serial no. PBR00269, manufactured in November 2006, unit no. U-4.Attachment IIBThis attachment encompasses the following equipment and associated appurtenances:a. One (1) 8.2 MMBtu/hr fire tube steam boilers, Cleaver Brooks model no. CB200-200-150, serial nos. OL103324; andb. One (1) 8.2 MMBtu/hr fire tube steam boilers, Cleaver Brooks model no. CB200-200-150, serial nos. OL103325.

57
NE
1/2-1
0.604 mi.
3188 ft.

RICHARD'S CHEVRON
1909 NUUANU AVE
HONOLULU, HI 96817

HI SHWS **1000601437**
HI SPILLS **N/A**
HI INST CONTROL
HI Financial Assurance

Relative:
Higher

Actual:
69 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	At Pauoa Rd
Island:	Oahu
Environmental Interest:	Richard's Chevron
HID Number:	Not reported
Facility Registry Identifier:	110005727320
Lead Agency:	HEER
Program:	State
Project Manager:	Cal Miyahara
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	At Pauoa Rd
SDAR Environmental Interest Name:	Richard's Chevron
HID Number:	Not reported
Facility Registry Identifier:	110005727320

RICHARD'S CHEVRON (Continued) **1000601437**

Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: TPH-D,r and PCE in soils above Indus/Comm Tier I levels.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	01/24/2012
Document Number:	Not reported
Document Subject:	Offsite Assessment Report Nuuanu Service Station #9-3875
Project Manager:	Cal Miyahara
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	At Pauoa Rd
Case Number:	20061026-0855
HID Number:	Not reported
Facility Registry Id:	110005727320
Lead and Program:	HEER EP&R
ER:	No -
Units:	Hydraulic Oil & other Contaminants Released
Substances:	Hydraulic Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Paul Chong
Assignment End Date:	2006-10-26 00:00:00
Result:	Refer to SDAR
File Under:	Chevron Products Company

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	At Pauoa Rd
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

HI Financial Assurance:

Alt Facility ID:	9-101101
Tank Id:	92
Tank Status:	Currently In Use
FRTYPE:	Other
Expiration Date:	Not reported

Alt Facility ID:	9-101101
Tank Id:	87
Tank Status:	Currently In Use

RICHARD'S CHEVRON (Continued) **1000601437**

FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101101
Tank Id: r-4
Tank Status: Permanently out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101101
Tank Id: 92
Tank Status: Currently In Use
FRTYPE: Self Insured
Expiration Date: 04/30/2010

Alt Facility ID: 9-101101
Tank Id: r-4
Tank Status: Permanently out of Use
FRTYPE: Self Insured
Expiration Date: 04/30/2010

Alt Facility ID: 9-101101
Tank Id: 87
Tank Status: Currently In Use
FRTYPE: Self Insured
Expiration Date: 04/30/2010

Alt Facility ID: 9-101101
Tank Id: 92
Tank Status: Currently In Use
FRTYPE: Guarantee
Expiration Date: 04/24/2014

Alt Facility ID: 9-101101
Tank Id: 87
Tank Status: Currently In Use
FRTYPE: Guarantee
Expiration Date: 04/24/2014

Alt Facility ID: 9-101101
Tank Id: r-4
Tank Status: Permanently out of Use
FRTYPE: Guarantee
Expiration Date: 04/24/2014

58
WNW
1/2-1
0.634 mi.
3345 ft.

DOLE IWILEI
801 DILLINGHAM BLVD
HONOLULU, HI 96817

HI SHWS **S106816902**
HI SPILLS **N/A**
HI INST CONTROL

Relative:
Higher

Actual:
10 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Dole Cannery
HID Number: HID981424385
Facility Registry Identifier: 110002148729

DOLE IWILEI (Continued) **S106816902**

Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Dole Cannery
HID Number:	HID981424385
Facility Registry Identifier:	110002148729
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Medium
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: petroleum in soil
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19880805
HID Number:	HID981424385
Facility Registry Id:	110002148729
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	IWILEI RD. 650 (DOLE PINEAPPLE) ammonia leak from condenser #3
Substances:	Ammonia
Less Or Greater Than:	Not reported
Numerical Quantity:	500
Units:	Pounds
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Dole Food Company Hawaii

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19880815
HID Number:	HID981424385
Facility Registry Id:	110002148729
Lead and Program:	HEER EP&R
ER:	Not reported

DOLE IWILEI (Continued) **S106816902**

Units:	DOLE CANNERY, IWILEI RD. 650 accidential release of ammonia found
Substances:	Ammonia
Less Or Greater Than:	Not reported
Numerical Quantity:	500
Units:	Pounds
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Dole Food Company Hawaii
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19880907
HID Number:	HID981424385
Facility Registry Id:	110002148729
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	IWILEI RD. 650 (DOLE PINEAPPLE) ammonia leak
Substances:	Ammonia
Less Or Greater Than:	Not reported
Numerical Quantity:	500
Units:	Pounds
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Dole Food Company Hawaii
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19880927
HID Number:	HID981424385
Facility Registry Id:	110002148729
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	IWILEI RD. 650 (DOLE PINEAPPLE) ammonia leak from condenser #1
Substances:	Ammonia
Less Or Greater Than:	Not reported
Numerical Quantity:	500
Units:	Pounds
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Dole Food Company Hawaii
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19881025
HID Number:	HID981424385
Facility Registry Id:	110002148729
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	DOLE CANNERY, IWILEI RD. 650 refrigeration ammonia leak
Substances:	Ammonia
Less Or Greater Than:	Not reported

DOLE IWILEI (Continued) **S106816902**

Numerical Quantity:	300
Units:	Pounds
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Dole Food Company Hawaii

Click this hyperlink while viewing on your computer to access
6 additional HI SPILLS: record(s) in the EDR Site Report.

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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59 **IWILEI BUSINESS CENTER** **HI SHWS** **S106817968**
West **501 SUMNER ST** **HI SPILLS** **N/A**
1/2-1 **HONOLULU, HI 96814** **HI INST CONTROL**
0.642 mi.
3391 ft.

Relative:
Higher

Actual:
7 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Iwilei Business Center
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Iwilei Business Center
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: TPH-D in soil and groundwater. To be characterized and remediated when site is redevelped.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not feasible to assess area under buildings before redevelopment.
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	No Further Action Letter - Restricted Use

IWILEI BUSINESS CENTER (Continued) **S106817968**

Document Date:	12/12/2005
Document Number:	2005-647-MS
Document Subject:	Review of pipeline report. No further work required until they re-develop. Must submit a Phase I
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20041223-1230
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Referred
Units:	Del Monte/IBC Black Oil Tank
Substances:	Bunker C Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Unknown
Activity Type:	Response
Activity Lead:	Mike Cripps
Assignment End Date:	2005-10-14 00:00:00
Result:	Refer to ISST
File Under:	California Packing/Del Monte/Iwilei Business Center

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20050406-1057
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	No
Units:	Unknown Substance
Substances:	Unknown
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	2005-10-28 00:00:00
Result:	SOSC NFA
File Under:	California Packing/Del Monte/Iwilei Business Center

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

K60 **580 NORTH NIMITZ HIGHWAY** **HI SHWS** **S109096040**
West **580 N NIMITZ HWY** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI 96817**
0.649 mi.
3429 ft. **Site 1 of 2 in cluster K**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	550 N Nimitz Hwy Inbound
Island:	Oahu
Environmental Interest:	580 North Nimitz
HID Number:	Not reported
Facility Registry Identifier:	110013768495
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	550 N Nimitz Hwy Inbound
SDAR Environmental Interest Name:	580 North Nimitz
HID Number:	Not reported
Facility Registry Identifier:	110013768495
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System and prohibit disturbance of the soil.
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	550 N Nimitz Hwy Inbound
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

K61 **CITY MILL** **HI SHWS** **U001235472**
West **660 N NIMITZ HWY** **HI LUST** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI UST**
0.667 mi. **HI INST CONTROL**
3521 ft. **Site 2 of 2 in cluster K**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	City Mill Company, Ltd.
HID Number:	Not reported
Facility Registry Identifier:	110013779189
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	City Mill Company, Ltd.
HID Number:	Not reported
Facility Registry Identifier:	110013779189
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	This site is adjacent to OU2 of the Iwilei District Project. Data suggest impact to the site from the corridor. There is still contamination left in place and will require soil management.
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	05/15/2008
Document Number:	2008-332-CAC
Document Subject:	Review and comments on Final Monitoring Well Installation and Environmental Sampling Summary Report,
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-101398
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	03/15/2010
Release ID:	930073
Project Officer:	Shunsheng Fu

UST:

Facility ID:	9-101398
Owner:	UNOCAL CORPORATION
Owner Address:	3915 Mission Avenue #7416

CITY MILL (Continued) **U001235472**

Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.314167
Longitude:	-157.871014
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Map

Tank ID:	R-A
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	03/08/1993
Tank Capacity:	2000
Substance:	Diesel

Tank ID:	R-B
Date Installed:	08/20/1973
Tank Status:	**Permanently Out of Use**
Date Closed:	03/08/1993
Tank Capacity:	1000
Substance:	Other

Tank ID:	R-C
Date Installed:	08/20/1973
Tank Status:	**Permanently Out of Use**
Date Closed:	03/08/1993
Tank Capacity:	500
Substance:	Gasoline

Tank ID:	R-D
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	03/08/1993
Tank Capacity:	5000
Substance:	Diesel

Tank ID:	R-E
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	03/08/1993
Tank Capacity:	2000
Substance:	Not Listed

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

62
SE
1/2-1
0.678 mi.
3578 ft.

1510 FREAR STREET
1510 FREAR ST
HONOLULU, HI 96813

HI SHWS **S107024174**
HI SPILLS **N/A**

Relative:
Higher

Actual:
69 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Unit A
Island:	Oahu
Environmental Interest:	1510A Frear Street
HID Number:	Not reported
Facility Registry Identifier:	110013783478
Lead Agency:	HEER
Program:	State
Project Manager:	Eric Sadoyama
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Unit A
SDAR Environmental Interest Name:	1510A Frear Street
HID Number:	Not reported
Facility Registry Identifier:	110013783478
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Not Necessary
Response:	Not reported
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Appears to be a small motor oil release that has attenuated.
Use Restrictions:	No Hazard Present for Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	07/15/2005
Document Number:	2005-351-ES
Document Subject:	"No further action" determination
Project Manager:	Eric Sadoyama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Unit A
Case Number:	19950404
HID Number:	Not reported
Facility Registry Id:	110013783478
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	1510A Frear Street
Substances:	Not reported
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Chris Takeno

1510 FREAR STREET (Continued) **S107024174**

Assignment End Date: Not reported
Result: Refer to ISST
File Under: 1510A Frear Street

63
WSW
1/2-1
0.685 mi.
3615 ft.

ZIPPY'S 634 N NIMITZ HIGHWAY
634 N NIMITZ HWY
HONOLULU, HI 96781

HI SHWS **S110061866**
HI SPILLS **N/A**
HI ENG CONTROLS
HI INST CONTROL

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Zippy's 634 N Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	High
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Zippy's 634 N Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	High
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Presumed: Petroleum.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20081029-0827
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Zippys Contamination IDPP led remediation

ZIPPY'S 634 N NIMITZ HIGHWAY (Continued) **S110061866**

Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Not reported
Activity Type:	Response
Activity Lead:	Anna Fernandez
Assignment End Date:	Not reported
Result:	Refer to SDAR
File Under:	Zippy's, Inc.

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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L64 **HAWAIIAN GRAIN CORPORATION** **HI SHWS** **U003402808**
WSW **701 N NIMITZ HWY** **HI LUST** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI UST**
0.725 mi.
3828 ft. **Site 1 of 3 in cluster L**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Fred L. Waldron Feed Mill
HID Number:	Not reported
Facility Registry Identifier:	110013789640
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Fred L. Waldron Feed Mill
HID Number:	Not reported
Facility Registry Identifier:	110013789640
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: petroleum in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined

HAWAIIAN GRAIN CORPORATION (Continued) **U003402808**

Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-100852
Facility Status:	Case Transferred to HEER (regulated)
Facility Status Date:	01/22/2010
Release ID:	920157
Project Officer:	To Heer

UST:

Facility ID:	9-100852
Owner:	HAWAIIAN GRAIN CORP.
Owner Address:	701 N NIMITZ HWY
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.312966
Longitude:	-157.869873
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Map

Tank ID:	R-001
Date Installed:	02/21/1956
Tank Status:	**Permanently Out of Use**
Date Closed:	10/06/1993
Tank Capacity:	1000
Substance:	Other

Tank ID:	R-002
Date Installed:	02/21/1967
Tank Status:	**Permanently Out of Use**
Date Closed:	10/06/1993
Tank Capacity:	550
Substance:	Gasoline

Tank ID:	R-003
Date Installed:	02/21/1967
Tank Status:	**Permanently Out of Use**
Date Closed:	10/06/1993
Tank Capacity:	8000
Substance:	Diesel

65
WSW
1/2-1
0.729 mi.
3850 ft.

SAUSE BROTHERS
ALAKEA ST
HONOLULU, HI 96817

HI SHWS **S107024013**
HI SPILLS **N/A**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Honolulu Harbor Pier 20
Island:	Oahu
Environmental Interest:	Sause Brothers
HID Number:	Not reported
Facility Registry Identifier:	110013778778
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Honolulu Harbor Pier 20
SDAR Environmental Interest Name:	Sause Brothers
HID Number:	Not reported
Facility Registry Identifier:	110013778778
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 20
Case Number:	20051110-1513
HID Number:	Not reported
Facility Registry Id:	110013778778
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Sause Brothers Pier
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	1
Units:	Ounces
Activity Type:	Response
Activity Lead:	Paul Chong

SAUSE BROTHERS (Continued) **S107024013**

Assignment End Date:	2005-11-10 00:00:00
Result:	SOSC NFA
File Under:	Sause Brothers
Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 20
Case Number:	19930415
HID Number:	Not reported
Facility Registry Id:	110013778778
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Sause Brothers at Piers 19-20, Honolulu Harbor, Honolulu, Oahu, HI
Substances:	Sludge with Sheen
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Sause Brothers
Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 20
Case Number:	19961009-1313
HID Number:	Not reported
Facility Registry Id:	110013778778
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Sause Brothers Towing Pier 20 Bildge Spill
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Bryce Hataoka
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Sause Brothers
Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 20
Case Number:	19970205-1547
HID Number:	Not reported
Facility Registry Id:	110013778778
Lead and Program:	HEER EP&R
ER:	No
Units:	Sause Brothers Fuel Oil Leak
Substances:	Fuel Oil #2
Less Or Greater Than:	Not reported
Numerical Quantity:	5
Units:	Gallons
Activity Type:	Response
Activity Lead:	Mike Cripps
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Sause Brothers

SAUSE BROTHERS (Continued) **S107024013**

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 20
Case Number:	19980328-1418
HID Number:	Not reported
Facility Registry Id:	110013778778
Lead and Program:	HEER EP&R
ER:	No
Units:	Pier 30 Gasoline Spill from the Pepeekeo Vessel
Substances:	Gasoline, Unleaded
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Sheen
Activity Type:	Penalty
Activity Lead:	Curtis Martin
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Sause Brothers

Click this hyperlink while viewing on your computer to access
2 additional HI SPILLS: record(s) in the EDR Site Report.

66
SSW
1/2-1
0.737 mi.
3893 ft.

Relative:
Lower

Actual:
3 ft.

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION **RCRA-TSDF** **1000146691**
170 ALA MOANA BOULEVARD **CERC-NFRAP** **HID000150680**
HONOLULU, HI 96813 **CORRACTS**
RCRA-CESQG
HI SHWS
HI SPILLS
CA HAZNET
HI AIRS
2020 COR ACTION

RCRA-TSDF:

Date form received by agency:	04/17/2014
Facility name:	HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION
Facility address:	170 ALA MOANA BOULEVARD HONOLULU, HI 96813
EPA ID:	HID000150680
Mailing address:	PO BOX 2750 HONOLULU, HI 96840
Contact:	WARREN S HALL
Contact address:	PO BOX 2750 (CP6-JW) HONOLULU, HI 96840
Contact country:	Not reported
Contact telephone:	808 5434524
Contact email:	WARREN.HALL@HAWAIIANELECTRIC.COM
EPA Region:	09
Land type:	Private
Classification:	TSDF
Description:	Handler is engaged in the treatment, storage or disposal of hazardous waste
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	HAWAIIAN ELECTRIC COMPANY, INC.
Owner/operator address:	PO BOX 2750 HONOLULU, HI 96840
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 543-4524
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/1893
Owner/Op end date:	Not reported

Owner/operator name:	HAWAIIAN ELECTRIC COMPANY, INC
Owner/operator address:	P.O. BOX 2750 HONOLULU, HI 96840
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/1893
Owner/Op end date:	Not reported

Owner/operator name:	HAWAIIAN ELECTRIC CO., INC.
Owner/operator address:	PO BOX 2750 CITY NOT REPORTED, HI 99999
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 548-7311
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	HAWAIIAN ELECTRIC CO., INC.
Owner/operator address:	PO BOX 2750 HONOLULU, HI 96840
Owner/operator country:	Not reported
Owner/operator telephone:	(808) 548-7311
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	HAWAIIAN ELECTRIC COMPANY, INC.
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/1893

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Owner/Op end date: Not reported

Owner/operator name: HAWAIIAN ELECTRIC COMPANY, INC
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/1893
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: Yes
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Historical Generators:

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Date form received by agency: 02/26/2004
Site name: HONOLULU GENERATING STATION
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D018
. Waste name: BENZENE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P106
. Waste name: SODIUM CYANIDE (OR) SODIUM CYANIDE NA(CN)

Date form received by agency: 03/19/2003
Site name: HONOLULU GENERATING STATION
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D008
. Waste name: LEAD

Date form received by agency: 07/29/1993
Site name: HAWAIIAN ELECTRIC CO HONOLULU GEN STE
Classification: Small Quantity Generator

Date form received by agency: 10/15/1992
Site name: HAWAIIAN ELECTRIC CO HONOLULU GEN STE
Classification: Large Quantity Generator

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Corrective Action Summary:

Event date:	01/01/1990
Event:	CA029ST
Event date:	04/30/1990
Event:	CA029EP
Event date:	04/30/1990
Event:	CA049PA
Event date:	04/30/1990
Event:	CA Prioritization, Facility or area was assigned a low corrective action priority.
Event date:	03/16/1992
Event:	CA Prioritization, Facility or area was assigned a low corrective action priority.
Event date:	03/16/1992
Event:	Stabilization Measures Evaluation,This facility is not amenable to stabilization activity at the present time for reasons other than 1- it appears to be technically infeasible or inappropriate (NF) or 2- there is a lack of technical information (IN). Reasons for this conclusion may be the status of closure at the facility, the degree of risk, timing considerations, the status of corrective action work at the facility, or other administrative considerations.
Event date:	04/01/2010
Event:	Current Human Exposures under Control, Yes, Current Human Exposures Under Control has been verified. Based on a review of information contained in the EI determination, current human exposures are expected to be under control at the facility under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.
Event date:	12/11/2012
Event:	CA550RC
Event date:	12/11/2012
Event:	Igration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified. Based on a review of information contained in the EI determination, it has been determined that migration of contaminated groundwater is under control at the facility. Specifically, this determination indicates that the migration of contaminated groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the existing area of contaminated groundwater. This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

Facility Has Received Notices of Violations:

Regulation violated:	FR - 40 CFR 262.34(a)(2)
Area of violation:	Generators - Pre-transport
Date violation determined:	03/18/2003
Date achieved compliance:	03/18/2004

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Violation lead agency: EPA
Enforcement action: Not reported
Enforcement action date: 05/28/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 40 CFR 262.34(a)(2)
Area of violation: Generators - Pre-transport
Date violation determined: 03/18/2003
Date achieved compliance: 03/18/2004
Violation lead agency: EPA
Enforcement action: Not reported
Enforcement action date: 05/15/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 40 CFR 279.22(c)(1)
Area of violation: Used Oil - Generators
Date violation determined: 03/18/2003
Date achieved compliance: 03/18/2004
Violation lead agency: EPA
Enforcement action: Not reported
Enforcement action date: 05/15/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 40 CFR 262.34(a)(2)
Area of violation: Generators - Pre-transport
Date violation determined: 03/18/2003
Date achieved compliance: 03/18/2004
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/31/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 40 CFR 279.22(c)(1)
Area of violation: Used Oil - Generators
Date violation determined: 03/18/2003
Date achieved compliance: 03/18/2004
Violation lead agency: EPA

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Enforcement action: WRITTEN INFORMAL
Enforcement action date: 07/31/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 40 CFR 279.22(c)(1)
Area of violation: Used Oil - Generators
Date violation determined: 03/18/2003
Date achieved compliance: 03/18/2004
Violation lead agency: EPA
Enforcement action: Not reported
Enforcement action date: 05/28/2003
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Financial Requirements
Date violation determined: 03/31/1986
Date achieved compliance: 05/08/1986
Violation lead agency: EPA
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 03/31/1986
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 03/18/2003
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Pre-transport
Date achieved compliance: 03/18/2004
Evaluation lead agency: EPA

Evaluation date: 03/18/2003
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Used Oil - Generators
Date achieved compliance: 03/18/2004
Evaluation lead agency: EPA

Evaluation date: 03/13/1987
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA

Evaluation date: 09/15/1986

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 03/31/1986
Evaluation: FINANCIAL RECORD REVIEW
Area of violation: TSD - Financial Requirements
Date achieved compliance: 05/08/1986
Evaluation lead agency: EPA

Evaluation date: 02/13/1986
Evaluation: COMPLIANCE SCHEDULE EVALUATION
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: EPA

Evaluation date: 07/11/1985
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

CERC-NFRAP:
Site ID: 0900377
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: Deferred to RCRA

CERCLIS-NFRAP Site Contact Details:
Contact Sequence ID: 13037252.00000
Person ID: 9000059.00000

Program Priority:
Description: RCRA Deferral - Lead Confirmed

CERCLIS-NFRAP Assessment History:
Action: DISCOVERY
Date Started: / /
Date Completed: 05/08/90
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 05/15/90
Priority Level: Deferred to RCRA (Subtitle C)

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 01/23/96
Priority Level: Not reported

CORRACTS:

EPA ID: HID000150680

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 20100401
Action: CA725YE - Current Human Exposures Under Control, Yes, Current Human Exposures Under Control has been verified
NAICS Code(s): 221112
Fossil Fuel Electric Power Generation
Original schedule date: 20100401
Schedule end date: Not reported

EPA ID: HID000150680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 20121211
Action: CA550RC
NAICS Code(s): 221112
Fossil Fuel Electric Power Generation
Original schedule date: 20121211
Schedule end date: Not reported

EPA ID: HID000150680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 20121211
Action: CA750YE - Migration of Contaminated Groundwater under Control, Yes, Migration of Contaminated Groundwater Under Control has been verified
NAICS Code(s): 221112
Fossil Fuel Electric Power Generation
Original schedule date: 20121211
Schedule end date: Not reported

EPA ID: HID000150680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19920316
Action: CA075LO - CA Prioritization, Facility or area was assigned a low corrective action priority
NAICS Code(s): 221112
Fossil Fuel Electric Power Generation
Original schedule date: Not reported
Schedule end date: Not reported

EPA ID: HID000150680
EPA Region: 09
Area Name: ENTIRE FACILITY
Actual Date: 19900430
Action: CA075LO - CA Prioritization, Facility or area was assigned a low corrective action priority
NAICS Code(s): 221112
Fossil Fuel Electric Power Generation
Original schedule date: Not reported
Schedule end date: Not reported

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Environmental Interest:	Hawaiian Electric Company (HECO)-Honolulu Generating Station
HID Number:	HID000150680
Facility Registry Identifier:	110000700064
Lead Agency:	HEER
Program:	State
Project Manager:	Unassigned
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Hawaiian Electric Company (HECO)-Honolulu Generating Station
HID Number:	HID000150680
Facility Registry Identifier:	110000700064
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Response Not Necessary
Response:	Not reported
Nature of Contamination:	Found: Heavy fuel oil - probably not migrating; no contact hazard due to soil; may be probable release to surface water - 3/7/1996
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Downtown Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Unassigned
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20040708-0700
HID Number:	HID000150680
Facility Registry Id:	110000700064
Lead and Program:	HEER EP&R
ER:	No
Units:	Honolulu Generating Station Seawater Intake
Substances:	Oil Sheen
Less Or Greater Than:	<
Numerical Quantity:	1
Units:	Gallons
Activity Type:	Response
Activity Lead:	Paul Chong
Assignment End Date:	2004-07-08 00:00:00
Result:	SOSC NFA
File Under:	Hawaiian Electric Company (HECO)-Honolulu Generating Station

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20041105-1850

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

HID Number:	HID000150680
Facility Registry Id:	110000700064
Lead and Program:	HEER EP&R
ER:	No
Units:	Ward Avenue Blown Transformer
Substances:	Shell Diala Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	100
Units:	Gallons
Activity Type:	Response
Activity Lead:	Paul Chong
Assignment End Date:	2004-11-09 00:00:00
Result:	SOSC NFA
File Under:	Hawaiian Electric Company (HECO)-Honolulu Generating Station
Island:	Oahu
Supplemental Loc. Text:	Ocean Off of 170 Ala Moana Blvd
Case Number:	20090102-0830
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None
Units:	Mystery Sheen NRC 893840
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Sheen
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2009-01-02 00:00:00
Result:	SOSC NFA
File Under:	Not reported
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20140731-1317
HID Number:	HID000150680
Facility Registry Id:	110000700064
Lead and Program:	HEER EP&R
ER:	None
Units:	Mercury Spill at Honolulu Power Plant
Substances:	Mercury
Less Or Greater Than:	Not reported
Numerical Quantity:	1.5
Units:	Ounces
Activity Type:	Response
Activity Lead:	Adam Teekell
Assignment End Date:	2014-07-31 00:00:00
Result:	SOSC NFA
File Under:	Hawaiian Electric Company (HECO)-Honolulu Generating Station
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19960214-1545
HID Number:	HID000150680
Facility Registry Id:	110000700064
Lead and Program:	HEER EP&R

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

ER:	No
Units:	Honolulu Power Plant HECO Fuel oil storage tanks
Substances:	Fuel Oil #6
Less Or Greater Than:	Not reported
Numerical Quantity:	1000
Units:	Gallons
Activity Type:	Response
Activity Lead:	Chris Takeno
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Hawaiian Electric Company (HECO)-Honolulu Generating Station

Click this hyperlink while viewing on your computer to access
3 additional HI SPILLS: record(s) in the EDR Site Report.

HAZNET:

envid:	1000146691
Year:	2013
GEPAID:	HID000150680
Contact:	DONN FUKUDA
Telephone:	8085435674
Mailing Name:	Not reported
Mailing Address:	170 ALA MOANA BLVD
Mailing City,St,Zip:	HONOLULU, HI 968130000
Gen County:	99
TSD EPA ID:	CAD059494310
TSD County:	Santa Clara
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.0325
Facility County:	Not reported

envid:	1000146691
Year:	2013
GEPAID:	HID000150680
Contact:	DONN FUKUDA
Telephone:	8085435674
Mailing Name:	Not reported
Mailing Address:	170 ALA MOANA BLVD
Mailing City,St,Zip:	HONOLULU, HI 968130000
Gen County:	99
TSD EPA ID:	CAD059494310
TSD County:	Santa Clara
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	2.25
Facility County:	Not reported

envid:	1000146691
Year:	2013
GEPAID:	HID000150680
Contact:	DONN FUKUDA
Telephone:	8085435674
Mailing Name:	Not reported
Mailing Address:	170 ALA MOANA BLVD

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

Mailing City,St,Zip:	HONOLULU, HI 968130000
Gen County:	99
TSD EPA ID:	CAD059494310
TSD County:	Santa Clara
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.25
Facility County:	Not reported

envid:	1000146691
Year:	2012
GEPAID:	HID000150680
Contact:	DONN FUKUDA
Telephone:	8085435674
Mailing Name:	Not reported
Mailing Address:	170 ALA MOANA BLVD
Mailing City,St,Zip:	HONOLULU, HI 968130000
Gen County:	99
TSD EPA ID:	CAD059494310
TSD County:	Santa Clara
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.075
Facility County:	99

envid:	1000146691
Year:	2012
GEPAID:	HID000150680
Contact:	DONN FUKUDA
Telephone:	8085435674
Mailing Name:	Not reported
Mailing Address:	170 ALA MOANA BLVD
Mailing City,St,Zip:	HONOLULU, HI 968130000
Gen County:	99
TSD EPA ID:	CAD059494310
TSD County:	Santa Clara
Waste Category:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.01
Facility County:	99

Click this hyperlink while viewing on your computer to access
26 additional CA_HAZNET: record(s) in the EDR Site Report.

AIRS:

Facility ID:	0238-01-C
Island:	Oahu
Mailing Address:	P.O. Box 2750
Locale:	Not reported
Business Phone:	808-543-4500
Mailing City,St,Zip:	Honolulu, HI 96840-0001
Contact Name:	Sheri-Ann Loo
Contact Title:	Manager, Environmental Department
Description:	Honolulu Generating StationThis permit encompasses the following

HAWAIIAN ELECTRIC - HONOLULU GENERATING STATION (Continued) **1000146691**

equipment and associated appurtenances:HECOUnit No.Description856 MW Babcock and Wilcox Boiler, 589.0 MMBtu/hr957 MW Babcock and Wilcox Boiler, 631.5 MMBtu/hr

2020 COR ACTION:

EPA ID:	HID000150680
Region:	9
Action:	Not reported

M67 **OWNED BY CCI, LEASED SPRINT** **FINDS** **1006819934**
WNW **925 DILLINGHAM BLVD** **HI SHWS** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI ENG CONTROLS**
0.741 mi. **HI INST CONTROL**
3914 ft. **Site 1 of 3 in cluster M** **HI VCP**

Relative: Higher

Actual: 7 ft.

FINDS:

Registry ID: 110013778055

Environmental Interest/Information System

US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Sprint Lot
HID Number:	Not reported
Facility Registry Identifier:	110013778055
Lead Agency:	HEER
Program:	Voluntary Response Program
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Sprint Lot
HID Number:	Not reported
Facility Registry Identifier:	110013778055
Lead Agency:	HEER
Progran Name:	Voluntary Response Program
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Diesel, free product in soil groundwater, and soil vapor
Nature of Residual Contamination:	Diesel, free product in soil groundwater, and soil vapor.
Use Restrictions:	Controls Required to Manage Contamination

OWNED BY CCI, LEASED SPRINT (Continued) **1006819934**

Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping or Monitoring Systems
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Letter of Completion - Restricted Use
Document Date:	12/17/2007
Document Number:	2007-843-MS
Document Subject:	LOC and Request for signature
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

VCP:

Program:	Voluntary Response Program
Zip Suffix:	Not reported
Supplemental Location:	Not reported
Island:	Oahu

L68 **HAWAIIAN FLOUR MILL** **HI SHWS** **S106817404**
WSW **703 N NIMITZ HWY** **N/A**
1/2-1 **HONOLULU, HI 96808**
0.748 mi.
3948 ft. **Site 2 of 3 in cluster L**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Hawaiian Flour Mill
HID Number:	Not reported
Facility Registry Identifier:	110013791469
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Hawaiian Flour Mill
HID Number:	Not reported
Facility Registry Identifier:	110013791469

HAWAIIAN FLOUR MILL (Continued) **S106817404**

Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

M69 **THEO DAVIES CATERPILLAR REPAIR SITE** **HI SHWS** **S109096031**
WNW **935 DILLINGHAM BLVD** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI INST CONTROL**
0.750 mi.
3961 ft. **Site 2 of 3 in cluster M**

Relative:
Lower

Actual:
5 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Theo Davies Caterpillar Repair Site
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Kelton Otsuka
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Theo Davies Caterpillar Repair Site
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: TPH -g,d methane in soil and soil vapor
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported

THEO DAVIES CATERPILLAR REPAIR SITE (Continued) **S109096031**

Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Kelton Otsuka
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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L70 **MOANA PAA KAI** **RCRA NonGen / NLR** **1000146699**
WSW **705 N NIMITZ HWY** **HI SHWS** **HID982411357**
1/2-1 **HONOLULU, HI 96817** **HI SPILLS**
0.752 mi.
3971 ft. **Site 3 of 3 in cluster L**

Relative:
Lower

Actual:
3 ft.

RCRA NonGen / NLR:

Date form received by agency:	02/26/2015
Facility name:	MOANA PAA KAI
Facility address:	705 N NIMITZ HWY PIER 21 HONOLULU, HI 96817
EPA ID:	HID982411357
Mailing address:	PO BOX 3288 HONOLULU, HI 96801 3288
Contact:	NATHAN L KAPULE
Contact address:	PO BOX 3288 HONOLULU, HI 96801 3288
Contact country:	US
Contact telephone:	808-543-9398
Contact email:	NKAPULE@HTBYB.COM
EPA Region:	09
Land type:	Private
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	HAWAII TUG AND BARGE YOUNG BROTHERS
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/1950
Owner/Op end date:	Not reported

MOANA PAA KAI (Continued) **1000146699**

Owner/operator name: STATE OF HAWAII
Owner/operator address: 79 S NIMITZ HWY
HONOLULU, HI 96813
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: State
Owner/Operator Type: Owner
Owner/Op start date: 01/01/1950
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 04/07/2008
Site name: MOANA PAA KAI
Classification: Conditionally Exempt Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D008
. Waste name: LEAD

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Date form received by agency: 02/07/1989
Site name: HAWAIIAN TUG & BARGE CORP
Classification: Not a generator, verified

Date form received by agency: 03/25/1988
Site name: HAWAIIAN TUG & BARGE CORP
Classification: Small Quantity Generator

MOANA PAA KAI (Continued) **1000146699**

Facility Has Received Notices of Violations:

Regulation violated:	Not reported
Area of violation:	Generators - General
Date violation determined:	01/23/2008
Date achieved compliance:	06/09/2008
Violation lead agency:	State
Enforcement action:	Not reported
Enforcement action date:	Not reported
Enf. disposition status:	Not reported
Enf. disp. status date:	Not reported
Enforcement lead agency:	Not reported
Proposed penalty amount:	Not reported
Final penalty amount:	Not reported
Paid penalty amount:	Not reported

Regulation violated:	Not reported
Area of violation:	Listing - General
Date violation determined:	01/23/2008
Date achieved compliance:	06/09/2008
Violation lead agency:	State
Enforcement action:	Not reported
Enforcement action date:	Not reported
Enf. disposition status:	Not reported
Enf. disp. status date:	Not reported
Enforcement lead agency:	Not reported
Proposed penalty amount:	Not reported
Final penalty amount:	Not reported
Paid penalty amount:	Not reported

Regulation violated:	Not reported
Area of violation:	Used Oil - Generators
Date violation determined:	01/23/2008
Date achieved compliance:	06/09/2008
Violation lead agency:	State
Enforcement action:	Not reported
Enforcement action date:	Not reported
Enf. disposition status:	Not reported
Enf. disp. status date:	Not reported
Enforcement lead agency:	Not reported
Proposed penalty amount:	Not reported
Final penalty amount:	Not reported
Paid penalty amount:	Not reported

Regulation violated:	S - 279.20-24
Area of violation:	Used Oil - Generators
Date violation determined:	07/12/2001
Date achieved compliance:	08/14/2001
Violation lead agency:	State
Enforcement action:	WRITTEN INFORMAL
Enforcement action date:	07/12/2001
Enf. disposition status:	Not reported
Enf. disp. status date:	Not reported
Enforcement lead agency:	State
Proposed penalty amount:	Not reported
Final penalty amount:	Not reported
Paid penalty amount:	Not reported

MOANA PAA KAI (Continued) **1000146699**

Regulation violated: FR - 262.10-12.A
Area of violation: Generators - General
Date violation determined: 02/04/1988
Date achieved compliance: 04/26/2001
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 10/12/2007
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 06/09/2008
Evaluation lead agency: State

Evaluation date: 10/12/2007
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Used Oil - Generators
Date achieved compliance: 06/09/2008
Evaluation lead agency: State

Evaluation date: 10/12/2007
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Listing - General
Date achieved compliance: 06/09/2008
Evaluation lead agency: State

Evaluation date: 04/26/2001
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Used Oil - Generators
Date achieved compliance: 08/14/2001
Evaluation lead agency: State

Evaluation date: 02/04/1988
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 04/26/2001
Evaluation lead agency: State

SHWS:
Organization: Not reported
Supplemental Location: Honolulu Harbor Pier 21
Island: Oahu
Environmental Interest: Hawaiian Tug & Barge Corporation
HID Number: Not reported
Facility Registry Identifier: 110005726438
Lead Agency: HEER
Program: State
Project Manager: Steve Mow
Hazard Priority: Low
Potential Hazards And Controls: Hazard Undetermined

MOANA PAA KAI (Continued) **1000146699**

Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Honolulu Harbor Pier 21
SDAR Environmental Interest Name:	Hawaiian Tug & Barge Corporation
HID Number:	Not reported
Facility Registry Identifier:	110005726438
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

Organization:	Not reported
Supplemental Location:	Honolulu Harbor Pier 24-28
Island:	Oahu
Environmental Interest:	Young Brothers, Ltd. Piers 24-28
HID Number:	Not reported
Facility Registry Identifier:	110005284110
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Honolulu Harbor Pier 24-28
SDAR Environmental Interest Name:	Young Brothers, Ltd. Piers 24-28
HID Number:	Not reported
Facility Registry Identifier:	110005284110
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported

MOANA PAA KAI (Continued) **1000146699**

Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 21
Case Number:	20070521-0853
HID Number:	Not reported
Facility Registry Id:	110005726438
Lead and Program:	HEER EP&R
ER:	No -
Units:	Diesel Fuel Release NRC 835985
Substances:	Diesel Fuel
Less Or Greater Than:	Not reported
Numerical Quantity:	40
Units:	Gallons
Activity Type:	Response
Activity Lead:	Paul Chong
Assignment End Date:	2007-05-21 00:00:00
Result:	SOSC NFA
File Under:	Hawaiian Tug & Barge Corporation

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 24-28
Case Number:	19900507-1
HID Number:	Not reported
Facility Registry Id:	110005284110
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	PIER 26, HONOLULU HARBOR brownish colored diesel smelling stuff under pier
Substances:	BROWNISH COLORED DIESEL SMELLING STUFF
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Young Brothers, Ltd.

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 24-28
Case Number:	19901207-2
HID Number:	Not reported
Facility Registry Id:	110005284110
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	YOUNG BROTHERS, HARBOR CHANNEL, HONOLULU HARBOR
Substances:	Not reported
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported

MOANA PAA KAI (Continued) **1000146699**

Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Young Brothers, Ltd.
Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 24-28
Case Number:	19921126
HID Number:	Not reported
Facility Registry Id:	110005284110
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Young Brothers Terminal, Pier 26, Honolulu Harbor
Substances:	Methane Gas
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Bill Perry
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Young Brothers, Ltd.
Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 24-28
Case Number:	19940217-1
HID Number:	Not reported
Facility Registry Id:	110005284110
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Young Brothers Sheen Under Pier
Substances:	petroleum
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Young Brothers, Ltd.

Click this hyperlink while viewing on your computer to access
5 additional HI SPILLS: record(s) in the EDR Site Report.

M71 **HONOLULU COMMUNITY COLLEGE GAS STATION** **HI SHWS** **1006820629**
WNW **874 DILLINGHAM BLVD** **N/A**
1/2-1 **HONOLULU, HI 96817**
0.765 mi.
4039 ft. **Site 3 of 3 in cluster M**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Honolulu Community College
Island:	Oahu
Environmental Interest:	Honolulu Community College Gas Station
HID Number:	Not reported
Facility Registry Identifier:	110013786224
Lead Agency:	HEER
Program:	State

HONOLULU COMMUNITY COLLEGE GAS STATION (Continued) **1006820629**

Project Manager:	Steve Mow
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Honolulu Community College
SDAR Environmental Interest Name:	Honolulu Community College Gas Station
HID Number:	Not reported
Facility Registry Identifier:	110013786224
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Not Necessary
Response:	Response Complete
Nature of Contamination:	Found: Petroleum in soil
Nature of Residual Contamination:	Not reported
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	02/08/2007
Document Number:	2007-092-SPM
Document Subject:	No Further Action Required at Honolulu Community College Gas Station, 874 Dillingham Blvd
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

N72 **POLYNESIAN HOSPITALITY** **RCRA-CESQG** **1000906758**
West **330 PACIFIC ST** **FINDS** **HI0000589812**
1/2-1 **HONOLULU, HI 96817** **HI SHWS**
0.766 mi. **HI LUST**
4046 ft. **Site 1 of 3 in cluster N** **HI UST**
HI SPILLS
Relative: **HI Financial Assurance**
Lower

Actual: **3 ft.**

RCRA-CESQG:

Date form received by agency:	08/16/1994
Facility name:	POLYNESIAN HOSPITALITY
Facility address:	330 PACIFIC ST HONOLULU, HI 96817
EPA ID:	HI0000589812
Contact:	GAYLORD KOLT
Contact address:	330 PACIFIC ST HONOLULU, HI 96817
Contact country:	US
Contact telephone:	(808) 526-3565
Contact email:	Not reported
EPA Region:	09
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or

POLYNESIAN HOSPITALITY (Continued) **1000906758**

other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:
Owner/operator name: PHT INC DBA POLYNESIAN HOSPITALITY
Owner/operator address: 330 PACIFIC ST
HONOLULU, HI 96817
Owner/operator country: Not reported
Owner/operator telephone: (808) 593-2885
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 04/10/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110005722316

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA

POLYNESIAN HOSPITALITY (Continued) **1000906758**

program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

STATE MASTER

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Polynesian Hospitality
HID Number:	Not reported
Facility Registry Identifier:	110005722316
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Polynesian Hospitality
HID Number:	Not reported
Facility Registry Identifier:	110005722316
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-101379
Facility Status:	Monitored Natural Attenuation

POLYNESIAN HOSPITALITY (Continued) **1000906758**

Facility Status Date: 06/17/1997
Release ID: 910046
Project Officer: Josh Nagashima

UST:

Facility ID:	9-101379
Owner:	POLYNESIAN HOSPITALITY
Owner Address:	330 PACIFIC ST
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.314630
Longitude:	-157.871140
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Map

Tank ID:	5
Date Installed:	01/01/1995
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	10000
Substance:	Diesel

Tank ID:	6
Date Installed:	01/01/1995
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	1000
Substance:	Diesel

Tank ID:	R-1
Date Installed:	12/30/1967
Tank Status:	**Permanently Out of Use**
Date Closed:	08/03/1994
Tank Capacity:	2000
Substance:	Gasoline

Tank ID:	R-2
Date Installed:	12/31/1967
Tank Status:	**Permanently Out of Use**
Date Closed:	08/03/1994
Tank Capacity:	5000
Substance:	Diesel

Tank ID:	R-3
Date Installed:	12/30/1967
Tank Status:	**Permanently Out of Use**
Date Closed:	08/03/1994
Tank Capacity:	5000
Substance:	Diesel

Tank ID:	R-4
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**

POLYNESIAN HOSPITALITY (Continued) **1000906758**

Date Closed: 03/19/1991
Tank Capacity: 1000
Substance: Used Oil

HI SPILLS:
Island: Oahu
Supplemental Loc. Text: Not reported
Case Number: 20080104-0912
HID Number: Not reported
Facility Registry Id: 110005722316
Lead and Program: HEER EP&R
ER: None
Units: Polynesian Hospitality
Substances: Not reported
Less Or Greater Than: Not reported
Numerical Quantity: Not reported
Units: Not reported
Activity Type: Response
Activity Lead: Curtis Martin
Assignment End Date: Not reported
Result: Not reported
File Under: Polynesian Hospitality

Island: Oahu
Supplemental Loc. Text: Not reported
Case Number: 19941201-2
HID Number: Not reported
Facility Registry Id: 110005722316
Lead and Program: HEER EP&R
ER: Not reported
Units: Polynesian Hospitality - Abutting City Mill
Substances: Gasoline
Less Or Greater Than: Not reported
Numerical Quantity: Not reported
Units: Not reported
Activity Type: Response
Activity Lead: Mike Cripps
Assignment End Date: Not reported
Result: SOSC NFA
File Under: Polynesian Hospitality

HI Financial Assurance:
Alt Facility ID: 9-101379
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101379
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101379
Tank Id: 5

POLYNESIAN HOSPITALITY (Continued) **1000906758**

Tank Status: Currently in Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101379
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101379
Tank Id: 6
Tank Status: Temporarily out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101379
Tank Id: R-4
Tank Status: Permanently Out of Use
FRTYPE: Other
Expiration Date: Not reported

Alt Facility ID: 9-101379
Tank Id: R-4
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 01/01/2016

Alt Facility ID: 9-101379
Tank Id: R-3
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 01/01/2016

Alt Facility ID: 9-101379
Tank Id: 6
Tank Status: Temporarily out of Use
FRTYPE: Insurance
Expiration Date: 01/01/2016

Alt Facility ID: 9-101379
Tank Id: 5
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 01/01/2016

Alt Facility ID: 9-101379
Tank Id: R-2
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 01/01/2016

Alt Facility ID: 9-101379
Tank Id: R-1
Tank Status: Permanently Out of Use
FRTYPE: Insurance
Expiration Date: 01/01/2016

N73 **BREWER ENVIRONMENTAL INDUSTRIES-PACIFIC STREET** **HI SHWS** **1000436248**
West **311 PACIFIC ST** **HI SPILLS** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI VCP**
0.771 mi.
4070 ft. **Site 2 of 3 in cluster N**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Brewer Environmental Industries-Pacific Street
HID Number:	HID059472357
Facility Registry Identifier:	110000903210
Lead Agency:	HEER
Program:	Voluntary Response Program
Project Manager:	Jordan Nakayama
Hazard Priority:	High
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Brewer Environmental Industries-Pacific Street
HID Number:	HID059472357
Facility Registry Identifier:	110000903210
Lead Agency:	HEER
Progran Name:	Voluntary Response Program
Potential Hazard And Controls:	Hazard Present
Priority:	High
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: Petroleum & PCS
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Jordan Nakayama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20050105-1326
HID Number:	HID059472357
Facility Registry Id:	110000903210
Lead and Program:	HEER EP&R
ER:	No
Units:	Brewer Environmental Boring Sheen
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Unknown
Activity Type:	Response
Activity Lead:	Mike Cripps

BREWER ENVIRONMENTAL INDUSTRIES-PACIFIC STREET (Continued) **1000436248**

Assignment End Date:	2005-01-07 00:00:00
Result:	Refer to SDAR
File Under:	Brewer Environmental Industries Hawaii
Island:	Oahu
Supplemental Loc. Text:	SW corner of property/pipes from Conoco-Philips
Case Number:	20110824-1130
HID Number:	HID059472357
Facility Registry Id:	110000903210
Lead and Program:	HEER EP&R
ER:	None
Units:	BEI - #7 pipeline release
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	100
Units:	Gallons
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2011-08-25 00:00:00
Result:	Refer to SDAR
File Under:	Brewer Environmental Industries Hawaii
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19851031
HID Number:	HID059472357
Facility Registry Id:	110000903210
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Brewer 150 Pound Chlorine Release
Substances:	Chlorine
Less Or Greater Than:	Not reported
Numerical Quantity:	150
Units:	Pounds
Activity Type:	Response
Activity Lead:	Bill Perry
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Brewer Environmental Industries Hawaii
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19881104
HID Number:	HID059472357
Facility Registry Id:	110000903210
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Brewer Offices, Indoor Air Pollution
Substances:	Hydrogen Sulfide
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Brewer Environmental Industries Hawaii

BREWER ENVIRONMENTAL INDUSTRIES-PACIFIC STREET (Continued) **1000436248**

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19920407-1
HID Number:	HID059472357
Facility Registry Id:	110000903210
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Brewer 25 Pound Chlorine Leak
Substances:	Chlorine
Less Or Greater Than:	Not reported
Numerical Quantity:	25
Units:	Pounds
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Brewer Environmental Industries Hawaii

Click this hyperlink while viewing on your computer to access
1 additional HI SPILLS: record(s) in the EDR Site Report.

VCP:

Program:	Voluntary Response Program
Zip Suffix:	Not reported
Supplemental Location:	Not reported
Island:	Oahu

N74 **356 PACIFIC STREET BWS TRENCHING SHEEN** **HI SHWS** **S110169069**
West **356 PACIFIC ST** **HI SPILLS** **N/A**
1/2-1 **HONOLULU, HI**
0.774 mi.
4086 ft. **Site 3 of 3 in cluster N**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Chevron Tanker Truck Loading Rack (TTLR)
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Jordan Nakayama
Hazard Priority:	High
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Chevron Tanker Truck Loading Rack (TTLR)
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	High
Assessment:	Assessment Ongoing
Response:	Not reported

356 PACIFIC STREET BWS TRENCHING SHEEN (Continued) **S110169069**

Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Jordan Nakayama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20080909-1450
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	356 Pacific Street BWS Trenching Sheen
Substances:	Oily Soil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Sheen
Activity Type:	Refer to EP&R
Activity Lead:	Anna Fernandez
Assignment End Date:	Not reported
Result:	Refer to IDPP
File Under:	City and County of Honolulu, Board of Water Supply

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20080909-1450
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	356 Pacific Street BWS Trenching Sheen
Substances:	Oily Soil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Sheen
Activity Type:	Response
Activity Lead:	Paul Chong
Assignment End Date:	2008-09-10 00:00:00
Result:	Refer to SDAR
File Under:	City and County of Honolulu, Board of Water Supply

75
West
1/2-1
0.789 mi.
4164 ft.

BHP GASCO BENZENE SITE
616 IWILEI RD
HONOLULU, HI 96817

HI SHWS **S110277531**
HI SPILLS **N/A**
HI INST CONTROL
HI AIRS

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	BHP Gasco Benzene Site
HID Number:	HID982392367
Facility Registry Identifier:	110013780499
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	High
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	BHP Gasco Benzene Site
HID Number:	HID982392367
Facility Registry Identifier:	110013780499
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	High
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Benzene
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Monitoring System
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20100910-1350
HID Number:	HID982392367
Facility Registry Id:	110013780499
Lead and Program:	HEER EP&R
ER:	None
Units:	GasCo hydrogen peroxide explosions
Substances:	Hydrogen Peroxide
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Not reported
Activity Type:	Response

BHP GASCO BENZENE SITE (Continued) **S110277531**

Activity Lead: Curtis Martin
Assignment End Date: Not reported
Result: Not reported
File Under: BHP Hawaii, Inc.

Island: Oahu
Supplemental Loc. Text: Not reported
Case Number: 19880407
HID Number: HID982392367
Facility Registry Id: 110013780499
Lead and Program: HEER EP&R
ER: Not reported
Units: PACIFIC ST. 432 Methane Leak
Substances: Methane
Less Or Greater Than: Not reported
Numerical Quantity: Not reported
Units: Not reported
Activity Type: Response
Activity Lead: Not reported
Assignment End Date: Not reported
Result: Not reported
File Under: BHP Hawaii, Inc.

Island: Oahu
Supplemental Loc. Text: Not reported
Case Number: 19880407
HID Number: HID982392367
Facility Registry Id: 110013780499
Lead and Program: HEER EP&R
ER: Not reported
Units: PACIFIC ST. 432 Methane Leak
Substances: Methane
Less Or Greater Than: Not reported
Numerical Quantity: Not reported
Units: Not reported
Activity Type: Response
Activity Lead: Not reported
Assignment End Date: Not reported
Result: SOSC NFA
File Under: BHP Hawaii, Inc.

INST CONTROL:
Potential hazards and controls: Hazard Managed With Controls
Supplemental Location: Not reported
Zip Suffix: Not reported
Island: Oahu
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

AIRS:
Facility ID: 0551-01-N
Island: Oahu
Mailing Address: 841 Bishop Street, Suite 2301
Locale: Not reported
Business Phone: 808-275-2911
Mailing City,St,Zip: Honolulu, HI 96813
Contact Name: Mark Ambler

BHP GASCO BENZENE SITE (Continued) **S110277531**

Contact Title: Project Engineer
Description: Soil Vapor Extraction and Treatment System1.This permit encompasses the following equipment and associated appurtenances for the soil vapor extraction and treatment system:a.ThermTech Thermal/Catalytic Oxidizer, model no. VAC 50, serial no. 11051100;b.G.L. Environmental Services Thermal/Catalytic Oxidizer, model no. GLE22435-13-65-11, serial no. 120-1150-30-8-97;c.Soil Vapor Extraction (SVE) System with Vacuum Blower;d.Vapor Extraction Wells; ande.In Situ Chemical Oxidation (ISCO).

O76 **UNOCAL 76 HONOLULU LRNG CTR** **RCRA NonGen / NLR** **1000167494**
West **411 PACIFIC ST** **FINDS** **HID981652696**
1/2-1 **HONOLULU, HI 96817** **HI SHWS**
0.790 mi. **HI UST**
4170 ft. **Site 1 of 2 in cluster O** **HI SPILLS**
HI VCP
Relative: Lower **HI Financial Assurance**

Actual: 3 ft.

RCRA NonGen / NLR:
Date form received by agency: 02/16/1994
Facility name: UNOCAL 76 HONOLULU LRNG CTR
Site name: UNION OIL TERMINAL
Facility address: 411 PACIFIC ST
HONOLULU, HI 968170000
EPA ID: HID981652696
Mailing address: PO BOX 659
HONOLULU, HI 968090000
Contact: PATRICK J IONA
Contact address: Not reported
Not reported
Contact country: Not reported
Contact telephone: (808) 522-7609
Contact email: Not reported
EPA Region: 09
Land type: Other land type
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: UNION OIL CO
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported

UNOCAL 76 HONOLULU LRNG CTR (Continued) **1000167494**

Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 08/02/1993
Site name: UNOCAL 76 HONOLULU LRNG CTR
Classification: Not a generator, verified

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 07/09/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110009359826

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

CRITERIA AND HAZARDOUS AIR POLLUTANT INVENTORY

Registry ID: 110000495848

Environmental Interest/Information System
GASOLINE AND DIESEL PRODUCERS

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the

UNOCAL 76 HONOLULU LRNG CTR (Continued) **1000167494**

National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

US EPA TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are transported off-site.

US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS WASTE BIENNIAL REPORTER

STATE MASTER

CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) is the Superfund database that is used to support management in all phases of the Superfund program. The system contains information on all aspects of hazardous waste sites, including an inventory of sites, planned and actual site activities, and financial information.

AIR MAJOR

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA’s programs. The vision for ICIS is to replace EPA’s independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and it Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include;

UNOCAL 76 HONOLULU LRNG CTR (Continued) **1000167494**

Incident Tracking, Compliance Assistance, and Compliance Monitoring.

SPCC

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	TOSCO Corporation-Honolulu Terminal #0282
HID Number:	Not reported
Facility Registry Identifier:	110000495848
Lead Agency:	HEER
Program:	Voluntary Response Program
Project Manager:	Steve Mow
Hazard Priority:	High
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	TOSCO Corporation-Honolulu Terminal #0282
HID Number:	Not reported
Facility Registry Identifier:	110000495848
Lead Agency:	HEER
Progran Name:	Voluntary Response Program
Potential Hazard And Controls:	Hazard Present
Priority:	High
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Petroleum in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping or Monitoring System
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

UST:

Facility ID:	9-100108
Owner:	Tosco Marketing Company
Owner Address:	P. O. Box 25376
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	Not reported
Longitude:	Not reported
Horizontal Reference Datum Name:	Not reported
Horizontal Collection Method Name:	Not reported
Tank ID:	R-4-1
Date Installed:	04/15/1982

UNOCAL 76 HONOLULU LRNG CTR (Continued) **1000167494**

Tank Status:	**Permanently Out of Use**
Date Closed:	03/07/1997
Tank Capacity:	550
Substance:	Used Oil

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20070131-1005
HID Number:	Not reported
Facility Registry Id:	110000495848
Lead and Program:	HEER EP&R
ER:	No -
Units:	TOSCO - Bunker Release from Two Parallel 12" Pipelines Abandoned
Substances:	Bunker Oil
Less Or Greater Than:	>
Numerical Quantity:	25
Units:	Gallons
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2007-01-31 00:00:00
Result:	Refer to VRP
File Under:	Phillips Petroleum Company

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20031028-0829
HID Number:	Not reported
Facility Registry Id:	110000495848
Lead and Program:	HEER EP&R
ER:	Drill
Units:	DRILL - 1200 barrel spill DRILL DRILL
Substances:	Low Surfur Diesel
Less Or Greater Than:	Not reported
Numerical Quantity:	1200
Units:	Barrels
Activity Type:	Drill
Activity Lead:	Drill
Assignment End Date:	2003-10-28 00:00:00
Result:	Drill
File Under:	Phillips Petroleum Company

Island:	Oahu
Supplemental Loc. Text:	future Lowe’s site
Case Number:	20090108-1030
HID Number:	Not reported
Facility Registry Id:	110000495848
Lead and Program:	HEER EP&R
ER:	None
Units:	411 & 439 Pacific Street Odor
Substances:	Unknown
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Unknown
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2009-01-12 00:00:00

UNOCAL 76 HONOLULU LRNG CTR (Continued) **1000167494**

Result:	Refer to SDAR
File Under:	Phillips Petroleum Company
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20101116-1943
HID Number:	Not reported
Facility Registry Id:	110000495848
Lead and Program:	HEER EP&R
ER:	None
Units:	Diesel Fuel Release
Substances:	Diesel Fuel
Less Or Greater Than:	Not reported
Numerical Quantity:	0.25
Units:	Gallons
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Phillips Petroleum Company
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20110408-0823
HID Number:	Not reported
Facility Registry Id:	110000495848
Lead and Program:	HEER EP&R
ER:	None
Units:	Storm Water and Groundwater Release
Substances:	Petroleum
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Not reported
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Phillips Petroleum Company

Click this hyperlink while viewing on your computer to access
8 additional HI SPILLS: record(s) in the EDR Site Report.

VCP:

Program:	Voluntary Response Program
Zip Suffix:	Not reported
Supplemental Location:	Not reported
Island:	Oahu

HI Financial Assurance:

Alt Facility ID:	9-100108
Tank Id:	R-4-1
Tank Status:	Permanently Out of Use
FRTYPE:	Other
Expiration Date:	Not reported
Alt Facility ID:	9-100108

UNOCAL 76 HONOLULU LRNG CTR (Continued) **1000167494**

Tank Id: R-4-1
Tank Status: Permanently Out of Use
FRTYPE: Self Insured
Expiration Date: Not reported

77
West
1/2-1
0.790 mi.
4171 ft.

700 N NIMITZ IDPP RELEASE
700 N NIMITZ HWY
HONOLULU, HI

HI SHWS **S110061245**
HI SPILLS **N/A**
HI ENG CONTROLS
HI INST CONTROL

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	TMK 1-1-5-013-003
Island:	Oahu
Environmental Interest:	700 N Nimitz IDPP Release
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	TMK 1-1-5-013-003
SDAR Environmental Interest Name:	700 N Nimitz IDPP Release
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	TMK 1-1-5-013-003
Case Number:	20081204-1001
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	None

700 N NIMITZ IDPP RELEASE (Continued) **S110061245**

Units:	700 N Nimitz IDPP Release
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Not reported
Activity Type:	Response
Activity Lead:	Anna Fernandez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Harry and Jeanette Weinberg Foundation

ENG CONTROLS:

Supplemental Location Text:	TMK 1-1-5-013-003
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	TMK 1-1-5-013-003
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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O78 **BHP GASCO** **EDR MGP** **1008409005**
West **432 PACIFIC STREET** **N/A**
1/2-1 **HONOLULU, HI 96817**
0.797 mi.
4207 ft. **Site 2 of 2 in cluster O**

Relative:
Lower

Actual:
3 ft.

Manufactured Gas Plants:
Alternate Name:HONOLULU GAS CO LTD. OPERATED FROM 1905-1974

P79 **BHP PIER 29** **HI SHWS** **S106816192**
WSW **739 N NIMITZ HWY** **N/A**
1/2-1 **HONOLULU, HI 96817**
0.802 mi.
4236 ft. **Site 1 of 2 in cluster P**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Honolulu Harbor Pier 29
Island:	Oahu
Environmental Interest:	BHP Pier 29
HID Number:	Not reported
Facility Registry Identifier:	110013780462
Lead Agency:	HEER
Program:	State
Project Manager:	Kelton Otsuka
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported

BHP PIER 29 (Continued) **S106816192**

Island:	Oahu
Supplemental Location Text:	Honolulu Harbor Pier 29
SDAR Environmental Interest Name:	BHP Pier 29
HID Number:	Not reported
Facility Registry Identifier:	110013780462
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Presumed: Unknown
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Historic NFA - Restricted Use
Document Date:	06/23/1997
Document Number:	1997-227-01-BH
Document Subject:	NFA letter for Pier 29
Project Manager:	Kelton Otsuka
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

P80 **755 N NIMITZ HWY** **HI SHWS** **S110061246**
WSW **755 N NIMITZ HWY** **HI SPILLS** **N/A**
1/2-1 **HONOLULU, HI** **HI ENG CONTROLS**
0.828 mi. **HI INST CONTROL**
4372 ft. **Site 2 of 2 in cluster P**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Akamai Car Rental
Island:	Oahu
Environmental Interest:	755 North Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Akamai Car Rental
SDAR Environmental Interest Name:	755 North Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: petroleum in soil
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination

755 N NIMITZ HWY (Continued) **S110061246**

Engineering Control:	Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Akamai Car Rental
Case Number:	20081118-0855
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	755 N Nimitz Hwy
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Not reported
Activity Type:	Response
Activity Lead:	Anna Fernandez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Kristina S Quiton Trust

ENG CONTROLS:

Supplemental Location Text:	Akamai Car Rental
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Akamai Car Rental
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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Q81 **COSTCO WAREHOUSE** **HI SHWS** **S108008497**
WNW **525 ALAKAWA ST** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI INST CONTROL**
0.830 mi. **HI VCP**
4382 ft. **Site 1 of 2 in cluster Q**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Costco Iwilei
HID Number:	Not reported

COSTCO WAREHOUSE (Continued) **S108008497**

Facility Registry Identifier:	110013780122
Lead Agency:	HEER
Program:	Voluntary Response Program
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Costco Iwilei
HID Number:	Not reported
Facility Registry Identifier:	110013780122
Lead Agency:	HEER
Progran Name:	Voluntary Response Program
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	TPH-D,o BTEX free product in soil and groundwater.
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	When any subsurface construction activity, a soil management plan must be submitted for review. Continue groundwater monitoring.
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Letter of Completion - Restricted Use
Document Date:	03/20/2008
Document Number:	2008-225-MS
Document Subject:	LOC for Costco Warehouse and Gas Station Iwilei
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

VCP:

Program:	Voluntary Response Program
Zip Suffix:	Not reported
Supplemental Location:	Not reported
Island:	Oahu

Q82 **COSTCO GAS STATION** **HI SHWS** **S108859910**
WNW **520 ALAKAWA ST** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI INST CONTROL**
0.838 mi. **HI VCP**
4424 ft. **Site 2 of 2 in cluster Q**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Alakawa St & Dillingham Blvd
Island:	Oahu
Environmental Interest:	Costco Gas Station
HID Number:	Not reported
Facility Registry Identifier:	110013779401
Lead Agency:	HEER
Program:	Voluntary Response Program
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Alakawa St & Dillingham Blvd
SDAR Environmental Interest Name:	Costco Gas Station
HID Number:	Not reported
Facility Registry Identifier:	110013779401
Lead Agency:	HEER
Progran Name:	Voluntary Response Program
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: TPH-D,o BTEX free product in soil, groundwater and soil vapor
Nature of Residual Contamination:	BTEX, PAHs, TPH free product in soil and groundwater.
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Submit a soil management plan before subsurface construction. Also evaluate soil vapor intrusion for new above ground construction.
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Letter of Completion - Restricted Use
Document Date:	10/23/2006
Document Number:	2006-655-MS
Document Subject:	Transmittal Memo for Final RAM Costco
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Alakawa St & Dillingham Blvd
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Alakawa St & Dillingham Blvd
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

COSTCO GAS STATION (Continued) **S108859910**

VCP:
Program: Voluntary Response Program
Zip Suffix: Not reported
Supplemental Location: Alakawa St & Dillingham Blvd
Island: Oahu

83
ENE
1/2-1
0.860 mi.
4543 ft.

HONOLULU SAKE BREWERY CO, LTD **HI SHWS** **U003221588**
2150 BOOTH RD **HI LUST** **N/A**
HONOLULU, HI 96813 **HI UST**
HI SPILLS

Relative:
Higher

Actual:
114 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Honolulu Sake Brewery UST
HID Number: Not reported
Facility Registry Identifier: 110011657304
Lead Agency: HEER
Program: State
Project Manager: Unassigned
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Undetermined
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Honolulu Sake Brewery UST
HID Number: Not reported
Facility Registry Identifier: 110011657304
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Undetermined
Priority: NFA
Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Found: Diesel in soil
Nature of Residual Contamination: Contamination removed
Use Restrictions: Undetermined
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Not reported
Site Closure Type: No Further Action - Type Undetermined
Document Date: 06/30/1997
Document Number: Not reported
Document Subject: Not reported
Project Manager: Unassigned
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:
Facility ID: 9-100247
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 10/11/1995
Release ID: 930097
Project Officer: Eric Sadoyama

HONOLULU SAKE BREWERY CO, LTD (Continued) **U003221588**

UST:

Facility ID:	9-100247
Owner:	HONOLULU SAKE BREWERY CO, LTD
Owner Address:	2150 BOOTH RD
Owner City,St,Zip:	Honolulu, 96813 96813
Latitude:	21.321074
Longitude:	-157.847247
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	03/21/2046
Tank Status:	**Permanently Out of Use**
Date Closed:	06/15/1993
Tank Capacity:	250
Substance:	Gasoline
Tank ID:	R-2
Date Installed:	03/21/2046
Tank Status:	**Permanently Out of Use**
Date Closed:	06/11/1993
Tank Capacity:	1000
Substance:	Heating Oil
Tank ID:	R-3
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	06/14/1993
Tank Capacity:	2000
Substance:	Diesel

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19970602-0830
HID Number:	Not reported
Facility Registry Id:	110011657304
Lead and Program:	HEER EP&R
ER:	No
Units:	Booth Road Sake Brewery UST
Substances:	Petroleum Hydrocarbon
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Bryce Hataoka
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Honolulu Sake Brewery Co Ltd (Former)

R84 **775 NORTH NIMITZ HIGHWAY** **HI SHWS** **S110061247**
West **775 N NIMITZ HWY** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI** **HI INST CONTROL**
0.865 mi.
4567 ft. **Site 1 of 2 in cluster R**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	775 North Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	775 North Nimitz Highway
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

85
NW
1/2-1
0.865 mi.
4569 ft.

JBL HAWAII, LTD
905 KOKEA ST
HONOLULU, HI 96817

HI SHWS **1006820832**
HI ENG CONTROLS **N/A**
HI INST CONTROL

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	JBL Hawaii, Limited
HID Number:	Not reported
Facility Registry Identifier:	110013788473
Lead Agency:	HEER
Program:	State
Project Manager:	Eric Sadoyama
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	JBL Hawaii, Limited
HID Number:	Not reported
Facility Registry Identifier:	110013788473
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Low
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Not reported
Nature of Residual Contamination:	Petroleum impacted soils, gasoline in gw does not exceed EALs
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	08/29/2005
Document Number:	2005-440-ES
Document Subject:	Comments on Aug 12, 2005 "Groundwater Monitoring and Sampling Report"
Project Manager:	Eric Sadoyama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

R86
West
1/2-1
0.886 mi.
4676 ft.

EQUILON ENTERPRISES LLC HONOLULU TERMINAL
789 N NIMITZ HWY
HONOLULU, HI 96817

Site 2 of 2 in cluster R

HI SHWS **S115488694**
N/A

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Equilon Enterprises LLC Honolulu Terminal
HID Number:	Not reported
Facility Registry Identifier:	110000486475
Lead Agency:	HEER
Program:	State
Project Manager:	Anna Fernandez
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Equilon Enterprises LLC Honolulu Terminal
HID Number:	Not reported
Facility Registry Identifier:	110000486475
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Anna Fernandez
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

87
West
1/2-1
0.892 mi.
4711 ft.

PAULEY PETROLEUM
795 N NIMITZ HWY
HONOLULU, HI 96817

HI SHWS **S108009116**
HI SPILLS **N/A**
HI ENG CONTROLS
HI INST CONTROL

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Honolulu Harbor Pier 32/33
Island:	Oahu
Environmental Interest:	Former Pauley Petroleum
HID Number:	Not reported
Facility Registry Identifier:	110013773522
Lead Agency:	HEER
Program:	State
Project Manager:	Clarence Callahan

PAULEY PETROLEUM (Continued) **S108009116**

Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Honolulu Harbor Pier 32/33
SDAR Environmental Interest Name:	Former Pauley Petroleum
HID Number:	Not reported
Facility Registry Identifier:	110013773522
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: NFA for pesticide storage but industrial waste and hydrocarbons still under investigation.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System and prohibit disturbance of the soil.
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	11/18/2005
Document Number:	2005-594-CAC
Document Subject:	No Further Action Letter
Project Manager:	Clarence Callahan
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 32/33
Case Number:	20050518-1415
HID Number:	Not reported
Facility Registry Id:	110013773522
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Petroleum contamination found in trenches
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2005-05-19 00:00:00
Result:	Refer to SDAR
File Under:	State of Hawaii, Department of Transportation, Harbors Division

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 32/33
Case Number:	19990421-0805
HID Number:	Not reported
Facility Registry Id:	110013773522
Lead and Program:	HEER EP&R
ER:	No
Units:	Possible Asbestos Release at Pier 31

PAULEY PETROLEUM (Continued) **S108009116**

Substances:	Asbestos (Pipe insulation)
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	State of Hawaii, Department of Transportation, Harbors Division
Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor Pier 32/33
Case Number:	20001017-1530
HID Number:	Not reported
Facility Registry Id:	110013773522
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Pauley Petroleum(Former)/DOT
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Bill Perry
Assignment End Date:	Not reported
Result:	Not reported
File Under:	State of Hawaii, Department of Transportation, Harbors Division

ENG CONTROLS:

Supplemental Location Text:	Honolulu Harbor Pier 32/33
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Honolulu Harbor Pier 32/33
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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88
NE
1/2-1
0.894 mi.
4718 ft.

Relative:
Higher

Actual:
164 ft.

SAKE BREWERY & ICE CO **FUDS** **1012129410**
N/A

HONOLULU, HI

FUDS:

Federal Facility ID:	HI9799F3867
FUDS #:	H09HI0127
INST ID:	57836
Facility Name:	SAKE BREWERY & ICE CO
City:	HONOLULU
State:	HI
EPA Region:	09
County:	HONOLULU

SAKE BREWERY & ICE CO (Continued) **1012129410**

Congressional District:	01
US Army District:	Honolulu District (POH)
Fiscal Year:	2012
Telephone:	808-438-8317
NPL Status:	Not Listed
RAB:	Not reported
CTC:	256
Current Owner:	Private Sector
Current Prog:	Not reported
Future Prog:	Not reported
Acreage:	Not reported
Description:	A PORTION OF THE SITE, SAKE BREWERY AND ICE COMPANY WAS ACQUIRED BY THE ARMY IN MAY 1942 FOR COLD STORAGE OD PERISHABLE ITEMS AND MANUFACTURE OF ICE. THE COMPANY OWNERS WERE ALLOWED TO OPERATE THE SOY SAUCE MANUFACTURING. THE ARMY INSTALLED TWO LARGE AMMONIA REFRIGERATION COMPRESSORS WHICH WAS SUBSEQUENTLY SOLD TO THE OWNERS OF THE SITE FOR ONE DOLLAR. THE COMPRESSORS WERE LATER DISPOSED BY THE OWNERS AT THE END OF THEIR SERVICEABLE LIFE.
History:	THE 2.42 ACRE SITE WAS ACQUIRED BY THE ARMY IN MAY 1942. AND LATER SOLD TO THE OWNERS OF THE SITE AROUND 1945 FOR ONE FDOLLAR. THE COMPRESSORS WERE REMOVED IN DECEMBER 1991 AND DEMOLSIHED IN MAR CH 1993.
Latitude:	21.32138399999
Longitude:	-157.8472199999

89
West
1/2-1
0.898 mi.
4742 ft.

HOME DEPOT
421 ALAKAWA ST
HONOLULU, HI 96817

HI SHWS **S105887731**
HI ENG CONTROLS **N/A**
HI INST CONTROL

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Home Depot
HID Number:	Not reported
Facility Registry Identifier:	110013785608
Lead Agency:	HEER
Program:	State
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Home Depot
HID Number:	Not reported
Facility Registry Identifier:	110013785608
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Methane, BTEX, PAHs, and TPH in soil and groundwater.
Nature of Residual Contamination:	Methane, BTEX, PAHs, and TPH in soil and groundwater.
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required

HOME DEPOT (Continued) **S105887731**

Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Monitoring System
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Letter of Completion - Restricted Use
Document Date:	09/03/1999
Document Number:	Not reported
Document Subject:	VRP LOC with Conditions
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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90
WSW
1/2-1
0.899 mi.
4748 ft.

PIER 30 TUG BOAT FUEL SPILL **HI SHWS** **U001235369**
777 N NIMITZ HWY **HI SPILLS** **N/A**
HONOLULU, HI 96817

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Chevron Honolulu Terminal Marine
HID Number:	Not reported
Facility Registry Identifier:	110000486457
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Chevron Honolulu Terminal Marine
HID Number:	Not reported
Facility Registry Identifier:	110000486457
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contaminationin soil and groundwater
Nature of Residual Contamination:	Not reported

PIER 30 TUG BOAT FUEL SPILL (Continued) **U001235369**

Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Pier 30
Case Number:	20071004-1400
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Mississippi Voyager Diesel Release
Substances:	Diesel Fuel
Less Or Greater Than:	Not reported
Numerical Quantity:	5
Units:	Barrels
Activity Type:	Response
Activity Lead:	Paul Chong
Assignment End Date:	2007-10-05 00:00:00
Result:	SOSC NFA
File Under:	Chevron Honolulu Terminal Marine

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor
Case Number:	20050908-1612
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Site Visit
Units:	Pier 30 Tug Boat Fuel Spill
Substances:	Diesel Fuel
Less Or Greater Than:	Not reported
Numerical Quantity:	1
Units:	Gallons
Activity Type:	Response
Activity Lead:	Terry Corpus
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Not reported

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20090427-1445
HID Number:	Not reported
Facility Registry Id:	110000486457
Lead and Program:	HEER EP&R
ER:	None
Units:	Pipeline at Chevron facility had pinhole leak NRC 903953

PIER 30 TUG BOAT FUEL SPILL (Continued) **U001235369**

Substances:	Diesel Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	10
Units:	Gallons
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Chevron USA, Inc.

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20110131-1610
HID Number:	Not reported
Facility Registry Id:	110000486457
Lead and Program:	HEER EP&R
ER:	None
Units:	Honolulu Harbor Pier 29
Substances:	Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	0
Units:	Not reported
Activity Type:	Response
Activity Lead:	TC
Assignment End Date:	Not reported
Result:	Refer to SDAR
File Under:	Chevron USA, Inc.

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20110613-0645
HID Number:	Not reported
Facility Registry Id:	110000486457
Lead and Program:	HEER EP&R
ER:	None
Units:	Drill - Diesel Fuel Release 979517
Substances:	Diesel Fuel #2 Low Sulfur
Less Or Greater Than:	Not reported
Numerical Quantity:	900
Units:	Gallons
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Chevron USA, Inc.

Click this hyperlink while viewing on your computer to access
8 additional HI SPILLS: record(s) in the EDR Site Report.

91
NW
1/2-1
0.916 mi.
4834 ft.

GTE-HAWAIIAN TEL EMPLOYEES FEDERAL CREDIT UNION (HTEFCU)
1138 N KING ST
HONOLULU, HI 96817

HI SHWS **1006820922**
HI ENG CONTROLS **N/A**
HI INST CONTROL

Relative:
Higher

Actual:
8 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	GTE-Hawaiian Tel Employees Federal Credit Union (HTEFCU)
HID Number:	Not reported
Facility Registry Identifier:	110013789506
Lead Agency:	HEER
Program:	State
Project Manager:	Richard Palmer
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	GTE-Hawaiian Tel Employees Federal Credit Union (HTEFCU)
HID Number:	Not reported
Facility Registry Identifier:	110013789506
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Presumed: Low Priority, 1999, lack of data re possible PAHs, chlorinated solvents &/or PCBs. Capped by building.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	07/11/2008
Document Number:	Not reported
Document Subject:	Hawaiian Tel Employees Federal Credit Union, Closed EI, LUC IC
Project Manager:	Richard Palmer
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu

GTE-HAWAIIAN TEL EMPLOYEES FEDERAL CREDIT UNION (HTEFCU) (Continued) **1006820922**

Institutional Control: Government - Hawaii Dept. of Health Letter Issued

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92
South
1/2-1
0.919 mi.
4853 ft.

Relative:
Higher

Actual:
7 ft.

QUEEN EMMALANI TOWER
600 QUEEN ST
HONOLULU, HI 96813

CERC-NFRAP **1000688441**
RCRA NonGen / NLR **HID982442394**
FINDS
HI SHWS
HI SPILLS
HI ENG CONTROLS
HI INST CONTROL

CERC-NFRAP:
Site ID: 0903920
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

CERCLIS-NFRAP Site Contact Details:
Contact Sequence ID: 13037379.00000
Person ID: 9000059.00000

CERCLIS-NFRAP Site Alias Name(s):
Alias Name: QUEEN EMMALANI TOWER
Alias Address: QUEEN & SOUTH STREET
HONOLULU, OAHU, HI 85546

CERCLIS-NFRAP Assessment History:
Action: DISCOVERY
Date Started: / /
Date Completed: 06/04/91
Priority Level: Not reported

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 10/11/94
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: / /
Date Completed: 10/11/94
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

RCRA NonGen / NLR:
Date form received by agency: 05/07/1991
Facility name: QUEEN EMMALANI TOWER
Facility address: 600 QUEEN ST
HONOLULU, HI 96813
EPA ID: HID982442394
Mailing address: 436 ENA RD
HONOLULU, HI 96815
Contact: ENVIRONMENTAL MANAGER
Contact address: 600 QUEEN ST
HONOLULU, HI 96813
Contact country: US
Contact telephone: (808) 949-0065
Contact email: Not reported
EPA Region: 09

QUEEN EMMALANI TOWER (Continued) **1000688441**

Land type: Other land type
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: MOTOI KOSAN USA INC
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: NOT REQUIRED
Owner/operator address: NOT REQUIRED
NOT REQUIRED, ME 99999
Owner/operator country: Not reported
Owner/operator telephone: (415) 555-1212
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 01/29/1996
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:

Registry ID: 110005726651

Environmental Interest/Information System

QUEEN EMMALANI TOWER (Continued) **1000688441**

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Queen Emmalani Tower
HID Number:	HID984466698
Facility Registry Identifier:	110005726651
Lead Agency:	Not reported
Program:	State
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Queen Emmalani Tower
HID Number:	HID984466698
Facility Registry Identifier:	110005726651
Lead Agency:	Not reported
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Contamination was place under building
Nature of Residual Contamination:	Contaminated (lead and metals) soil removed or capped by building.
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	02/01/2006
Document Number:	2006-058-MS
Document Subject:	NFA for areas 1 and 3
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19910807-2
HID Number:	HID984466698
Facility Registry Id:	110005726651
Lead and Program:	HEER EP&R

QUEEN EMMALANI TOWER (Continued) **1000688441**

ER:	Not reported
Units:	Queen Emmalani Tower Development
Substances:	petroleum
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Queen Emmalani Tower

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20060112-0950
HID Number:	HID984466698
Facility Registry Id:	110005726651
Lead and Program:	HEER EP&R
ER:	No
Units:	600 Queen Street Lead Contamination
Substances:	Lead
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Unknown
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2006-01-12 00:00:00
Result:	Refer to SDAR
File Under:	Queen Emmalani Tower

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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S93 **HAWAII NEWSPAPER AGENCY INC** **HI SHWS** **1000146678**
SSE **605 KAPIOLANI BLVD** **HI LUST** **N/A**
1/2-1 **HONOLULU, HI 96813** **HI UST**
0.921 mi. **HI SPILLS**
4863 ft. **Site 1 of 2 in cluster S** **HI ENG CONTROLS**
HI INST CONTROL

Relative:
Higher

Actual:
7 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	The Honolulu Advertiser (Hawaii Newspaper Agency)
HID Number:	Not reported

HAWAII NEWSPAPER AGENCY INC (Continued) **1000146678**

Facility Registry Identifier:	110005726330
Lead Agency:	HEER
Program:	State
Project Manager:	Cal Miyahara
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	The Honolulu Advertiser (Hawaii Newspaper Agency)
HID Number:	Not reported
Facility Registry Identifier:	110005726330
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: TPH-G found in soil near New Building loading dock. TPH-O found in soil on east side of property near Kapiolani Blvd. Lead (4050 mg/kg) found in soil in westside parking lot.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Not reported
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	10/26/2011
Document Number:	2011-618-CMM
Document Subject:	Final EHMP, Honolulu Advertiser Property, 605 Kapiolani Blvd & 610 Kawaiahao St, Honolulu HI
Project Manager:	Cal Miyahara
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-100938
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	05/07/1999
Release ID:	930071
Project Officer:	Eric Sadoyama

Facility ID:	9-100938
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	10/27/1993
Release ID:	940008
Project Officer:	Eric Sadoyama

UST:

Facility ID:	9-100938
Owner:	HAWAII NEWSPAPER AGENCY, INC.
Owner Address:	605 KAPIOLANI BLVD
Owner City,St,Zip:	Honolulu, 96813 96813
Latitude:	21.303079
Longitude:	-157.855681
Horizontal Reference Datum Name:	NAD83

HAWAII NEWSPAPER AGENCY INC (Continued) **1000146678**

Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: 05/16/1978
Tank Status: **Permanently Out of Use**
Date Closed: 12/01/1994
Tank Capacity: 6000
Substance: Gasoline

Tank ID: R-2
Date Installed: 05/16/1978
Tank Status: **Permanently Out of Use**
Date Closed: 12/01/1994
Tank Capacity: 6000
Substance: Gasoline

Tank ID: R-3
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 10/16/1989
Tank Capacity: Not reported
Substance: Not Listed

HI SPILLS:
Island: Oahu
Supplemental Loc. Text: Not reported
Case Number: 20100826-1115
HID Number: Not reported
Facility Registry Id: 110005726330
Lead and Program: HEER EP&R
ER: None
Units: former Honolulu Advertiser site
Substances: Lead
Less Or Greater Than: Not reported
Numerical Quantity: 0
Units: Unknown
Activity Type: Response
Activity Lead: Liz Galvez
Assignment End Date: 2011-01-11 00:00:00
Result: Refer to SDAR
File Under: The Honolulu Advertiser

Island: Oahu
Supplemental Loc. Text: Not reported
Case Number: 20100826-1115
HID Number: Not reported
Facility Registry Id: 110005726330
Lead and Program: HEER EP&R
ER: None
Units: former Honolulu Advertiser site
Substances: Oil
Less Or Greater Than: Not reported
Numerical Quantity: 0
Units: Unknown
Activity Type: Response

HAWAII NEWSPAPER AGENCY INC (Continued) **1000146678**

Activity Lead: Liz Galvez
Assignment End Date: 2011-01-11 00:00:00
Result: Refer to SDAR
File Under: The Honolulu Advertiser

ENG CONTROLS:
Supplemental Location Text: Not reported
Zip Suffix: Not reported
Island: Oahu
Potential Hazards And Controls: Hazard Managed With Controls
Engineering Control: Engineering Control Required

INST CONTROL:
Potential hazards and controls: Hazard Managed With Controls
Supplemental Location: Not reported
Zip Suffix: Not reported
Island: Oahu
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

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T94 **WEYERHAEUSER** **HI SHWS S106821137**
West **900 N NIMITZ HWY** **HI SPILLS N/A**
1/2-1 **HONOLULU, HI 96817**
0.941 mi.
4970 ft. **Site 1 of 3 in cluster T**

Relative:
Lower

Actual:
3 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Weyerhaeuser
HID Number: Not reported
Facility Registry Identifier: 110001760390
Lead Agency: HEER
Program: State
Project Manager: Steve Mow
Hazard Priority: Low
Potential Hazards And Controls: Hazard Present
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Weyerhaeuser
HID Number: Not reported
Facility Registry Identifier: 110001760390
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Present
Priority: Low
Assessment: Response Necessary
Response: Response Ongoing
Nature of Contamination: Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination: Not reported
Use Restrictions: Controls Required to Manage Contamination
Engineering Control: Not reported
Description of Restrictions: Not reported
Institutional Control: Not reported
Within Designated Areawide Contamination: Honolulu Harbor Iwilei Unit
Site Closure Type: Not reported

WEYERHAEUSER (Continued) **S106821137**

Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19931115
HID Number:	Not reported
Facility Registry Id:	110001760390
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Weyerhauser, 900 North Nimitz, Honolulu, Oahu, HI
Substances:	Antifreeze
Less Or Greater Than:	Not reported
Numerical Quantity:	4
Units:	Gallons
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Weyerhaeuser

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19940310-2
HID Number:	Not reported
Facility Registry Id:	110001760390
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Weyerhaeuser
Substances:	Diesel Fuel
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Weyerhaeuser

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19960809-0930
HID Number:	Not reported
Facility Registry Id:	110001760390
Lead and Program:	HEER EP&R
ER:	No
Units:	Weyerhaeuser Corporation
Substances:	petroleum and creosote soaked railroad ties.
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Bryce Hataoka

WEYERHAEUSER (Continued) **S106821137**

Assignment End Date: Not reported
Result: SOSC NFA
File Under: Weyerhaeuser

S95 **HECO PAD-MOUNTED #65844 TRANSFORMER RELEASE** **HI SHWS** **1006818926**
SSE **650 KAPIOLANI BLVD** **HI SPILLS** **N/A**
1/2-1 **HONOLULU, HI 96813** **HI INST CONTROL**
0.942 mi.
4974 ft. **Site 2 of 2 in cluster S**

Relative:
Higher

Actual:
7 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Motor Imports
HID Number:	Not reported
Facility Registry Identifier:	110013766825
Lead Agency:	HEER
Program:	State
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Motor Imports
HID Number:	Not reported
Facility Registry Identifier:	110013766825
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	NFA
Assessment:	Response Necessary
Response:	Response Complete
Nature of Contamination:	Found: Petroleum contaminated soil and groundwater on and off the site. Cannot remove soil based on electical corridirs
Nature of Residual Contamination:	Free product still observed in one monitoring well
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Monitoring System
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Restricted Use
Document Date:	07/13/2004
Document Number:	2004-267-MS
Document Subject:	No further Groundwater monitoring required
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20110629-1249
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R

HECO PAD-MOUNTED #65844 TRANSFORMER RELEASE (Continued) **1006818926**

ER:	None
Units:	HECO pad-mounted #65844 transformer release
Substances:	Transformer Oil
Less Or Greater Than:	>
Numerical Quantity:	2
Units:	Gallons
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	Not reported
Result:	Not reported
File Under:	Not reported

INST CONTROL:

Potential hazards and controls:	Hazard Managed With Controls
Supplemental Location:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued

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T96 **HAWAIIAN ELECTRIC COMPANY (HECO) - IWILEI TANK YARD** **HI SHWS** **U001235311**
West **855 N NIMITZ HWY** **HI SPILLS** **N/A**
1/2-1 **HONOLULU, HI 96818** **HI ENG CONTROLS**
0.943 mi. **HI INST CONTROL**
4977 ft. **Site 2 of 3 in cluster T**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Hawaiian Electric Company (HECO) - Iwilei Tank Yard
HID Number:	Not reported
Facility Registry Identifier:	110013791593
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Hawaiian Electric Company (HECO) - Iwilei Tank Yard
HID Number:	Not reported
Facility Registry Identifier:	110013791593
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Petroleum in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System and prohibit disturbance of the soil.
Institutional Control:	Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit

HAWAIIAN ELECTRIC COMPANY (HECO) - IWILEI TANK YARD (Continued) **U001235311**

Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20050906-1122
HID Number:	Not reported
Facility Registry Id:	110013791593
Lead and Program:	HEER EP&R
ER:	No
Units:	Weathered Petroleum Discovered during Pole Excavation
Substances:	Diesel Fuel/Fuel Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	2006-05-31 00:00:00
Result:	Refer to SDAR
File Under:	Hawaiian Electric Co., Inc. (HECO)

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20050906-1122
HID Number:	Not reported
Facility Registry Id:	110013791593
Lead and Program:	HEER EP&R
ER:	No
Units:	Weathered Petroleum Discovered during Pole Excavation
Substances:	Fuel Oil
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Curtis Martin
Assignment End Date:	2006-05-31 00:00:00
Result:	Refer to SDAR
File Under:	Hawaiian Electric Co., Inc. (HECO)

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19990601-1625
HID Number:	Not reported
Facility Registry Id:	110013791593
Lead and Program:	HEER EP&R
ER:	No
Units:	HECO Tank Fuel Leak
Substances:	Unknown
Less Or Greater Than:	Not reported
Numerical Quantity:	400
Units:	Gallons
Activity Type:	Response

HAWAIIAN ELECTRIC COMPANY (HECO) - IWILEI TANK YARD (Continued) **U001235311**

Activity Lead: Mike Cripps
Assignment End Date: Not reported
Result: SOSC NFA
File Under: Hawaiian Electric Co., Inc. (HECO)

ENG CONTROLS:
Supplemental Location Text: Not reported
Zip Suffix: Not reported
Island: Oahu
Potential Hazards And Controls: Hazard Managed With Controls
Engineering Control: Engineering Control Required

INST CONTROL:
Potential hazards and controls: Hazard Managed With Controls
Supplemental Location: Not reported
Zip Suffix: Not reported
Island: Oahu
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

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T97 **861-869 NORTH NIMITZ HIGHWAY** **HI SHWS** **S108859941**
West **861-869 N NIMITZ HWY** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI INST CONTROL**
0.947 mi.
4998 ft. **Site 3 of 3 in cluster T**

Relative:
Lower

Actual:
3 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Hakim Properties, Inc.
HID Number: Not reported
Facility Registry Identifier: 110013790460
Lead Agency: HEER
Program: State
Project Manager: Eric Sadoyama
Hazard Priority: NFA
Potential Hazards And Controls: Hazard Managed With Controls
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Hakim Properties, Inc.
HID Number: Not reported
Facility Registry Identifier: 110013790460
Lead Agency: HEER
Progran Name: State
Potential Hazard And Controls: Hazard Managed With Controls
Priority: NFA
Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Found: Petroleum and related constituents
Nature of Residual Contamination: Some conatminants remain just above Tier 1 levels including, ethylbenzene in soil near one UST removal and acenapthene and fluoranthense in groundwater near hydraulic lift removal site, according to 1997 NFA ltr.
Use Restrictions: Controls Required to Manage Contamination
Engineering Control: Engineering Control Required
Description of Restrictions: Limit Further Land Use - The concrete and asphalt cap must remain

861-869 NORTH NIMITZ HIGHWAY (Continued) **S108859941**

intact.
Institutional Control: Government - Hawaii Dept. of Health Letter Issued
Within Designated Areawide Contamination: Honolulu Harbor Iwilei Unit
Site Closure Type: No Further Action Letter - Restricted Use
Document Date: 07/13/2005
Document Number: Not reported
Document Subject: Not reported
Project Manager: Eric Sadoyama
Contact Information: (808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:
Supplemental Location Text: Not reported
Zip Suffix: Not reported
Island: Oahu
Potential Hazards And Controls: Hazard Managed With Controls
Engineering Control: Engineering Control Required

INST CONTROL:
Potential hazards and controls: Hazard Managed With Controls
Supplemental Location: Not reported
Zip Suffix: Not reported
Island: Oahu
Institutional Control: Government - Hawaii Dept. of Health Letter Issued

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98
West
1/2-1
0.957 mi.
5051 ft.

BEST BUY **HI SHWS** **S108008729**
ALAKAWA ST & NIMITZ HWY **HI SPILLS** **N/A**
HONOLULU, HI 96817

Relative:
Lower

Actual:
3 ft.

SHWS:
Organization: Not reported
Supplemental Location: Not reported
Island: Oahu
Environmental Interest: Best Buy
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: Not reported
Program: State
Project Manager: Mark Sutterfield
Hazard Priority: NFA
Potential Hazards And Controls: No Hazard
Organization: Not reported
Island: Oahu
Supplemental Location Text: Not reported
SDAR Environmental Interest Name: Best Buy
HID Number: Not reported
Facility Registry Identifier: Not reported
Lead Agency: Not reported
Progran Name: State
Potential Hazard And Controls: No Hazard
Priority: NFA
Assessment: Response Necessary
Response: Response Complete
Nature of Contamination: Found: Hydrocarbon
Nature of Residual Contamination: No (hydrocarbon) contamination left on site above EALs.
Use Restrictions: No Hazard Present for Unrestricted Residential Use

BEST BUY (Continued) **S108008729**

Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	01/24/2006
Document Number:	2006-039-MS
Document Subject:	NFA letter
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20041029-1530
HID Number:	Not reported
Facility Registry Id:	Not reported
Lead and Program:	HEER EP&R
ER:	Referred
Units:	Best Buy Site
Substances:	Petroleum
Less Or Greater Than:	<
Numerical Quantity:	Not reported
Units:	Unknown
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	2004-11-10 00:00:00
Result:	Refer to ISST
File Under:	Best Buy

U99 **CHEVRON HONOLULU TRANSPORTATION TERMINAL** **HI SHWS** **U003154454**
West **933 N NIMITZ HWY** **HI ENG CONTROLS** **N/A**
1/2-1 **HONOLULU, HI 96817** **HI Financial Assurance**
0.973 mi.
5140 ft. **Site 1 of 2 in cluster U**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Chevron Honolulu Transportation Terminal
HID Number:	Not reported
Facility Registry Identifier:	110000486466
Lead Agency:	HEER
Program:	State
Project Manager:	Jordan Nakayama
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Chevron Honolulu Transportation Terminal
HID Number:	Not reported
Facility Registry Identifier:	110000486466
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls

CHEVRON HONOLULU TRANSPORTATION TERMINAL (Continued) **U003154454**

Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System and prohibit disturbance of the soil.
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Jordan Nakayama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

ENG CONTROLS:

Supplemental Location Text:	Not reported
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

HI Financial Assurance:

Alt Facility ID:	9-100242
Tank Id:	R-1
Tank Status:	Permanently Out of Use
FRTYPE:	Other
Expiration Date:	Not reported

U100 **HAWAII STEVEDORES** **HI SHWS S106817380**
West **965 N NIMITZ HWY** **HI SPILLS N/A**
1/2-1 **HONOLULU, HI 96817** **HI ENG CONTROLS**
0.987 mi.
5212 ft. **Site 2 of 2 in cluster U**

Relative:
Lower

Actual:
3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Honolulu Harbor Pier 35
Island:	Oahu
Environmental Interest:	Chevron Pier 35 Pipeline Release
HID Number:	Not reported
Facility Registry Identifier:	110013779278
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Managed With Controls
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Honolulu Harbor Pier 35
SDAR Environmental Interest Name:	Chevron Pier 35 Pipeline Release
HID Number:	Not reported
Facility Registry Identifier:	110013779278
Lead Agency:	HEER

HAWAII STEVEDORES (Continued) **S106817380**

Progran Name:	State
Potential Hazard And Controls:	Hazard Managed With Controls
Priority:	Medium
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Engineering Control Required
Description of Restrictions:	Prohibit Any Activity That May Disturb the Integrity of the Capping System and prohibit the disturbance of soil.
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814
Organization:	Not reported
Supplemental Location:	Honolulu Harbor
Island:	Oahu
Environmental Interest:	Hawaii Stevedores
HID Number:	Not reported
Facility Registry Identifier:	110005725082
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	Low
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Honolulu Harbor
SDAR Environmental Interest Name:	Hawaii Stevedores
HID Number:	Not reported
Facility Registry Identifier:	110005725082
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Low
Assessment:	Response Necessary
Response:	Response Ongoing
Nature of Contamination:	Found: Subsurface petroleum contamination in soil and groundwater
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Honolulu Harbor Iwilei Unit
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

HAWAII STEVEDORES (Continued) **S106817380**

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Honolulu Harbor
Case Number:	19941126
HID Number:	Not reported
Facility Registry Id:	110005725082
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Pier 26, Honolulu Harbor diesel #2, #6, bunker fuel leaching from soil/storm drain
Substances:	Diesel #2, #6, Bunker Fuel
Less Or Greater Than:	Not reported
Numerical Quantity:	150
Units:	Gallons
Activity Type:	Response
Activity Lead:	Bill Perry
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Hawaii Stevedores, Inc.

ENG CONTROLS:

Supplemental Location Text:	Honolulu Harbor Pier 35
Zip Suffix:	Not reported
Island:	Oahu
Potential Hazards And Controls:	Hazard Managed With Controls
Engineering Control:	Engineering Control Required

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101 **801 SOUTH HOTEL STREET** **HI SHWS** **S115488669**
SSE **801 S HOTEL ST** **N/A**
1/2-1 **HONOLULU, HI 96813**
0.993 mi.
5242 ft.

Relative:
Higher

Actual:
16 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	801 South Hotel Street
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Cal Miyahara
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	801 South Hotel Street
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	Medium
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Not reported

801 SOUTH HOTEL STREET (Continued) **S115488669**

Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Cal Miyahara
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

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102 WNW 1/2-1 0.995 mi. 5252 ft. **CLASSIC BOWL** **HI SHWS** **S117391422**
1190 DILLINGHAM BLVD **N/A**
HONOLULU, HI

Relative: Lower

Actual: 3 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Classic Bowl
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Program:	State
Project Manager:	Jordan Nakayama
Hazard Priority:	Medium
Potential Hazards And Controls:	Hazard Present
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Classic Bowl
HID Number:	Not reported
Facility Registry Identifier:	Not reported
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Present
Priority:	Medium
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: Petroleum-impacted soil, groundwater, and soil gas.
Nature of Residual Contamination:	Not reported
Use Restrictions:	Controls Required to Manage Contamination
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	Not reported
Document Date:	Not reported
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Jordan Nakayama
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

103
NNE
1/2-1
0.999 mi.
5274 ft.

SAINT FRANCIS HOSPITAL
2230 LILIHA ST
HONOLULU, HI 96817

HI SHWS **U001235227**
HI LUST **N/A**
HI UST
HI SPILLS

Relative:
Higher

Actual:
185 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Saint Francis Medical Center, Liliha Street
HID Number:	Not reported
Facility Registry Identifier:	110014043631
Lead Agency:	HEER
Program:	State
Project Manager:	Steve Mow
Hazard Priority:	NFA
Potential Hazards And Controls:	Hazard Undetermined
Organization:	Not reported
Island:	Oahu
Supplemental Location Text:	Not reported
SDAR Environmental Interest Name:	Saint Francis Medical Center, Liliha Street
HID Number:	Not reported
Facility Registry Identifier:	110014043631
Lead Agency:	HEER
Progran Name:	State
Potential Hazard And Controls:	Hazard Undetermined
Priority:	NFA
Assessment:	Assessment Ongoing
Response:	Not reported
Nature of Contamination:	Found: PAHs (benzo[a]pyrene & anthracene) found near UST
Nature of Residual Contamination:	Not reported
Use Restrictions:	Undetermined
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action - Type Undetermined
Document Date:	04/29/2005
Document Number:	Not reported
Document Subject:	Not reported
Project Manager:	Steve Mow
Contact Information:	(808) 586-4249 919 Ala Moana Blvd, Honolulu, HI 96814

LUST:

Facility ID:	9-100785
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	06/04/2002
Release ID:	000094
Project Officer:	Shunsheng Fu

Facility ID:	9-100785
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	03/19/2002
Release ID:	910032
Project Officer:	Shunsheng Fu

UST:

SAINT FRANCIS HOSPITAL (Continued) **U001235227**

Facility ID:	9-100785
Owner:	SAINT FRANCIS HOSPITAL
Owner Address:	2230 LILIHA ST
Owner City,St,Zip:	Honolulu, 96817 96817
Latitude:	21.328933
Longitude:	-157.852226
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching

Tank ID:	R-1
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	11/30/1990
Tank Capacity:	7500
Substance:	Diesel

Tank ID:	R-2
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	11/30/1990
Tank Capacity:	550
Substance:	Other

Tank ID:	R-4
Date Installed:	01/30/1976
Tank Status:	**Permanently Out of Use**
Date Closed:	04/22/1994
Tank Capacity:	450
Substance:	Diesel

Tank ID:	R-M-1
Date Installed:	01/30/1976
Tank Status:	**Permanently Out of Use**
Date Closed:	12/13/2000
Tank Capacity:	10000
Substance:	Diesel

Tank ID:	R-M-6
Date Installed:	Not reported
Tank Status:	**Permanently Out of Use**
Date Closed:	01/01/1990
Tank Capacity:	250
Substance:	Diesel

HI SPILLS:

Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19940120-1
HID Number:	Not reported
Facility Registry Id:	110014043631
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Saint Francis Hospital Diesel Pipe Pressure Check

SAINT FRANCIS HOSPITAL (Continued) **U001235227**

Substances:	Diesel Fuel
Less Or Greater Than:	<
Numerical Quantity:	1
Units:	Gallons
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Saint Francis Health System
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	19940201
HID Number:	Not reported
Facility Registry Id:	110014043631
Lead and Program:	HEER EP&R
ER:	Not reported
Units:	Saint Francis Hospital Tank Tightness Test Failure
Substances:	Diesel Fuel
Less Or Greater Than:	Not reported
Numerical Quantity:	Not reported
Units:	Not reported
Activity Type:	Response
Activity Lead:	Not reported
Assignment End Date:	Not reported
Result:	SOSC NFA
File Under:	Saint Francis Health System

Count: 9 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
HONOLULU	S117391417	1339 SCHOOL STREET	1339, 1341, 1343 N SCHOOL ST		HI SHWS, HI ENG CONTROLS, HI INST CONTROL
HONOLULU	S111704669	ALA WAI HARBOR BOAT REPAIR YARD	ALA MOANA BLVD		HI SHWS
HONOLULU	1006820751	KAKAAKO MAKAI GATEWAY	COOKE ST & ILALO ST	96814	HI SHWS
HONOLULU	S106708609	CANNON CLUB	DIAMOND HEAD RD		HI SHWS, HI BROWNFIELDS
HONOLULU	1003879469	PACIFIC RESOURCES, INCORPORATED (G	IWILEI RD	96817	CERC-NFRAP
HONOLULU	S111704745	HONOLULU SEAWATER AIR CONDITIONING	KEAWE ST		HI SHWS, HI ENG CONTROLS, HI INST CONTROL
HONOLULU	S111704706	FORMER KAPALAMA MILITARY RESERVATI	N NIMITZ HWY		HI SHWS
HONOLULU	S108008765	CITIZENS ENERGY SERVICES PIER 38	NIMITZ HWY		HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST CONTROL
HONOLULU	S106819311	NIMITZ HIGHWAY WATER IMPROVEMENT P	N NIMITZ HWY	96817	HI SHWS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/16/2014
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: EPA
Telephone: N/A
Last EDR Contact: 04/08/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/16/2014
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: EPA
Telephone: N/A
Last EDR Contact: 04/08/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/16/2014
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: EPA
Telephone: N/A
Last EDR Contact: 04/08/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 03/26/2015
Date Data Arrived at EDR: 04/08/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/08/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 11/11/2013
Date Made Active in Reports: 02/13/2014
Number of Days to Update: 94

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/10/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 72

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/10/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/10/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/10/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/10/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 03/16/2015
Date Data Arrived at EDR: 03/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 03/16/2015
Date Data Arrived at EDR: 03/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 13

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/18/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 63

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: Sites List

Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Landfills in the State of Hawaii

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/17/2012
Date Data Arrived at EDR: 04/03/2013
Date Made Active in Reports: 05/10/2013
Number of Days to Update: 37

Source: Department of Health
Telephone: 808-586-4245
Last EDR Contact: 04/02/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 03/02/2015
Date Data Arrived at EDR: 03/04/2015
Date Made Active in Reports: 03/17/2015
Number of Days to Update: 13

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Semi-Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 29

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/08/2015
Date Data Arrived at EDR: 01/08/2015
Date Made Active in Reports: 02/09/2015
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/08/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 01/28/2015
Date Data Arrived at EDR: 01/30/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 42

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/10/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 31
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/26/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 11/01/2013
Number of Days to Update: 184
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/03/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 01/30/2015
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 32
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 03/02/2015
Date Data Arrived at EDR: 03/04/2015
Date Made Active in Reports: 03/17/2015
Number of Days to Update: 13
Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/30/2015
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 36
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/26/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 01/29/2015
Date Data Arrived at EDR: 01/30/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 42

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/14/2014
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 28

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/26/2015
Next Scheduled EDR Contact: 05/11/2015
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2015
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 29

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Quarterly

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/01/2013
Date Data Arrived at EDR: 05/01/2013
Date Made Active in Reports: 01/27/2014
Number of Days to Update: 271

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/28/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/30/2014
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/13/2015
Number of Days to Update: 10

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Semi-Annually

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/13/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Control Sites

A listing of sites with engineering controls in place.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 404-586-4249
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls

Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/29/2014
Date Data Arrived at EDR: 10/01/2014
Date Made Active in Reports: 11/06/2014
Number of Days to Update: 36

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/02/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Response Program Sites
Sites participating in the Voluntary Response Program. The purpose of the VRP is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntarily cleanup properties.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Sites
With certain legal exclusions and additions, the term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/27/2015
Number of Days to Update: 36
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/23/2015
Date Data Arrived at EDR: 03/24/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 70
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/24/2015
Next Scheduled EDR Contact: 07/06/2015
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/23/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/01/2015
Next Scheduled EDR Contact: 08/17/2015
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/25/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 15
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Quarterly

CDL: Clandestine Drug Lab Listing
A listing of clandestine drug lab site locations.

Date of Government Version: 08/04/2010
Date Data Arrived at EDR: 09/10/2010
Date Made Active in Reports: 10/22/2010
Number of Days to Update: 42
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/25/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 15
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 72

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

SPILLS: Release Notifications

Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/22/2014
Date Made Active in Reports: 01/28/2015
Number of Days to Update: 37

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 03/10/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/11/2013
Number of Days to Update: 39

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/10/2015
Date Data Arrived at EDR: 03/31/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/31/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/05/2015
Next Scheduled EDR Contact: 08/17/2015
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/14/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 06/06/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 09/18/2014
Number of Days to Update: 8

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 46

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/30/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/26/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Varies

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 12/30/2014
Date Data Arrived at EDR: 12/31/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 29

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/03/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 02/12/2015
Date Made Active in Reports: 06/02/2015
Number of Days to Update: 110

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 01/29/2015
Next Scheduled EDR Contact: 06/08/2015
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/27/2015
Next Scheduled EDR Contact: 07/06/2015
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/20/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/20/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/10/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/23/2015
Date Data Arrived at EDR: 02/06/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 31
Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 04/09/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 10/15/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 33
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/17/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/31/2015
Date Data Arrived at EDR: 04/09/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 63
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 06/04/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/07/2015
Date Data Arrived at EDR: 04/09/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/09/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 01/18/2015
Date Data Arrived at EDR: 02/27/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 26

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2015
Date Data Arrived at EDR: 02/13/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/27/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/26/2013
Date Made Active in Reports: 04/19/2013
Number of Days to Update: 52

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/29/2015
Next Scheduled EDR Contact: 09/07/2015
Data Release Frequency: Biennially

UIC: Underground Injection Wells Listing

A listing of underground injection well locations.

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/12/2013
Date Made Active in Reports: 04/09/2013
Number of Days to Update: 56

Source: Department of Health
Telephone: 808-586-4258
Last EDR Contact: 06/01/2015
Next Scheduled EDR Contact: 09/14/2015
Data Release Frequency: Varies

DRYCLEANERS: Permitted Drycleaner Facility Listing
A listing of permitted drycleaner facilities in the state.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 01/09/2015
Date Made Active in Reports: 02/11/2015
Number of Days to Update: 33
Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 04/06/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Varies

AIRS: List of Permitted Facilities
A listing of permitted facilities in the state.

Date of Government Version: 04/08/2015
Date Data Arrived at EDR: 04/10/2015
Date Made Active in Reports: 04/30/2015
Number of Days to Update: 20
Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 04/06/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/14/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/21/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Varies

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/07/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/14/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: N/A

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Quarterly

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 11/25/2014
Date Data Arrived at EDR: 11/26/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/10/2015
Next Scheduled EDR Contact: 07/20/2015
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/09/2015
Date Data Arrived at EDR: 03/10/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/31/2015
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/14/2015
Next Scheduled EDR Contact: 08/24/2015
Data Release Frequency: Varies

Financial Assurance: Financial Assurance Information Listing

A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/13/2015
Date Data Arrived at EDR: 03/17/2015
Date Made Active in Reports: 03/25/2015
Number of Days to Update: 8

Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 06/10/2015
Next Scheduled EDR Contact: 09/28/2015
Data Release Frequency: Varies

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/16/2014
Date Data Arrived at EDR: 10/31/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 17

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/30/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/16/2014
Date Data Arrived at EDR: 10/31/2014
Date Made Active in Reports: 11/17/2014
Number of Days to Update: 17

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/30/2015
Next Scheduled EDR Contact: 07/13/2015
Data Release Frequency: Annually

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/15/2015
Next Scheduled EDR Contact: 07/27/2015
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/01/2015
Next Scheduled EDR Contact: 08/10/2015
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2015
Next Scheduled EDR Contact: 09/21/2015
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR US Hist Auto Stat: EDR Exclusive Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR US Hist Cleaners: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/17/2014
Number of Days to Update: 200

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/08/2014
Number of Days to Update: 191

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines:
Source: PennWell Corporation
Telephone: 800-823-6277
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Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: 800-823-6277
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

1331-1347 RIVER STREET
1331-1347 RIVER STREET
HONOLULU, HI 96817

TARGET PROPERTY COORDINATES

Latitude (North):	21.3157 - 21° 18' 56.52''
Longitude (West):	157.8597 - 157° 51' 34.92''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	618266.7
UTM Y (Meters):	2357376.8
Elevation:	7 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	21157-C7 HONOLULU, HI
Most Recent Revision:	Not reported
West Map:	21157-C8 PEARL HARBOR, HI
Most Recent Revision:	Not reported

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

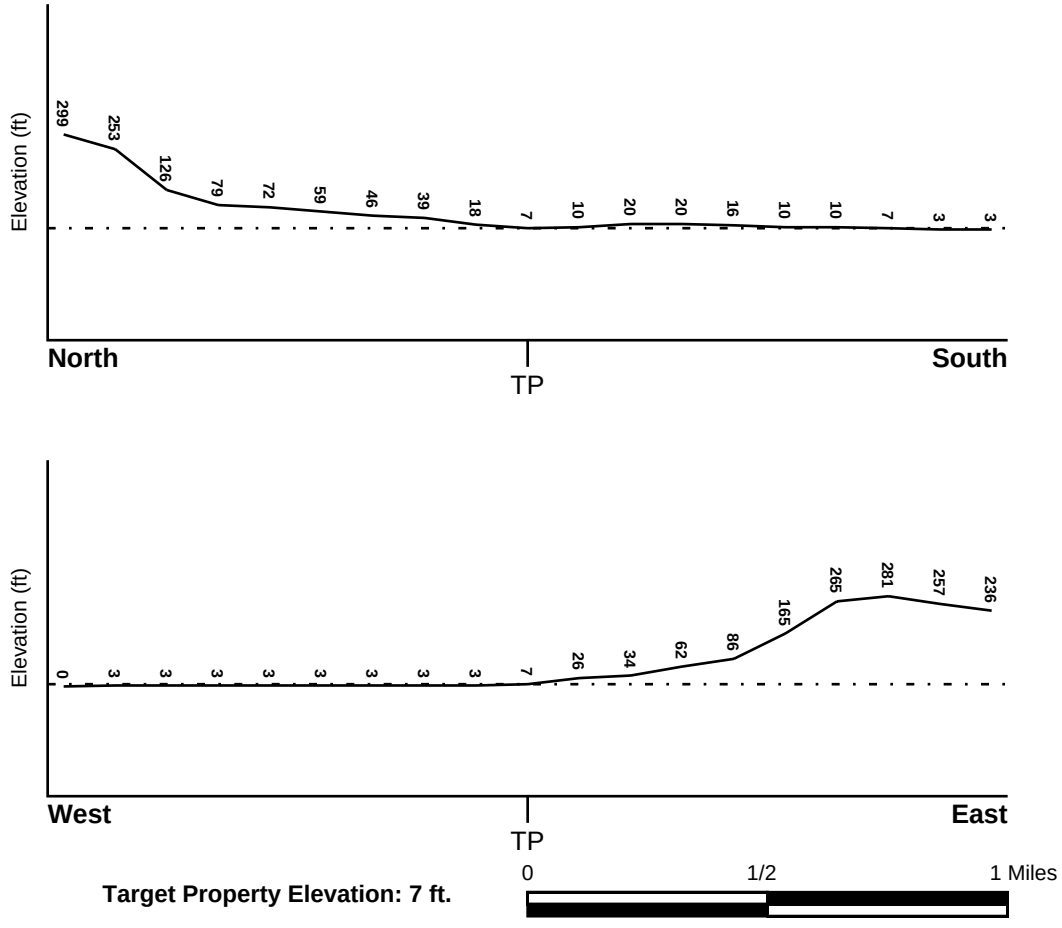
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 7 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
HONOLULU, HI	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 15003C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
HONOLULU	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

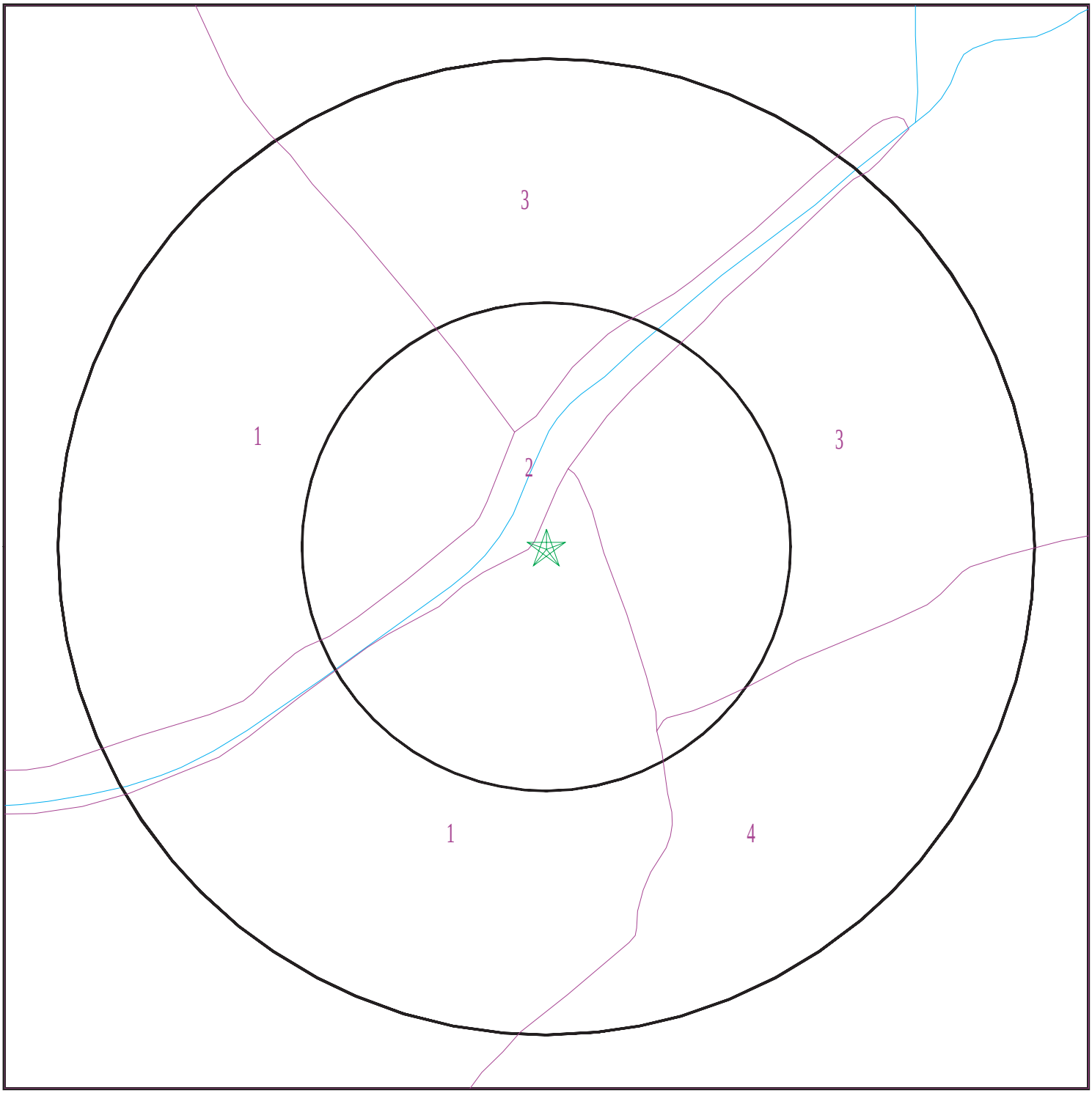
Era: -
System: -
Series: -
Code: N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 4328367.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	1331-1347 River Street	CLIENT:	Bureau Veritas North America, Inc.
ADDRESS:	1331-1347 River Street Honolulu HI 96817	CONTACT:	Nicole Okino
LAT/LONG:	21.3157 / 157.8597	INQUIRY #:	4328367.2s
		DATE:	June 17, 2015 1:48 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Ewa

Soil Surface Texture: silty clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14 Min: 4.23	Max: 7.3 Min: 6.6
2	7 inches	29 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	ML-K (proposed)	Max: 14 Min: 4.23	Max: 7.3 Min: 6.6
3	29 inches	38 inches	bedrock	Not reported	Not reported	Max: 42 Min: 1	Max: Min:

Soil Map ID: 2

Soil Component Name: Water > 40 acres

Soil Surface Texture: silty clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:
Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 3

Soil Component Name: Kaena

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 107 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 4.23 Min: 0.42	Max: 7.3 Min: 6.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	9 inches	37 inches	stony clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.41 Min: 0.01	Max: 7.3 Min: 6.6
3	37 inches	53 inches	stony clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 1.41 Min: 0.01	Max: 7.3 Min: 6.6

Soil Map ID: 4

Soil Component Name: Makiki

Soil Surface Texture: clay loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 42 Min: 4.23	Max: 5.5 Min: 5.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	20 inches	29 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 14.11 Min: 4.23	Max: 6 Min: 5.6
3	29 inches	59 inches	paragravelly clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141.14 Min: 14.11	Max: 6 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000269785	1/8 - 1/4 Mile ENE
3	USGS40000269742	1/8 - 1/4 Mile SSW
B4	USGS40000269805	1/8 - 1/4 Mile NNW
D7	USGS40000269784	1/4 - 1/2 Mile ENE
E11	USGS40000269733	1/4 - 1/2 Mile SE
C12	USGS40000269728	1/4 - 1/2 Mile South
C13	USGS40000269729	1/4 - 1/2 Mile SSW
F16	USGS40000269719	1/4 - 1/2 Mile South
G19	USGS40000269731	1/4 - 1/2 Mile SW
H20	USGS40000269794	1/4 - 1/2 Mile WNW
F23	USGS40000269717	1/4 - 1/2 Mile South

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
I26	USGS40000269715	1/4 - 1/2 Mile SSE
I27	USGS40000269716	1/4 - 1/2 Mile SSE
I29	USGS40000269712	1/4 - 1/2 Mile South
J31	USGS40000269718	1/4 - 1/2 Mile SSW
J33	USGS40000269713	1/4 - 1/2 Mile SSW
K36	USGS40000269704	1/4 - 1/2 Mile South
L37	USGS40000269721	1/4 - 1/2 Mile SE
J39	USGS40000269705	1/4 - 1/2 Mile SSW
J40	USGS40000269706	1/4 - 1/2 Mile SSW
J41	USGS40000269707	1/4 - 1/2 Mile SSW
N44	USGS40000269795	1/2 - 1 Mile WNW
M46	USGS40000269703	1/2 - 1 Mile SSE
J47	USGS40000269708	1/2 - 1 Mile SSW
M52	USGS40000269699	1/2 - 1 Mile SSE
O53	USGS40000269711	1/2 - 1 Mile SSW
P57	USGS40000269697	1/2 - 1 Mile SSW
O59	USGS40000269700	1/2 - 1 Mile SSW
O60	USGS40000269701	1/2 - 1 Mile SSW
Q62	USGS40000269695	1/2 - 1 Mile South
R66	USGS40000269751	1/2 - 1 Mile WSW
T67	USGS40000269710	1/2 - 1 Mile SE
S69	USGS40000269688	1/2 - 1 Mile South
S70	USGS40000269689	1/2 - 1 Mile South
V71	USGS40000269822	1/2 - 1 Mile NNW
W73	USGS40000269810	1/2 - 1 Mile NW
S78	USGS40000269682	1/2 - 1 Mile South
S79	USGS40000269683	1/2 - 1 Mile South
P80	USGS40000269692	1/2 - 1 Mile SSW
U86	USGS40000269778	1/2 - 1 Mile West
U87	USGS40000269779	1/2 - 1 Mile West
U88	USGS40000269780	1/2 - 1 Mile West
P90	USGS40000269690	1/2 - 1 Mile SSW
P91	USGS40000269691	1/2 - 1 Mile SSW
X93	USGS40000269799	1/2 - 1 Mile WNW
X95	USGS40000269790	1/2 - 1 Mile West
Q96	USGS40000269681	1/2 - 1 Mile South
U99	USGS40000269768	1/2 - 1 Mile West
X100	USGS40000269800	1/2 - 1 Mile WNW
S102	USGS40000269679	1/2 - 1 Mile SSW
U105	USGS40000269771	1/2 - 1 Mile West
X106	USGS40000269796	1/2 - 1 Mile WNW
U107	USGS40000269763	1/2 - 1 Mile West
X109	USGS40000269801	1/2 - 1 Mile WNW
X112	USGS40000269802	1/2 - 1 Mile WNW
Z114	USGS40000269673	1/2 - 1 Mile SSE
Y117	USGS40000269687	1/2 - 1 Mile SSE
AA118	USGS40000269666	1/2 - 1 Mile SSW
AB119	USGS40000269693	1/2 - 1 Mile SW
AA121	USGS40000269667	1/2 - 1 Mile SSW
AD123	USGS40000269772	1/2 - 1 Mile West
AC126	USGS40000269674	1/2 - 1 Mile SSW
AE127	USGS40000269649	1/2 - 1 Mile South

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
AB128	USGS40000269684	1/2 - 1 Mile SSW
AF131	USGS40000269678	1/2 - 1 Mile SSE
AE133	USGS40000269646	1/2 - 1 Mile South
AF135	USGS40000269672	1/2 - 1 Mile SSE
AD137	USGS40000269773	1/2 - 1 Mile West
AD139	USGS40000269781	1/2 - 1 Mile West
AD140	USGS40000269786	1/2 - 1 Mile West
AG143	USGS40000269788	1/2 - 1 Mile West
AF144	USGS40000269670	1/2 - 1 Mile SSE
AF145	USGS40000269671	1/2 - 1 Mile SSE
AH146	USGS40000269647	1/2 - 1 Mile SSW
AI148	USGS40000269813	1/2 - 1 Mile WNW
AI149	USGS40000269811	1/2 - 1 Mile WNW
AI150	USGS40000269812	1/2 - 1 Mile WNW
AI151	USGS40000269815	1/2 - 1 Mile NW
AI152	USGS40000269816	1/2 - 1 Mile NW
AI153	USGS40000269817	1/2 - 1 Mile NW
AG163	USGS40000269789	1/2 - 1 Mile West
AI164	USGS40000269814	1/2 - 1 Mile WNW
AF166	USGS40000269664	1/2 - 1 Mile SSE
AJ177	USGS40000269852	1/2 - 1 Mile North
AF178	USGS40000269657	1/2 - 1 Mile SSE
AF179	USGS40000269658	1/2 - 1 Mile SSE
AF180	USGS40000269656	1/2 - 1 Mile SSE
AF181	USGS40000269654	1/2 - 1 Mile SSE
AF182	USGS40000269655	1/2 - 1 Mile SSE
AF183	USGS40000269662	1/2 - 1 Mile SSE
AF184	USGS40000269663	1/2 - 1 Mile SSE
AF185	USGS40000269661	1/2 - 1 Mile SSE
AF186	USGS40000269659	1/2 - 1 Mile SSE
AF187	USGS40000269660	1/2 - 1 Mile SSE
AK189	USGS40000269850	1/2 - 1 Mile NNW
AL190	USGS40000269636	1/2 - 1 Mile South
194	USGS40000269635	1/2 - 1 Mile South
AM195	USGS40000269645	1/2 - 1 Mile SSE
AL197	USGS40000269634	1/2 - 1 Mile South
AK198	USGS40000269853	1/2 - 1 Mile NNW
AK200	USGS40000269854	1/2 - 1 Mile NNW
AK202	USGS40000269863	1/2 - 1 Mile NNW
AN203	USGS40000269807	1/2 - 1 Mile ENE
AM207	USGS40000269639	1/2 - 1 Mile SSE
210	USGS40000269730	1/2 - 1 Mile WSW
AO211	USGS40000269627	1/2 - 1 Mile SSE
AP212	USGS40000269621	1/2 - 1 Mile South
AQ214	USGS40000269638	1/2 - 1 Mile SSE
AS217	USGS40000269633	1/2 - 1 Mile SSE
AR218	USGS40000269617	1/2 - 1 Mile South

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
F17	HI0000236	1/4 - 1/2 Mile South

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	HI9000000000914	1/8 - 1/4 Mile ENE
B5	HI9000000000916	1/4 - 1/2 Mile NNW
C6	HI9000000000773	1/4 - 1/2 Mile South
D8	HI9000000000917	1/4 - 1/2 Mile ENE
C9	HI9000000000786	1/4 - 1/2 Mile South
E10	HI9000000000752	1/4 - 1/2 Mile SE
C14	HI9000000000777	1/4 - 1/2 Mile South
15	HI9000000000775	1/4 - 1/2 Mile SSW
G18	HI9000000000813	1/4 - 1/2 Mile SW
H21	HI9000000000921	1/4 - 1/2 Mile WNW
F22	HI9000000000766	1/4 - 1/2 Mile South
I24	HI9000000000792	1/4 - 1/2 Mile SSE
I25	HI9000000000791	1/4 - 1/2 Mile SSE
I28	HI9000000000741	1/4 - 1/2 Mile South
J30	HI9000000000785	1/4 - 1/2 Mile SSW
J32	HI9000000000776	1/4 - 1/2 Mile SSW
K34	HI9000000000759	1/4 - 1/2 Mile South
L35	HI9000000000743	1/4 - 1/2 Mile SE
J38	HI9000000000788	1/4 - 1/2 Mile SSW
M42	HI9000000000802	1/2 - 1 Mile SSE
J43	HI9000000000774	1/2 - 1 Mile SSW
N45	HI9000000000941	1/2 - 1 Mile WNW
M48	HI9000000000797	1/2 - 1 Mile SSE
K49	HI9000000000784	1/2 - 1 Mile SSW
K50	HI9000000000783	1/2 - 1 Mile SSW
O51	HI9000000000815	1/2 - 1 Mile SSW
P54	HI9000000000789	1/2 - 1 Mile SSW
O55	HI9000000000808	1/2 - 1 Mile SSW
O56	HI9000000000807	1/2 - 1 Mile SSW
Q58	HI9000000000740	1/2 - 1 Mile South
O61	HI9000000000812	1/2 - 1 Mile SSW
R63	HI9000000000955	1/2 - 1 Mile WSW
S64	HI9000000000778	1/2 - 1 Mile South
S65	HI9000000000779	1/2 - 1 Mile South
U68	HI9000000000951	1/2 - 1 Mile West
T72	HI9000000000790	1/2 - 1 Mile SE
V74	HI9000000000933	1/2 - 1 Mile NNW
W75	HI9000000000919	1/2 - 1 Mile NW
S76	HI9000000000781	1/2 - 1 Mile South
S77	HI9000000000782	1/2 - 1 Mile South
P81	HI9000000000806	1/2 - 1 Mile SSW
U82	HI9000000000944	1/2 - 1 Mile West
U83	HI9000000000946	1/2 - 1 Mile West

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

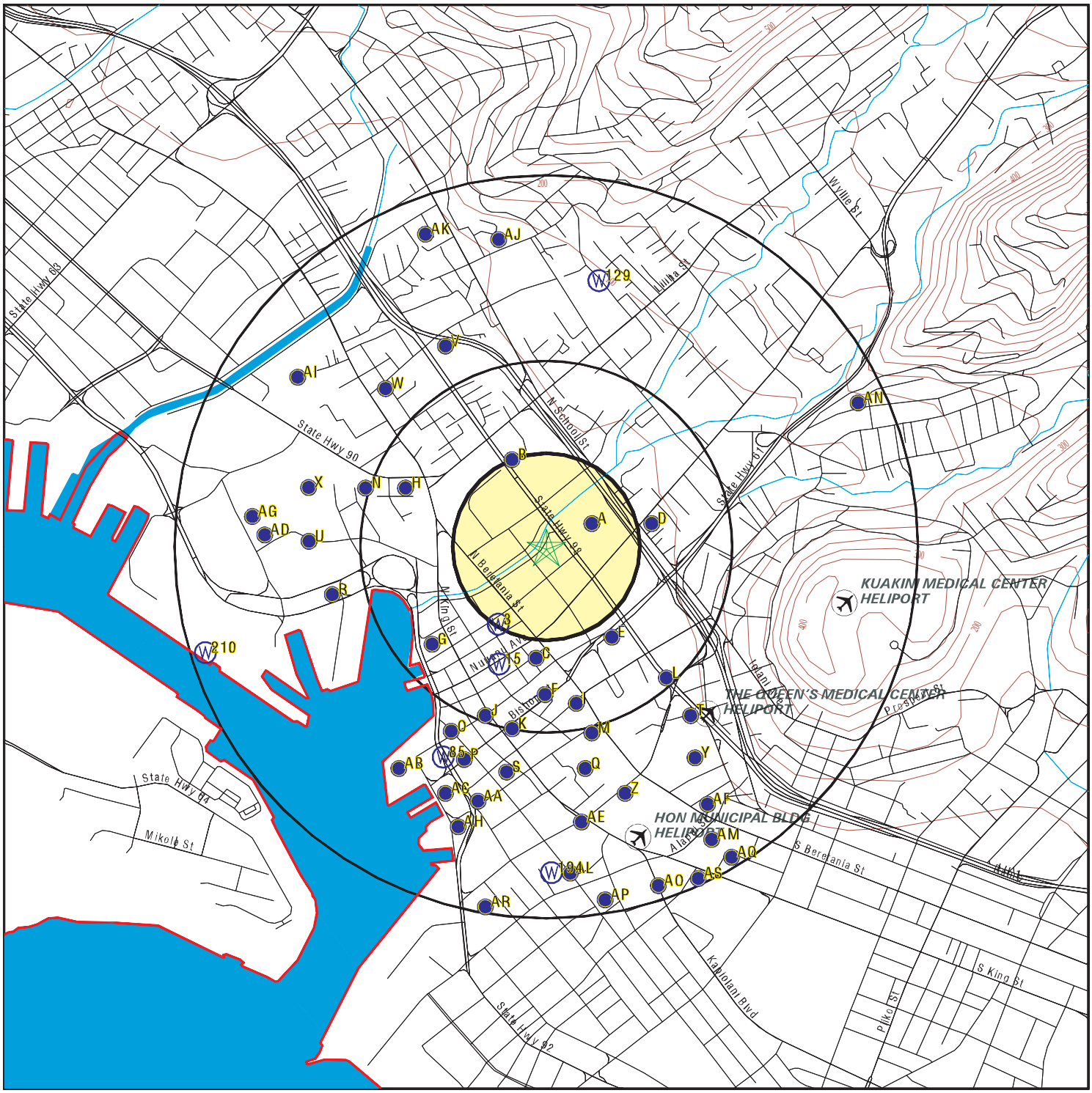
MAP ID	WELL ID	LOCATION FROM TP
U84	HI9000000000945	1/2 - 1 Mile West
85	HI9000000000804	1/2 - 1 Mile SSW
Q89	HI9000000000787	1/2 - 1 Mile SSE
X92	HI9000000000938	1/2 - 1 Mile WNW
X94	HI9000000000930	1/2 - 1 Mile West
P97	HI9000000000805	1/2 - 1 Mile SSW
U98	HI9000000000949	1/2 - 1 Mile West
S101	HI9000000000763	1/2 - 1 Mile SSW
U103	HI9000000000950	1/2 - 1 Mile West
X104	HI9000000000929	1/2 - 1 Mile WNW
X108	HI9000000000939	1/2 - 1 Mile WNW
Y110	HI9000000000747	1/2 - 1 Mile SE
X111	HI9000000000931	1/2 - 1 Mile WNW
Z113	HI9000000000780	1/2 - 1 Mile SSE
AA115	HI9000000000755	1/2 - 1 Mile SSW
AB116	HI9000000000816	1/2 - 1 Mile SW
AC120	HI9000000000818	1/2 - 1 Mile SSW
AD122	HI9000000000947	1/2 - 1 Mile West
AE124	HI9000000000739	1/2 - 1 Mile South
AB125	HI9000000000817	1/2 - 1 Mile SSW
129	HI9000000000918	1/2 - 1 Mile North
AE130	HI9000000000745	1/2 - 1 Mile South
AF132	HI9000000000810	1/2 - 1 Mile SSE
AD134	HI9000000000942	1/2 - 1 Mile West
AE136	HI9000000000809	1/2 - 1 Mile South
AD138	HI9000000000943	1/2 - 1 Mile West
AG141	HI9000000000948	1/2 - 1 Mile West
AF142	HI9000000000793	1/2 - 1 Mile SSE
AH147	HI9000000000758	1/2 - 1 Mile SSW
AG154	HI9000000000932	1/2 - 1 Mile West
AI155	HI9000000000959	1/2 - 1 Mile NW
AI156	HI9000000000960	1/2 - 1 Mile NW
AI157	HI9000000000957	1/2 - 1 Mile NW
AI158	HI9000000000958	1/2 - 1 Mile NW
AI159	HI9000000000963	1/2 - 1 Mile NW
AI160	HI9000000000964	1/2 - 1 Mile NW
AI161	HI9000000000961	1/2 - 1 Mile NW
AI162	HI9000000000962	1/2 - 1 Mile NW
AF165	HI9000000000811	1/2 - 1 Mile SSE
AF167	HI9000000000767	1/2 - 1 Mile SSE
AF168	HI9000000000749	1/2 - 1 Mile SSE
AF169	HI9000000000748	1/2 - 1 Mile SSE
AF170	HI9000000000771	1/2 - 1 Mile SSE
AF171	HI9000000000803	1/2 - 1 Mile SSE
AF172	HI9000000000769	1/2 - 1 Mile SSE
AF173	HI9000000000770	1/2 - 1 Mile SSE
AF174	HI9000000000760	1/2 - 1 Mile SSE
AF175	HI9000000000761	1/2 - 1 Mile SSE
AF176	HI9000000000768	1/2 - 1 Mile SSE
AJ188	HI9000000000915	1/2 - 1 Mile North
AK191	HI9000000000922	1/2 - 1 Mile NNW
AL192	HI9000000000754	1/2 - 1 Mile South

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
AM193	HI9000000000756	1/2 - 1 Mile SSE
AL196	HI9000000000801	1/2 - 1 Mile South
AK199	HI9000000000923	1/2 - 1 Mile NNW
AK201	HI9000000000928	1/2 - 1 Mile NNW
AN204	HI9000000000913	1/2 - 1 Mile ENE
AM205	HI9000000000744	1/2 - 1 Mile SSE
AK206	HI9000000000927	1/2 - 1 Mile NNW
AO208	HI9000000000750	1/2 - 1 Mile SSE
AP209	HI9000000000757	1/2 - 1 Mile South
AQ213	HI9000000000772	1/2 - 1 Mile SSE
AR215	HI9000000000753	1/2 - 1 Mile South
AS216	HI9000000000800	1/2 - 1 Mile SSE

PHYSICAL SETTING SOURCE MAP - 4328367.2s



- County Boundary
- Major Roads
- Contour Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location

SITE NAME: 1331-1347 River Street ADDRESS: 1331-1347 River Street Honolulu HI 96817 LAT/LONG: 21.3157 / 157.8597	CLIENT: Bureau Veritas North America, Inc. CONTACT: Nicole Okino INQUIRY #: 4328367.2s DATE: June 17, 2015 1:48 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
ENE **FED USGS** **USGS40000269785**
1/8 - 1/4 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211911157513801		
Monloc name:	3-1951-01 W109 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3165573
Longitude:	-157.8578123	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	35.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18830101	Welldepth:	767
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

A2
ENE **HI WELLS** **HI9000000000914**
1/8 - 1/4 Mile
Higher

Wid:	3-1951-001	Island:	Oahu
Well name:	Botanic Garden	Old name:	Not Reported
Yr drilled:	1883		
Driller:	Not Reported		
Quad map:	13		
Long83dd:	-157.857778		
Lat83dd:	21.316667		
Gps:	0	Utm:	-1
Owner user:	Department of Parks and Recreation, Honolulu, DPR		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	109-	Well type:	Not Reported
Casing dia:	8	Ground el:	35
Well depth:	767		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	31.4	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	55		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-732
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-7-008:002
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000914

3
SSW **FED USGS** **USGS40000269742**
1/8 - 1/4 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211857157515201		
Monloc name:	3-1851-39 W100 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3126688
Longitude:	-157.861701	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	21.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19370101	Welldepth:	60
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

B4
NNW **FED USGS** **USGS40000269805**
1/8 - 1/4 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211920157515001		
Monloc name:	3-1951-03 W112		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3190572
Longitude:	-157.8611455	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	23.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19050101	Welldepth:	1029
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

B5
NNW
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000916**

Wid:	3-1951-003	Island:	Oahu
Well name:	Vineyard Blvd	Old name:	Not Reported
Yr drilled:	1905		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.861111		
Lat83dd:	21.319167		
Gps:	0	Utm:	-1
Owner user:	The Salvation Army		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	112-	Well type:	Not Reported
Casing dia:	10	Ground el:	23
Well depth:	1029		
Solid case:	1009	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	29.6	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	70		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RA		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-1006
Bot solid:	-986	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-05
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000916

C6
South
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000773**

Wid:	3-1851-037	Island:	Oahu
Well name:	Nuuanu Ave	Old name:	Not Reported
Yr drilled:	1936		
Driller:	Hobart		
Quad map:	13		
Long83dd:	-157.860278		
Lat83dd:	21.311944		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	100-1	Well type:	Not Reported
Casing dia:	8	Ground el:	24
Well depth:	52		
Solid case:	40	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	0.4	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	3
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	PLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-28
Bot solid:	-16	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-36
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000773

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

D7
ENE **FED USGS** **USGS40000269784**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211911157512901		
Monloc name:	3-1951-04 W109-1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3165573
Longitude:	-157.8553123	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	35.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19390825	Welldepth:	53
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

D8
ENE **HI WELLS** **HI9000000000917**
1/4 - 1/2 Mile
Higher

Wid:	3-1951-004	Island:	Oahu
Well name:	Liliha	Old name:	Not Reported
Yr drilled:	1939		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.855278		
Lat83dd:	21.316667		
Gps:	0	Utm:	-1
Owner user:	Chun Hoon Market		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	53		
Solid case:	28	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	69		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RA		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000917

C9
South
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000786**

Wid:	3-1851-050	Island:	Oahu
Well name:	Ft St Mall	Old name:	Not Reported
Yr drilled:	1940		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.859722		
Lat83dd:	21.311389		
Gps:	0	Utm:	-1
Owner user:	W. Ramsey		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	105-2	Well type:	Not Reported
Casing dia:	3	Ground el:	Not Reported
Well depth:	25		
Solid case:	6	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-40
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000786

E10
SE
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000752**

Wid:	3-1851-016	Island:	Oahu
Well name:	Central School	Old name:	Not Reported
Yr drilled:	1889		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.856944		
Lat83dd:	21.312222		
Gps:	0	Utm:	-1
Owner user:	C&C of Honolulu		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	107-	Well type:	Not Reported
Casing dia:	6	Ground el:	28
Well depth:	1007		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-979
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000752

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

E11
SE **FED USGS** **USGS40000269733**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211855157513501		
Monloc name:	3-1851-16 W107 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3121131
Longitude:	-157.856979	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	28.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18990101	Welldepth:	1007
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C12
South **FED USGS** **USGS40000269728**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211852157514501		
Monloc name:	3-1851-50 W105-2 DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3112799
Longitude:	-157.8597567	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	25.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19400801	Welldepth:	25
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C13
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269729**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211852157514901		
Monloc name:	3-1851-37 W100-1 DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3112799
Longitude:	-157.8608678	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	24.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19361006	Welldepth:	52
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

C14
South
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000777**

Wid:	3-1851-041	Island:	Oahu
Well name:	Ft St Mall	Old name:	Not Reported
Yr drilled:	1938		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.86		
Lat83dd:	21.310833		
Gps:	0	Utm:	-1
Owner user:	Fronk & Wynn		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	105-1	Well type:	Not Reported
Casing dia:	6	Ground el:	21
Well depth:	46		
Solid case:	22	Perf case:	42
Use:	Other		
Use year:	Not Reported		
Init head:	1.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	139		
Test date:	Not Reported	Test gpm:	40

Test ddown:	2.3	Test chlor:	150
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-25
Bot solid:	-1	Bot perf:	-21
Spec capac:	17		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-38
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000777

15
SSW
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000775**

Wid:	3-1851-039	Island:	Oahu
Well name:	Hawaii Theatre	Old name:	Not Reported
Yr drilled:	1937		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.861667		
Lat83dd:	21.311111		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	100-	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	60		
Solid case:	20	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	50
Test ddown:	0.8	Test chlor:	181
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	PLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	63		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-003:014
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-37
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000775

F16
South
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269719**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211848157514601		
Monloc name:	3-1851-41 W105-1 DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3101689
Longitude:	-157.8600345	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	21.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19380101	Welldepth:	46
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

F17
South
1/4 - 1/2 Mile
Higher

FRDS PWS **HI0000236**

Epa region:	09	State:	HI
Pwsid:	HI0000236		
Pwsname:	KALUAKOI		
City served:	Not Reported	State served:	HI
Zip served:	Not Reported	Fips county:	15009
Status:	Closed	Pop srvd:	700
Pwssvcconn:	59	Source:	Groundwater
Pws type:	CWS	Owner:	Private
Contact:	Not Reported		
Contactor gname:	Not Reported		

Contact phone:	Not Reported	Contact address1:	Not Reported
Contact address2:	Not Reported	Contact city:	Not Reported
Contact state:	Not Reported	Contact zip:	Not Reported
Activity code:	N		

Facid:	166		
Facname:	MOLOKAI IRRIGATION SYSTEM (WELL 17)		
Facility type:	Treatment_plant	Activity code:	A
Treatment obj:	disinfection	Treatment process:	chlorination (frds-1.5)

Location Information:

Name:	KALUAKOI		
Pwstypcd:	CWS	Primsrccd:	GW
Popserved:	700		
Add1:	Not Reported		
Add2:	Not Reported		
City:	Not Reported	State:	Not Reported
Zip:	Not Reported	Phone:	Not Reported
Cityserv:	Not Reported	Cntyserv:	Maui
Stateserv:	HI	Zipserv:	Not Reported

Enforcement Information:

Violation id:	905	Orig cd:	S
Enf fy:	2005	Enf act date:	06/30/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	905	Orig cd:	S
Enf fy:	2005	Enf act date:	07/19/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	905	Orig cd:	S
Enf fy:	2005	Enf act date:	07/19/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	904	Orig cd:	S
Enf fy:	2004	Enf act date:	07/20/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	904	Orig cd:	S
Enf fy:	2004	Enf act date:	07/07/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	904	Orig cd:	S
Enf fy:	2004	Enf act date:	07/20/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	902	Orig cd:	S
Enf fy:	2002	Enf act date:	07/25/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	902	Orig cd:	S
Enf fy:	2002	Enf act date:	07/04/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	902	Orig cd:	S
Enf fy:	2002	Enf act date:	07/25/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	900	Orig cd:	S
Enf fy:	2000	Enf act date:	07/20/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	900	Orig cd:	S
Enf fy:	2000	Enf act date:	07/13/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	900	Orig cd:	S
Enf fy:	2000	Enf act date:	07/13/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	805	Orig cd:	S
Enf fy:	2005	Enf act date:	07/19/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	805	Orig cd:	S
Enf fy:	2005	Enf act date:	06/30/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	805	Orig cd:	S
Enf fy:	2005	Enf act date:	07/19/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	804	Orig cd:	S
Enf fy:	2004	Enf act date:	07/07/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	804	Orig cd:	S
Enf fy:	2004	Enf act date:	07/20/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	804	Orig cd:	S
Enf fy:	2004	Enf act date:	07/20/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	802	Orig cd:	S
Enf fy:	2002	Enf act date:	07/25/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	802	Orig cd:	S
Enf fy:	2002	Enf act date:	07/04/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	802	Orig cd:	S
Enf fy:	2002	Enf act date:	07/25/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	800	Orig cd:	S
Enf fy:	2000	Enf act date:	07/20/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	800	Orig cd:	S
Enf fy:	2000	Enf act date:	07/13/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	800	Orig cd:	S
Enf fy:	2000	Enf act date:	07/13/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	705	Orig cd:	S
Enf fy:	2005	Enf act date:	07/19/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	705	Orig cd:	S
Enf fy:	2005	Enf act date:	06/30/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	705	Orig cd:	S
Enf fy:	2005	Enf act date:	07/19/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	704	Orig cd:	S
Enf fy:	2004	Enf act date:	07/20/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	704	Orig cd:	S
Enf fy:	2004	Enf act date:	07/20/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	704	Orig cd:	S
Enf fy:	2004	Enf act date:	07/07/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	702	Orig cd:	S
Enf fy:	2002	Enf act date:	07/04/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	702	Orig cd:	S
Enf fy:	2002	Enf act date:	07/25/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	702	Orig cd:	S
Enf fy:	2002	Enf act date:	07/25/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	700	Orig cd:	S
Enf fy:	2000	Enf act date:	07/20/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	700	Orig cd:	S
Enf fy:	2000	Enf act date:	07/13/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	700	Orig cd:	S
Enf fy:	2000	Enf act date:	07/13/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	605	Orig cd:	S
Enf fy:	2005	Enf act date:	04/22/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	605	Orig cd:	S
Enf fy:	2005	Enf act date:	04/22/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	605	Orig cd:	S
Enf fy:	2005	Enf act date:	04/07/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	604	Orig cd:	S
Enf fy:	2004	Enf act date:	04/07/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	604	Orig cd:	S
Enf fy:	2004	Enf act date:	05/04/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	604	Orig cd:	S
Enf fy:	2004	Enf act date:	05/04/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	603	Orig cd:	S
Enf fy:	2003	Enf act date:	04/03/2003
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	603	Orig cd:	S
Enf fy:	2003	Enf act date:	04/25/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	603	Orig cd:	S
Enf fy:	2003	Enf act date:	04/25/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	602	Orig cd:	S
Enf fy:	2002	Enf act date:	04/26/2002
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	602	Orig cd:	S
Enf fy:	2002	Enf act date:	04/17/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	602	Orig cd:	S
Enf fy:	2002	Enf act date:	04/11/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	602	Orig cd:	S
Enf fy:	2003	Enf act date:	10/30/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	602	Orig cd:	S
Enf fy:	2002	Enf act date:	04/17/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	600	Orig cd:	S
Enf fy:	2000	Enf act date:	04/18/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	600	Orig cd:	S
Enf fy:	2000	Enf act date:	04/07/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	600	Orig cd:	S
Enf fy:	2000	Enf act date:	04/18/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	505	Orig cd:	S
Enf fy:	2005	Enf act date:	04/22/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	505	Orig cd:	S
Enf fy:	2005	Enf act date:	04/07/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	505	Orig cd:	S
Enf fy:	2005	Enf act date:	04/22/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	504	Orig cd:	S
Enf fy:	2004	Enf act date:	05/04/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	504	Orig cd:	S
Enf fy:	2004	Enf act date:	05/04/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	504	Orig cd:	S
Enf fy:	2004	Enf act date:	04/07/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	503	Orig cd:	S
Enf fy:	2003	Enf act date:	04/25/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	503	Orig cd:	S
Enf fy:	2003	Enf act date:	04/25/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	503	Orig cd:	S
Enf fy:	2003	Enf act date:	04/03/2003
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	502	Orig cd:	S
Enf fy:	2002	Enf act date:	04/11/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	502	Orig cd:	S
Enf fy:	2002	Enf act date:	04/26/2002
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	502	Orig cd:	S
Enf fy:	2002	Enf act date:	04/17/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	502	Orig cd:	S
Enf fy:	2002	Enf act date:	04/17/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	500	Orig cd:	S
Enf fy:	2000	Enf act date:	04/18/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	500	Orig cd:	S
Enf fy:	2000	Enf act date:	04/18/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	500	Orig cd:	S
Enf fy:	2000	Enf act date:	04/07/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	405	Orig cd:	S
Enf fy:	2005	Enf act date:	04/22/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	405	Orig cd:	S
Enf fy:	2005	Enf act date:	04/07/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	405	Orig cd:	S
Enf fy:	2005	Enf act date:	04/22/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	404	Orig cd:	S
Enf fy:	2004	Enf act date:	04/07/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	404	Orig cd:	S
Enf fy:	2004	Enf act date:	05/04/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	404	Orig cd:	S
Enf fy:	2004	Enf act date:	05/04/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	403	Orig cd:	S
Enf fy:	2003	Enf act date:	04/25/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	403	Orig cd:	S
Enf fy:	2003	Enf act date:	04/03/2003
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	403	Orig cd:	S
Enf fy:	2003	Enf act date:	04/25/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	402	Orig cd:	S
Enf fy:	2002	Enf act date:	04/26/2002
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	402	Orig cd:	S
Enf fy:	2002	Enf act date:	04/11/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	402	Orig cd:	S
Enf fy:	2002	Enf act date:	04/17/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	402	Orig cd:	S
Enf fy:	2002	Enf act date:	04/17/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	400	Orig cd:	S
Enf fy:	2000	Enf act date:	04/18/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	400	Orig cd:	S
Enf fy:	2000	Enf act date:	04/18/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	400	Orig cd:	S
Enf fy:	2000	Enf act date:	04/07/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	305	Orig cd:	S
Enf fy:	2005	Enf act date:	01/19/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	305	Orig cd:	S
Enf fy:	2005	Enf act date:	01/06/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	305	Orig cd:	S
Enf fy:	2005	Enf act date:	01/19/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	304	Orig cd:	S
Enf fy:	2004	Enf act date:	01/08/2004
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	304	Orig cd:	S
Enf fy:	2004	Enf act date:	01/14/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	304	Orig cd:	S
Enf fy:	2004	Enf act date:	01/14/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	303	Orig cd:	S
Enf fy:	2003	Enf act date:	01/22/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	303	Orig cd:	S
Enf fy:	2003	Enf act date:	01/22/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	303	Orig cd:	S
Enf fy:	2003	Enf act date:	12/05/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	300	Orig cd:	S
Enf fy:	2000	Enf act date:	01/07/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	300	Orig cd:	S
Enf fy:	2000	Enf act date:	01/19/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	300	Orig cd:	S
Enf fy:	2000	Enf act date:	01/19/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	205	Orig cd:	S
Enf fy:	2005	Enf act date:	01/06/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	205	Orig cd:	S
Enf fy:	2005	Enf act date:	01/19/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	205	Orig cd:	S
Enf fy:	2005	Enf act date:	01/19/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	204	Orig cd:	S
Enf fy:	2004	Enf act date:	01/08/2004
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	204	Orig cd:	S
Enf fy:	2004	Enf act date:	01/14/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	204	Orig cd:	S
Enf fy:	2004	Enf act date:	01/14/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	203	Orig cd:	S
Enf fy:	2003	Enf act date:	01/22/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	203	Orig cd:	S
Enf fy:	2003	Enf act date:	12/05/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	203	Orig cd:	S
Enf fy:	2003	Enf act date:	01/22/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	200	Orig cd:	S
Enf fy:	2000	Enf act date:	01/19/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	200	Orig cd:	S
Enf fy:	2000	Enf act date:	01/07/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	200	Orig cd:	S
Enf fy:	2000	Enf act date:	01/19/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1205	Orig cd:	S
Enf fy:	2005	Enf act date:	09/15/2005
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	1205	Orig cd:	S
Enf fy:	2006	Enf act date:	10/06/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	1205	Orig cd:	S
Enf fy:	2006	Enf act date:	11/01/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1205	Orig cd:	S
Enf fy:	2005	Enf act date:	09/15/2005
Enf act detail:	St No addtl Formal Action needed	Enf act cat:	Informal

Enforcement Information:

Violation id:	1205	Orig cd:	S
Enf fy:	2006	Enf act date:	11/01/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1203	Orig cd:	S
Enf fy:	2004	Enf act date:	10/23/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1203	Orig cd:	S
Enf fy:	2004	Enf act date:	10/23/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1203	Orig cd:	S
Enf fy:	2004	Enf act date:	10/02/2003
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1202	Orig cd:	S
Enf fy:	2002	Enf act date:	09/05/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1202	Orig cd:	S
Enf fy:	2003	Enf act date:	10/30/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1202	Orig cd:	S
Enf fy:	2003	Enf act date:	10/30/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1200	Orig cd:	S
Enf fy:	2001	Enf act date:	10/20/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1200	Orig cd:	S
Enf fy:	2001	Enf act date:	10/20/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1200	Orig cd:	S
Enf fy:	2001	Enf act date:	10/06/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1105	Orig cd:	S
Enf fy:	2006	Enf act date:	10/06/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	1105	Orig cd:	S
Enf fy:	2005	Enf act date:	09/15/2005
Enf act detail:	St No addtl Formal Action needed	Enf act cat:	Informal

Enforcement Information:

Violation id:	1105	Orig cd:	S
Enf fy:	2006	Enf act date:	11/01/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1105	Orig cd:	S
Enf fy:	2005	Enf act date:	09/15/2005
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	1105	Orig cd:	S
Enf fy:	2006	Enf act date:	11/01/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1103	Orig cd:	S
Enf fy:	2004	Enf act date:	10/23/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1103	Orig cd:	S
Enf fy:	2004	Enf act date:	10/02/2003
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1103	Orig cd:	S
Enf fy:	2004	Enf act date:	10/23/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1102	Orig cd:	S
Enf fy:	2003	Enf act date:	10/30/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1102	Orig cd:	S
Enf fy:	2002	Enf act date:	09/05/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1102	Orig cd:	S
Enf fy:	2003	Enf act date:	10/30/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1100	Orig cd:	S
Enf fy:	2001	Enf act date:	10/20/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1100	Orig cd:	S
Enf fy:	2001	Enf act date:	10/20/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1100	Orig cd:	S
Enf fy:	2001	Enf act date:	10/06/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	10605	Orig cd:	S
Enf fy:	2005	Enf act date:	05/26/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10605	Orig cd:	S
Enf fy:	2005	Enf act date:	06/30/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10605	Orig cd:	S
Enf fy:	2005	Enf act date:	05/26/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	10505	Orig cd:	S
Enf fy:	2005	Enf act date:	09/29/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10505	Orig cd:	S
Enf fy:	2005	Enf act date:	09/14/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10505	Orig cd:	S
Enf fy:	2005	Enf act date:	09/14/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	105	Orig cd:	S
Enf fy:	2005	Enf act date:	01/19/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	105	Orig cd:	S
Enf fy:	2005	Enf act date:	01/19/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	105	Orig cd:	S
Enf fy:	2005	Enf act date:	01/06/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10405	Orig cd:	S
Enf fy:	2005	Enf act date:	03/31/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	10405	Orig cd:	S
Enf fy:	2005	Enf act date:	04/07/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10405	Orig cd:	S
Enf fy:	2005	Enf act date:	03/31/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	104	Orig cd:	S
Enf fy:	2004	Enf act date:	01/14/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	104	Orig cd:	S
Enf fy:	2004	Enf act date:	01/14/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	104	Orig cd:	S
Enf fy:	2004	Enf act date:	01/08/2004
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	103	Orig cd:	S
Enf fy:	2003	Enf act date:	12/05/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	103	Orig cd:	S
Enf fy:	2003	Enf act date:	01/22/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	103	Orig cd:	S
Enf fy:	2003	Enf act date:	01/22/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	10204	Orig cd:	S
Enf fy:	2005	Enf act date:	11/04/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10204	Orig cd:	S
Enf fy:	2005	Enf act date:	10/21/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	10204	Orig cd:	S
Enf fy:	2005	Enf act date:	10/21/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10105	Orig cd:	S
Enf fy:	2005	Enf act date:	10/28/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10105	Orig cd:	S
Enf fy:	2005	Enf act date:	10/28/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	10105	Orig cd:	S
Enf fy:	2005	Enf act date:	11/11/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	10104	Orig cd:	S
Enf fy:	2005	Enf act date:	10/21/2004
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	10104	Orig cd:	S
Enf fy:	2005	Enf act date:	10/21/2004
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	10104	Orig cd:	S
Enf fy:	2005	Enf act date:	11/04/2004
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	1005	Orig cd:	S
Enf fy:	2006	Enf act date:	11/01/2005
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1005	Orig cd:	S
Enf fy:	2005	Enf act date:	09/15/2005
Enf act detail:	St Compliance achieved	Enf act cat:	Resolving

Enforcement Information:

Violation id:	1005	Orig cd:	S
Enf fy:	2006	Enf act date:	10/06/2005
Enf act detail:	St Public Notif received	Enf act cat:	Informal

Enforcement Information:

Violation id:	1005	Orig cd:	S
Enf fy:	2005	Enf act date:	09/15/2005
Enf act detail:	St No addtl Formal Action needed	Enf act cat:	Informal

Enforcement Information:

Violation id:	1005	Orig cd:	S
Enf fy:	2006	Enf act date:	11/01/2005
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1003	Orig cd:	S
Enf fy:	2004	Enf act date:	10/02/2003
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1003	Orig cd:	S
Enf fy:	2004	Enf act date:	10/23/2003
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1003	Orig cd:	S
Enf fy:	2004	Enf act date:	10/23/2003
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1002	Orig cd:	S
Enf fy:	2003	Enf act date:	10/30/2002
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1002	Orig cd:	S
Enf fy:	2002	Enf act date:	09/05/2002
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1002	Orig cd:	S
Enf fy:	2003	Enf act date:	10/30/2002
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	1000	Orig cd:	S
Enf fy:	2001	Enf act date:	10/20/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Enforcement Information:

Violation id:	1000	Orig cd:	S
Enf fy:	2001	Enf act date:	10/06/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	1000	Orig cd:	S
Enf fy:	2001	Enf act date:	10/20/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	100	Orig cd:	S
Enf fy:	2000	Enf act date:	01/19/2000
Enf act detail:	St Violation/Reminder Notice	Enf act cat:	Informal

Enforcement Information:

Violation id:	100	Orig cd:	S
Enf fy:	2000	Enf act date:	01/07/2000
Enf act detail:	St Public Notif issued	Enf act cat:	Informal

Enforcement Information:

Violation id:	100	Orig cd:	S
Enf fy:	2000	Enf act date:	01/19/2000
Enf act detail:	St Public Notif requested	Enf act cat:	Informal

Violations Information:

Violoation id:	905	Orig cd:	S
State:	HI	Viol fy:	2005
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported

State mcl:	Not Reported	Cmpbdt:	06/01/2005
Cmpedt:	06/30/2005		

Violations Information:

Violoation id:	904	Orig cd:	S
State:	HI	Viol fy:	2004
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	06/01/2004
Cmpedt:	06/30/2004		

Violations Information:

Violoation id:	902	Orig cd:	S
State:	HI	Viol fy:	2002
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	06/01/2002
Cmpedt:	06/30/2002		

Violations Information:

Violoation id:	900	Orig cd:	S
State:	HI	Viol fy:	2000
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	06/01/2000
Cmpedt:	06/30/2000		

Violations Information:

Violoation id:	805	Orig cd:	S
State:	HI	Viol fy:	2005
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	05/01/2005
Cmpedt:	05/31/2005		

Violations Information:

Violoation id:	804	Orig cd:	S
State:	HI	Viol fy:	2004
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	05/01/2004
Cmpedt:	05/31/2004		

Violations Information:

Violoation id:	802	Orig cd:	S
State:	HI	Viol fy:	2002
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	05/01/2002
Cmpedt:	05/31/2002		

Violations Information:

Violoation id:	800	Orig cd:	S
State:	HI	Viol fy:	2000
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	05/01/2000
Cmpedt:	05/31/2000		

Violations Information:

Violoation id:	705	Orig cd:	S
State:	HI	Viol fy:	2005
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	04/01/2005
Cmpedt:	04/30/2005		

Violations Information:

Violoation id:	704	Orig cd:	S
State:	HI	Viol fy:	2004
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported

State mcl:	Not Reported	Cmpbdt:	04/01/2004
Cmpedt:	04/30/2004		

Violations Information:

Violoation id:	702	Orig cd:	S
State:	HI	Viol fy:	2002
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	04/01/2002
Cmpedt:	04/30/2002		

Violations Information:

Violoation id:	700	Orig cd:	S
State:	HI	Viol fy:	2000
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	04/01/2000
Cmpedt:	04/30/2000		

Violations Information:

Violoation id:	605	Orig cd:	S
State:	HI	Viol fy:	2005
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	03/01/2005
Cmpedt:	03/31/2005		

Violations Information:

Violoation id:	604	Orig cd:	S
State:	HI	Viol fy:	2004
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	03/01/2004
Cmpedt:	03/31/2004		

Violations Information:

Violoation id:	603	Orig cd:	S
State:	HI	Viol fy:	2003
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	03/01/2003
Cmpedt:	03/31/2003		

Violations Information:

Violoation id:	602	Orig cd:	S
State:	HI	Viol fy:	2002
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	03/01/2002
Cmpedt:	03/31/2002		

Violations Information:

Violoation id:	600	Orig cd:	S
State:	HI	Viol fy:	2000
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	03/01/2000
Cmpedt:	03/31/2000		

Violations Information:

Violoation id:	505	Orig cd:	S
State:	HI	Viol fy:	2005
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	02/01/2005
Cmpedt:	02/28/2005		

Violations Information:

Violoation id:	504	Orig cd:	S
State:	HI	Viol fy:	2004
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported

State mcl:	Not Reported	Cmpbdt:	02/01/2004
Cmpedt:	02/29/2004		

Violations Information:

Violoation id:	503	Orig cd:	S
State:	HI	Viol fy:	2003
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	02/01/2003
Cmpedt:	02/28/2003		

Violations Information:

Violoation id:	502	Orig cd:	S
State:	HI	Viol fy:	2002
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	02/01/2002
Cmpedt:	02/28/2002		

Violations Information:

Violoation id:	500	Orig cd:	S
State:	HI	Viol fy:	2000
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	02/01/2000
Cmpedt:	02/29/2000		

Violations Information:

Violoation id:	405	Orig cd:	S
State:	HI	Viol fy:	2005
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	01/01/2005
Cmpedt:	01/31/2005		

Violations Information:

Violoation id:	404	Orig cd:	S
State:	HI	Viol fy:	2004
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	01/01/2004
Cmpedt:	01/31/2004		

Violations Information:

Violoation id:	403	Orig cd:	S
State:	HI	Viol fy:	2003
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	01/01/2003
Cmpedt:	01/31/2003		

Violations Information:

Violoation id:	402	Orig cd:	S
State:	HI	Viol fy:	2002
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	01/01/2002
Cmpedt:	01/31/2002		

Violations Information:

Violoation id:	400	Orig cd:	S
State:	HI	Viol fy:	2000
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported
State mcl:	Not Reported	Cmpbdt:	01/01/2000
Cmpedt:	01/31/2000		

Violations Information:

Violoation id:	305	Orig cd:	S
State:	HI	Viol fy:	2004
Contamcd:	0200		
Contamnm:	SWTR		
Viol code:	41		
Viol name:	Treatment Technique (SWTR and GWR)		
Rule code:	121		
Rule name:	SWTR		
Violmeasur:	Not Reported	Unitmeasur:	Not Reported

State mcl: Not Reported Cmpbdt: 12/01/2004
Cmpedt: 12/31/2004

Violations Information:
Violoation id: 304 Orig cd: S
State: HI Viol fy: 2003
Contamcd: 0200
Contamnm: SWTR
Viol code: 41
Viol name: Treatment Technique (SWTR and GWR)
Rule code: 121
Rule name: SWTR
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 12/01/2003
Cmpedt: 12/31/2003

Violations Information:
Violoation id: 303 Orig cd: S
State: HI Viol fy: 2002
Contamcd: 0200
Contamnm: SWTR
Viol code: 41
Viol name: Treatment Technique (SWTR and GWR)
Rule code: 121
Rule name: SWTR
Violmeasur: Not Reported Unitmeasur: Not Reported
State mcl: Not Reported Cmpbdt: 12/01/2002
Cmpedt: 12/31/2002

PWS ID: HI0000236
Date Initiated: Not Reported Date Deactivated: Not Reported
PWS Name: KALUA KOI
KUKUI MOLOKAI
KALUA KOI HOTEL, MOLOKAI
MAUNALOA, HI 96770

Addressee / Facility: Operator
MR. NOBU SHIMIZU
KALUA KOI CORPORATION
P.O. BOX 26
MAUNALOA, HI 96770

Facility Latitude: 21 18 48 Facility Longitude: 157 51 48
City Served: MOLOKAI
City Served: KALUA KOI
Treatment Class: Treated Population: 700

PWS currently has or had major violation(s) or enforcement: YES

VIOLATIONS INFORMATION:

Violation ID: 9402005 Source ID: 003 PWS Phone: Not Reported
Vio. beginning Date: 10/01/93 Vio. end Date: 10/31/93 Vio. Period: 001 Months
Num required Samples: Not Reported Number of Samples Taken: Not Reported
Analysis Result: Not Reported Maximum Contaminant Level: Not Reported
Analysis Method: Not Reported
Violation Type: Treatment Technique (SWTR)
Contaminant: Not Reported
Vio. Awareness Date: Not Reported

Violation ID:	9402006	Source ID:	003	PWS Phone:	Not Reported
Vio. beginning Date:	11/01/93	Vio. end Date:	11/30/93	Vio. Period:	001 Months
Num required Samples:	Not Reported	Number of Samples Taken:		Not Reported	
Analysis Result:	Not Reported	Maximum Contaminant Level:		Not Reported	
Analysis Method:	Not Reported				
Violation Type:	Treatment Technique (SWTR)				
Contaminant:	Not Reported				
Vio. Awareness Date:	Not Reported				

Violation ID:	9402007	Source ID:	003	PWS Phone:	Not Reported
Vio. beginning Date:	12/01/93	Vio. end Date:	12/31/93	Vio. Period:	001 Months
Num required Samples:	Not Reported	Number of Samples Taken:		Not Reported	
Analysis Result:	Not Reported	Maximum Contaminant Level:		Not Reported	
Analysis Method:	Not Reported				
Violation Type:	Treatment Technique (SWTR)				
Contaminant:	Not Reported				
Vio. Awareness Date:	Not Reported				

ENFORCEMENT INFORMATION:

System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-11-01 - 1999-11-30		
Violation ID:	0000001		
Enforcement Date:	2000-01-19	Enf. Action:	State Violation/Reminder Notice

System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-12-01 - 1999-12-31		
Violation ID:	0000002		
Enforcement Date:	2000-01-19	Enf. Action:	State Violation/Reminder Notice

System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-10-01 - 1999-10-31		
Violation ID:	0000003		
Enforcement Date:	2000-01-19	Enf. Action:	State Public Notif Requested

System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-11-01 - 1999-11-30		
Violation ID:	0000003		
Enforcement Date:	2000-01-19	Enf. Action:	State Public Notif Requested

System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-12-01 - 1999-12-31		
Violation ID:	0000003		
Enforcement Date:	2000-01-19	Enf. Action:	State Public Notif Requested

System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-11-01 - 1999-11-30		
Violation ID:	0000003		
Enforcement Date:	2000-01-07	Enf. Action:	State Public Notif Issued

ENFORCEMENT INFORMATION:

System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-12-01 - 1999-12-31		
Violation ID:	0000003		
Enforcement Date:	2000-01-07	Enf. Action:	State Public Notif Issued
System Name:	KALUA KOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	1999-10-01 - 1999-10-31		
Violation ID:	0000003		
Enforcement Date:	2000-01-07	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2000 0:00:00 - 7/31/2000 0:00:00		
Violation ID:	1000		
Enforcement Date:	10/20/2000 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2000 0:00:00 - 7/31/2000 0:00:00		
Violation ID:	1000		
Enforcement Date:	10/6/2000 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/00 - 07/31/00		
Violation ID:	1000		
Enforcement Date:	10/06/00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/00 - 07/31/00		
Violation ID:	1000		
Enforcement Date:	10/20/00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/00 - 07/31/00		
Violation ID:	1000		
Enforcement Date:	10/20/00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2000 0:00:00 - 7/31/2000 0:00:00		
Violation ID:	1000		
Enforcement Date:	10/20/2000 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2001 0:00:00 - 7/31/2001 0:00:00		
Violation ID:	1001		
Enforcement Date:	10/23/2001 0:00:00	Enf. Action:	State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/01 - 07/31/01		
Violation ID:	1001		
Enforcement Date:	10/23/01	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/01 - 07/31/01		
Violation ID:	1001		
Enforcement Date:	10/23/01	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2001 0:00:00 - 7/31/2001 0:00:00		
Violation ID:	1001		
Enforcement Date:	10/4/2001 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2001 0:00:00 - 7/31/2001 0:00:00		
Violation ID:	1001		
Enforcement Date:	10/23/2001 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/01 - 07/31/01		
Violation ID:	1001		
Enforcement Date:	10/04/01	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2002 0:00:00 - 7/31/2002 0:00:00		
Violation ID:	1002		
Enforcement Date:	9/5/2002 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2002 0:00:00 - 7/31/2002 0:00:00		
Violation ID:	1002		
Enforcement Date:	10/30/2002 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2002 0:00:00 - 7/31/2002 0:00:00		
Violation ID:	1002		
Enforcement Date:	10/30/2002 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/02 - 07/31/02		
Violation ID:	1002		
Enforcement Date:	10/30/02	Enf. Action:	State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/02 - 07/31/02		
Violation ID:	1002		
Enforcement Date:	10/30/02	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/02 - 07/31/02		
Violation ID:	1002		
Enforcement Date:	09/05/02	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2003 0:00:00 - 7/31/2003 0:00:00		
Violation ID:	1003		
Enforcement Date:	10/23/2003 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2003 0:00:00 - 7/31/2003 0:00:00		
Violation ID:	1003		
Enforcement Date:	10/2/2003 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/03 - 07/31/03		
Violation ID:	1003		
Enforcement Date:	10/02/03	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2003 0:00:00 - 7/31/2003 0:00:00		
Violation ID:	1003		
Enforcement Date:	10/23/2003 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/03 - 07/31/03		
Violation ID:	1003		
Enforcement Date:	10/23/03	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/03 - 07/31/03		
Violation ID:	1003		
Enforcement Date:	10/23/03	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2005 0:00:00 - 7/31/2005 0:00:00		
Violation ID:	1005		
Enforcement Date:	11/1/2005 0:00:00	Enf. Action:	State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2005 0:00:00 - 7/31/2005 0:00:00		
Violation ID:	1005		
Enforcement Date:	11/1/2005 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	7/1/2005 0:00:00 - 7/31/2005 0:00:00		
Violation ID:	1005		
Enforcement Date:	10/6/2005 0:00:00	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/05 - 07/31/05		
Violation ID:	1005		
Enforcement Date:	09/15/05	Enf. Action:	State No Additional Formal Action Needed
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/05 - 07/31/05		
Violation ID:	1005		
Enforcement Date:	11/01/05	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/05 - 07/31/05		
Violation ID:	1005		
Enforcement Date:	10/06/05	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/05 - 07/31/05		
Violation ID:	1005		
Enforcement Date:	09/15/05	Enf. Action:	State Compliance Achieved
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	07/01/05 - 07/31/05		
Violation ID:	1005		
Enforcement Date:	11/01/05	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2000 0:00:00 - 10/31/2000 0:00:00		
Violation ID:	101		
Enforcement Date:	1/19/2001 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2000 0:00:00 - 10/31/2000 0:00:00		
Violation ID:	101		
Enforcement Date:	1/22/2001 0:00:00	Enf. Action:	State Violation/Reminder Notice

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2000 0:00:00 - 10/31/2000 0:00:00		
Violation ID:	101		
Enforcement Date:	1/22/2001 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/00 - 10/31/00		
Violation ID:	101		
Enforcement Date:	01/19/01	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/00 - 10/31/00		
Violation ID:	101		
Enforcement Date:	01/22/01	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/00 - 10/31/00		
Violation ID:	101		
Enforcement Date:	01/22/01	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	04/01/04 - 06/30/04		
Violation ID:	10104		
Enforcement Date:	10/21/04	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	04/01/04 - 06/30/04		
Violation ID:	10104		
Enforcement Date:	10/21/04	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	04/01/04 - 06/30/04		
Violation ID:	10104		
Enforcement Date:	11/04/04	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	10/01/04 - 12/31/04		
Violation ID:	10105		
Enforcement Date:	10/28/04	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	10/01/04 - 12/31/04		
Violation ID:	10105		
Enforcement Date:	10/28/04	Enf. Action:	State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	10/01/04 - 12/31/04		
Violation ID:	10105		
Enforcement Date:	11/11/04	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2001 0:00:00 - 10/31/2001 0:00:00		
Violation ID:	102		
Enforcement Date:	12/13/2001 0:00:00	Enf. Action:	State AO (w/penalty) Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2001 0:00:00 - 10/31/2001 0:00:00		
Violation ID:	102		
Enforcement Date:	1/3/2002 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2001 0:00:00 - 10/31/2001 0:00:00		
Violation ID:	102		
Enforcement Date:	2/12/2002 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2001 0:00:00 - 10/31/2001 0:00:00		
Violation ID:	102		
Enforcement Date:	2/12/2002 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/01 - 10/31/01		
Violation ID:	102		
Enforcement Date:	01/03/02	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/01 - 10/31/01		
Violation ID:	102		
Enforcement Date:	02/12/02	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/01 - 10/31/01		
Violation ID:	102		
Enforcement Date:	12/13/01	Enf. Action:	State AO (w/penalty) Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/01 - 10/31/01		
Violation ID:	102		
Enforcement Date:	02/12/02	Enf. Action:	State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	07/01/04 - 09/30/04		
Violation ID:	10204		
Enforcement Date:	10/21/04	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	07/01/04 - 09/30/04		
Violation ID:	10204		
Enforcement Date:	10/21/04	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	07/01/04 - 09/30/04		
Violation ID:	10204		
Enforcement Date:	11/04/04	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2002 0:00:00 - 10/31/2002 0:00:00		
Violation ID:	103		
Enforcement Date:	1/22/2003 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2002 0:00:00 - 10/31/2002 0:00:00		
Violation ID:	103		
Enforcement Date:	1/22/2003 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/02 - 10/31/02		
Violation ID:	103		
Enforcement Date:	12/05/02	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/02 - 10/31/02		
Violation ID:	103		
Enforcement Date:	01/22/03	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/02 - 10/31/02		
Violation ID:	103		
Enforcement Date:	01/22/03	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2002 0:00:00 - 10/31/2002 0:00:00		
Violation ID:	103		
Enforcement Date:	12/5/2002 0:00:00	Enf. Action:	State Public Notif Issued

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2003 0:00:00 - 10/31/2003 0:00:00		
Violation ID:	104		
Enforcement Date:	1/8/2004 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/03 - 10/31/03		
Violation ID:	104		
Enforcement Date:	01/14/04	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/03 - 10/31/03		
Violation ID:	104		
Enforcement Date:	01/14/04	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2003 0:00:00 - 10/31/2003 0:00:00		
Violation ID:	104		
Enforcement Date:	1/14/2004 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2003 0:00:00 - 10/31/2003 0:00:00		
Violation ID:	104		
Enforcement Date:	1/14/2004 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/03 - 10/31/03		
Violation ID:	104		
Enforcement Date:	01/08/04	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	01/01/05 - 03/31/05		
Violation ID:	10405		
Enforcement Date:	03/31/05	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	01/01/05 - 03/31/05		
Violation ID:	10405		
Enforcement Date:	04/07/05	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	01/01/05 - 03/31/05		
Violation ID:	10405		
Enforcement Date:	03/31/05	Enf. Action:	State Public Notif Requested

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/04 - 10/31/04		
Violation ID:	105		
Enforcement Date:	01/06/05	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/04 - 10/31/04		
Violation ID:	105		
Enforcement Date:	01/19/05	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/01/04 - 10/31/04		
Violation ID:	105		
Enforcement Date:	01/19/05	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2004 0:00:00 - 10/31/2004 0:00:00		
Violation ID:	105		
Enforcement Date:	1/19/2005 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2004 0:00:00 - 10/31/2004 0:00:00		
Violation ID:	105		
Enforcement Date:	1/19/2005 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	10/1/2004 0:00:00 - 10/31/2004 0:00:00		
Violation ID:	105		
Enforcement Date:	1/6/2005 0:00:00	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	04/01/05 - 06/30/05		
Violation ID:	10505		
Enforcement Date:	09/14/05	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	04/01/05 - 06/30/05		
Violation ID:	10505		
Enforcement Date:	09/14/05	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	2456		
Compliance Period:	04/01/05 - 06/30/05		
Violation ID:	10505		
Enforcement Date:	09/29/05	Enf. Action:	State Public Notif Received

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	TTHM		
Compliance Period:	04/01/05 - 06/30/05		
Violation ID:	10605		
Enforcement Date:	05/26/05	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	TTHM		
Compliance Period:	04/01/05 - 06/30/05		
Violation ID:	10605		
Enforcement Date:	05/26/05	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	2		
Contaminant:	TTHM		
Compliance Period:	04/01/05 - 06/30/05		
Violation ID:	10605		
Enforcement Date:	06/30/05	Enf. Action:	State Public Notif Received
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	8/1/2000 0:00:00 - 8/31/2000 0:00:00		
Violation ID:	1100		
Enforcement Date:	10/6/2000 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	8/1/2000 0:00:00 - 8/31/2000 0:00:00		
Violation ID:	1100		
Enforcement Date:	10/20/2000 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	8/1/2000 0:00:00 - 8/31/2000 0:00:00		
Violation ID:	1100		
Enforcement Date:	10/20/2000 0:00:00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	08/01/00 - 08/31/00		
Violation ID:	1100		
Enforcement Date:	10/20/00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	08/01/00 - 08/31/00		
Violation ID:	1100		
Enforcement Date:	10/20/00	Enf. Action:	State Violation/Reminder Notice
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	08/01/00 - 08/31/00		
Violation ID:	1100		
Enforcement Date:	10/06/00	Enf. Action:	State Public Notif Issued

ENFORCEMENT INFORMATION:

System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	08/01/01 - 08/31/01		
Violation ID:	1101		
Enforcement Date:	10/23/01	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	8/1/2001 0:00:00 - 8/31/2001 0:00:00		
Violation ID:	1101		
Enforcement Date:	10/4/2001 0:00:00	Enf. Action:	State Public Notif Issued
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	8/1/2001 0:00:00 - 8/31/2001 0:00:00		
Violation ID:	1101		
Enforcement Date:	10/23/2001 0:00:00	Enf. Action:	State Public Notif Requested
System Name:	KALUAKOI		
Violation Type:	Treatment Technique (SWTR)		
Contaminant:	SWTR		
Compliance Period:	8/1/2001 0:00:00 - 8/31/2001 0:00:00		
Violation ID:	1101		
Enforcement Date:	10/23/2001 0:00:00	Enf. Action:	State Violation/Reminder Notice

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G18
SW
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000813**

Wid:	3-1852-001	Island:	Oahu
Well name:	Ala Moana Blvd	Old name:	Not Reported
Yr drilled:	1937		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.864444		
Lat83dd:	21.311944		
Gps:	0	Utm:	-1
Owner user:	Chun Hoon Market		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	110-	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	60		
Solid case:	20	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	PLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-7-018:011
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-37
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000813

G19
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269731**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211854157520201		
Monloc name:	3-1852-01 W110 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3118356
Longitude:	-157.8644788	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	10.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19370101	Welldepth:	60
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

H20
WNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269794**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211916157520601		
Monloc name:	3-1952-03 W113 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3179463
Longitude:	-157.8655898	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19000101	Welldepth:	524
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

H21
WNW
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000921**

Wid:	3-1952-003	Island:	Oahu
Well name:	Dillingham Blvd	Old name:	Not Reported
Yr drilled:	1900		
Driller:	Pinkham		
Quad map:	13		
Long83dd:	-157.865556		
Lat83dd:	21.318056		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	113-	Well type:	Not Reported
Casing dia:	10	Ground el:	5
Well depth:	530		
Solid case:	478	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	30.1	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	187		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	22.5	Test unit:	C
Pump gpm:	0		
Draft mgy:	36	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-525
Bot solid:	-473	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-007:035
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	02-JAN-00
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000921

F22
South
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000766**

Wid:	3-1851-030	Island:	Oahu
Well name:	Alakea St	Old name:	Not Reported
Yr drilled:	1915		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.859167		
Lat83dd:	21.309722		
Gps:	0	Utm:	-1
Owner user:	Honolulu Merchandise Market		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	105-	Well type:	Not Reported
Casing dia:	10	Ground el:	18
Well depth:	810		
Solid case:	706	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	28.4	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	44		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	36	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-792
Bot solid:	-688	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-010:005
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-15
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000766

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

F23
South
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS40000269717**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211846157514301		
Monloc name:	3-1851-30 W105 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3096134
Longitude:	-157.8592012	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	18.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19150501	Welldepth:	810
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

I24
SSE
1/4 - 1/2 Mile
Higher | **HI WELLS** | **HI9000000000792**

Wid:	3-1851-056	Island:	Oahu
Well name:	Alakea St	Old name:	Not Reported
Yr drilled:	1958		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.858333		
Lat83dd:	21.309722		
Gps:	0	Utm:	-1
Owner user:	Am. Mutual Ins.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	106-1B	Well type:	Not Reported
Casing dia:	24	Ground el:	16
Well depth:	30		
Solid case:	3	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	1	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	75

Test ddown:	1	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-14
Bot solid:	13	Bot perf:	Not Reported
Spec capac:	75		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-58
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000792

I25
SSE **HI WELLS** **HI9000000000791**
1/4 - 1/2 Mile
Higher

Wid:	3-1851-055	Island:	Oahu
Well name:	Alakea St	Old name:	Not Reported
Yr drilled:	1958		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.858333		
Lat83dd:	21.309722		
Gps:	0	Utm:	-1
Owner user:	Am. Mutual Ins.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	106-1A	Well type:	Not Reported
Casing dia:	24	Ground el:	16
Well depth:	40		
Solid case:	3	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	1	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	967		
Test date:	Not Reported	Test gpm:	250
Test ddown:	4	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-24
Bot solid:	13	Bot perf:	Not Reported
Spec capac:	63		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-58
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000791

I26
SSE **FED USGS** **USGS40000269715**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211846157514001		
Monloc name:	3-1851-55 W106-1A DW		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3096133
Longitude:	-157.8583679	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	16.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19581028	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	130
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

I27
SSE **FED USGS** **USGS40000269716**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211846157514002		
Monloc name:	3-1851-56 W106-1B DW		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3096133
Longitude:	-157.8583679	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	16.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19580101	Welldepth:	30
Welldepth units:	ft	Wellholedepth:	30
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

I28
South
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000741**

Wid:	3-1851-005	Island:	Oahu
Well name:	Alakea St	Old name:	Not Reported
Yr drilled:	1882		
Driller:	Not Reported		
Quad map:	13		
Long83dd:	-157.858611		
Lat83dd:	21.309444		
Gps:	0	Utm:	-1
Owner user:	K. Cooper		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	106-	Well type:	Not Reported
Casing dia:	6	Ground el:	20
Well depth:	636		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	26	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	48		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-616
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000741

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

I29
South
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS40000269712**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211845157514101		
Monloc name:	3-1851-05 W106 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3093356
Longitude:	-157.8586457	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	20.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18820101	Welldepth:	636
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

J30
SSW
1/4 - 1/2 Mile
Higher | **HI WELLS** | **HI9000000000785**

Wid:	3-1851-049	Island:	Oahu
Well name:	King St	Old name:	Not Reported
Yr drilled:	1940		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.8625		
Lat83dd:	21.309722		
Gps:	0	Utm:	-1
Owner user:	Royal Amusement		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-2	Well type:	Not Reported
Casing dia:	Not Reported	Ground el:	Not Reported
Well depth:	60		
Solid case:	21	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-40
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000785

J31
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269718**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211846157515501		
Monloc name:	3-1851-49 W90-2 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3096134
Longitude:	-157.8625344	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	10.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19400825	Welldepth:	60
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

J32
SSW
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000776**

Wid:	3-1851-040	Island:	Oahu
Well name:	Ft St Mall	Old name:	Not Reported
Yr drilled:	1938		
Driller:	Hobart		
Quad map:	13		
Long83dd:	-157.862222		
Lat83dd:	21.309444		
Gps:	0	Utm:	-1
Owner user:	Easy Appliances		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-3	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	42		
Solid case:	8	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-38
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000776

J33
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269713**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211845157515401		
Monloc name:	3-1851-40 W90-3 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3093357
Longitude:	-157.8622566	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	13.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19380101	Welldepth:	42
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

K34
South
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000759**

Wid:	3-1851-023	Island:	Oahu
Well name:	Bishop St	Old name:	Not Reported
Yr drilled:	1901		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.860556		
Lat83dd:	21.308889		
Gps:	0	Utm:	-1
Owner user:	Waikele Golf Club, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	104-	Well type:	Not Reported
Casing dia:	10	Ground el:	15
Well depth:	960		
Solid case:	850	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	26.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	67		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	109	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-945
Bot solid:	-835	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-01
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000759

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

L35
SE
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000743**

Wid:	3-1851-007	Island:	Oahu
Well name:	Pacific Club	Old name:	Not Reported
Yr drilled:	1884		
Driller:	Ashley		
Quad map:	13		
Long83dd:	-157.854611		
Lat83dd:	21.310694		
Gps:	0	Utm:	-1
Owner user:	The Pacific Club		
Land owner:	The Pacific Club		
Pump insta:	Not Reported		
Old number:	108-	Well type:	Not Reported
Casing dia:	3	Ground el:	28
Well depth:	560		
Solid case:	498	Perf case:	Not Reported
Use:	IRR - Irrigation (non-domestic, non-agriculture)		
Use year:	Not Reported		
Init head:	23.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	35		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	35		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	1985		
Draft yr:	Not Reported	Bot hole:	-532
Bot solid:	-470	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	.05		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-019:014
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000743

K36
South
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269704**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211843157514801		
Monloc name:	3-1851-23 W104 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3087801
Longitude:	-157.86059	Sourcemap scale:	24000

Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	15.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19010101	Welldepth:	960
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

L37
SE
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269721**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211849157512701		
Monloc name:	3-1851-07 W108 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3104465
Longitude:	-157.8547569	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	28.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18840101	Welldepth:	560
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

J38
SSW
1/4 - 1/2 Mile
Higher

HI WELLS **HI9000000000788**

Wid:	3-1851-052	Island:	Oahu
Well name:	King St	Old name:	Not Reported
Yr drilled:	1952		
Driller:	Samson/Smock		
Quad map:	13		
Long83dd:	-157.861667		
Lat83dd:	21.308889		
Gps:	0	Utm:	-1
Owner user:	Bank of Hawaii		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	104-1	Well type:	Not Reported
Casing dia:	8	Ground el:	Not Reported
Well depth:	100		
Solid case:	100	Perf case:	Not Reported
Use:	ABN - Lost		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	148
Test ddown:	0.6	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	247		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-52
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000788

J39
SSW **FED USGS** **USGS40000269705**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211843157515201		
Monloc name:	3-1851-52 W104-1 DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3087801
Longitude:	-157.861701	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	15.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19520302	Welldepth:	100
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

J40
SSW **FED USGS** **USGS40000269706**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211843157515301		
Monloc name:	3-1851-42 W90-1A DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3087801
Longitude:	-157.8619789	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	10.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19390101	Welldepth:	50
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

J41
SSW **FED USGS** **USGS40000269707**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211843157515302		
Monloc name:	3-1851.01 -43/W90-1B		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3087801
Longitude:	-157.8619789	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	10.09
Vert measure units:	feet	Vertacc measure val:	.5
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19390701	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	40
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1939-07-27	10.00	

Note: A nearby site that taps the same aquifer had been pumped recently.

M42
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000802**

Wid:	3-1851-066	Island:	Oahu
Well name:	Beretania	Old name:	Not Reported
Yr drilled:	1967		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.8575		
Lat83dd:	21.308611		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	99-3	Well type:	ROT
Casing dia:	Not Reported	Ground el:	20
Well depth:	100		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	1500
Test ddown:	40	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-80
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	38		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-024:011
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-67
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000802

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
J43 **SSW** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI9000000000774**

Wid:	3-1851-038	Island:	Oahu
Well name:	Ft St Mall	Old name:	Not Reported
Yr drilled:	1937		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.862778		
Lat83dd:	21.308889		
Gps:	0	Utm:	-1
Owner user:	Brewer Chemical Corp.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	100		
Solid case:	20	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	130
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	PLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-37
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000774

	Database	EDR ID Number
N44 **WNW** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000269795**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211916157521201		
Monloc name:	3-1952-23 W114-1 KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3179463
Longitude:	-157.8672565	Sourcemap scale:	24000

Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19390424	Welldepth:	100
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

N45
WNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000941**

Wid:	3-1952-023	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1939		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.867222		
Lat83dd:	21.318056		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	114-1	Well type:	Not Reported
Casing dia:	8	Ground el:	4
Well depth:	100		
Solid case:	52	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	1.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	1380		
Test date:	Not Reported	Test gpm:	110
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-96
Bot solid:	-48	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000941

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

M46
SSE
1/2 - 1 Mile
Higher | **FED USGS** | **USGS40000269703**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211842157513701		
Monloc name:	3-1851-66 W99-3 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3085023
Longitude:	-157.8575346	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	20.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19670501	Welldepth:	100
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

J47
SSW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS40000269708**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211843157515601		
Monloc name:	3-1851-38 W90 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3087802
Longitude:	-157.8628122	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	12.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19370101	Welldepth:	100
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

M48
SSE **HI WELLS** **HI9000000000797**
1/2 - 1 Mile
Higher

Wid:	3-1851-061	Island:	Oahu
Well name:	State Capitol	Old name:	Not Reported
Yr drilled:	1963		
Driller:	Samson & Zerbe		
Quad map:	13		
Long83dd:	-157.858056		
Lat83dd:	21.308333		
Gps:	0	Utm:	-1
Owner user:	State Dept. of Acc. & Gen. Serv. DAGS		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	99-2	Well type:	Not Reported
Casing dia:	16	Ground el:	20
Well depth:	77		
Solid case:	25	Perf case:	71
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	30	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	4030		
Test date:	Not Reported	Test gpm:	1655
Test ddown:	27	Test chlor:	7500
Test temp:	24.4	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-57
Bot solid:	-5	Bot perf:	-51
Spec capac:	61		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-024:011
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-63
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000797

K49
SSW **HI WELLS** **HI9000000000784**
1/2 - 1 Mile
Higher

Wid:	3-1851-048	Island:	Oahu
Well name:	King St	Old name:	Not Reported
Yr drilled:	1939		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.861667		
Lat83dd:	21.308333		
Gps:	0	Utm:	-1
Owner user:	Walston & Co.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	103-2B	Well type:	Not Reported
Casing dia:	8	Ground el:	Not Reported
Well depth:	40		
Solid case:	34	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	3.6	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	1360		
Test date:	Not Reported	Test gpm:	75
Test ddown:	0.3	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	250		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000784

K50
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000783**

Wid:	3-1851-047	Island:	Oahu
Well name:	King St	Old name:	Not Reported
Yr drilled:	1939		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.861667		
Lat83dd:	21.308333		
Gps:	0	Utm:	-1
Owner user:	Walston & Co.		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	103-2A	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	41		
Solid case:	22	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	3.7	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	3290		
Test date:	Not Reported	Test gpm:	75
Test ddown:	0.3	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	250		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000783

O51
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000815**

Wid:	3-1852-003	Island:	Oahu
Well name:	Ala Moana Blvd	Old name:	Not Reported
Yr drilled:	1947		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.863889		
Lat83dd:	21.309167		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-4	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	52		
Solid case:	16	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	150

Test ddown:	2.3	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	65		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-001:006
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-47
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000815

M52
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269699**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211841157513901		
Monloc name:	3-1851-61 W99-2 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3082245
Longitude:	-157.85809	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	20.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19630501	Welldepth:	77
Welldepth units:	ft	Wellholedepth:	110
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

O53
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269711**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211844157520001		
Monloc name:	3-1852-03 W90-4 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3090579
Longitude:	-157.8639232	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	3.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19470501	Welldepth:	52
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

P54
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000789**

Wid:	3-1851-053	Island:	Oahu
Well name:	Queen St	Old name:	Not Reported
Yr drilled:	1956		
Driller:	Samson/Smock		
Quad map:	13		
Long83dd:	-157.862778		
Lat83dd:	21.308056		
Gps:	0	Utm:	-1
Owner user:	Astoria International Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-7	Well type:	Not Reported
Casing dia:	12	Ground el:	8
Well depth:	122		
Solid case:	22	Perf case:	30
Use:	Other		
Use year:	Not Reported		
Init head:	0.4	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	400
Test ddown:	13.1	Test chlor:	19
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-114
Bot solid:	-14	Bot perf:	-22
Spec capac:	31		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-56
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000789

O55
SSW **HI WELLS** **HI9000000000808**
1/2 - 1 Mile
Higher

Wid:	3-1851-072	Island:	Oahu
Well name:	Ft St Mall 2	Old name:	Not Reported
Yr drilled:	1973		
Driller:	Roscoe Moss Hawaii Inc		
Quad map:	13		
Long83dd:	-157.863611		
Lat83dd:	21.308333		
Gps:	0	Utm:	-1
Owner user:	Center Properties		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	PER
Casing dia:	16	Ground el:	7
Well depth:	45		
Solid case:	10	Perf case:	Not Reported
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	7/12/1973	Test gpm:	950
Test ddown:	8.5	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-38
Bot solid:	-3	Bot perf:	Not Reported
Spec capac:	112		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-013:001
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JUL-73
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000808

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

O56
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000807**

Wid:	3-1851-071	Island:	Oahu
Well name:	Ft St Mall 1	Old name:	Not Reported
Yr drilled:	1973		
Driller:	Roscoe Moss Hawaii Inc		
Quad map:	13		
Long83dd:	-157.863611		
Lat83dd:	21.308333		
Gps:	0	Utm:	-1
Owner user:	Center Properties		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	PER
Casing dia:	16	Ground el:	7
Well depth:	45		
Solid case:	10	Perf case:	Not Reported
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	7/2/1973	Test gpm:	850
Test ddown:	8.2	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-38
Bot solid:	-3	Bot perf:	Not Reported
Spec capac:	104		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-013:001
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JUL-73
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000807

P57
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269697**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211840157515601		
Monloc name:	3-1851-53 W90-7 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3079469
Longitude:	-157.8628122	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	8.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19561028	Welldepth:	122
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Q58
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000740**

Wid:	3-1851-004	Island:	Oahu
Well name:	Iolani Palace	Old name:	Not Reported
Yr drilled:	1882		
Driller:	Not Reported		
Quad map:	13		
Long83dd:	-157.858333		
Lat83dd:	21.3075		
Gps:	0	Utm:	-1
Owner user:	Division of State Parks Oahu, DLNR-SP		
Land owner:	Division of State Parks Oahu, DLNR-SP		
Pump insta:	Not Reported		
Old number:	99-	Well type:	Not Reported
Casing dia:	14	Ground el:	18
Well depth:	752		
Solid case:	748	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	25.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	43		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-734
Bot solid:	-730	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-025:002
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000740

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

O59
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269700**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211841157515901		
Monloc name:	3-1851-71 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3082247
Longitude:	-157.8636455	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19730702	Welldepth:	45
Welldepth units:	ft	Wellholedepth:	45
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1973-07-02	7.00	

O60
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269701**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211841157515902		
Monloc name:	3-1851-72 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3082247
Longitude:	-157.8636455	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19730712	Welldepth:	45
Welldepth units:	ft	Wellholedepth:	45
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1973-07-12	7.00	

O61
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000812**

Wid:	3-1851-076	Island:	Oahu
Well name:	Amfac Center	Old name:	Not Reported
Yr drilled:	0		
Driller:	Not Reported		
Quad map:	13		
Long83dd:	-157.863333		
Lat83dd:	21.308056		
Gps:	0	Utm:	-1
Owner user:	Topa Management Company		
Land owner:	Duesenberg Investment Company, LLC		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	Not Reported	Ground el:	Not Reported
Well depth:	0		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	1400		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	1969		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	2.016		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-013:006
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000812

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

Q62
South
1/2 - 1 Mile
Higher | **FED USGS** | **USGS40000269695**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211838157514001		
Monloc name:	3-1851-04 W99, 99A,B		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3073913
Longitude:	-157.8583679	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	18.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18820101	Welldepth:	752
Welldepth units:	ft	Wellholedepth:	765
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

R63
WSW
1/2 - 1 Mile
Lower | **HI WELLS** | **HI9000000000955**

Wid:	3-1952-037	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1972		
Driller:	Continental Drilling Hawaii, Inc		
Quad map:	13		
Long83dd:	-157.868611		
Lat83dd:	21.313889		
Gps:	0	Utm:	-1
Owner user:	Union Oil Co.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	109		
Solid case:	43	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	10/13/1972	Test gpm:	22

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RT		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-039:012
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	13-OCT-72
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000955

S64
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000778**

Wid:	3-1851-042	Island:	Oahu
Well name:	Merchant St	Old name:	Not Reported
Yr drilled:	1939		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.861111		
Lat83dd:	21.307222		
Gps:	0	Utm:	-1
Owner user:	Wilcox Development		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-1A	Well type:	Not Reported
Casing dia:	8	Ground el:	10
Well depth:	50		
Solid case:	22	Perf case:	40
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	2100		
Test date:	Not Reported	Test gpm:	125
Test ddown:	2.3	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-40
Bot solid:	-12	Bot perf:	-30
Spec capac:	54		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000778

S65
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000779**

Wid:	3-1851-043	Island:	Oahu
Well name:	Merchant St	Old name:	Not Reported
Yr drilled:	1939		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.861111		
Lat83dd:	21.307222		
Gps:	0	Utm:	-1
Owner user:	Wilcox Development		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-1B	Well type:	Not Reported
Casing dia:	8	Ground el:	10
Well depth:	40		
Solid case:	17	Perf case:	37
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	125
Test ddown:	3.1	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-30
Bot solid:	-7	Bot perf:	-27
Spec capac:	40		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000779

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

R66
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269751**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211901157521701		
Monloc name:	3-1952.02 -37		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.31378
Longitude:	-157.8686453	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19721013	Welldepth:	109
Welldepth units:	ft	Wellholedepth:	109
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1972-10-13	8.00	

T67
SE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269710**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211844157512201		
Monloc name:	3-1851-54 Queens Hospital, Oahu, HI		
Monloc type:	Well		
Monloc desc:	former W98-1 NAWQA entry ver. 05/15/2002 Hunt C		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3091944
Longitude:	-157.8536944	Sourcemap scale:	24000
Horiz Acc measure:	.1	Horiz Acc measure units:	seconds
Horiz Collection method:	Global positioning system (GPS), uncorrected		
Horiz coord refsys:	NAD83	Vert measure val:	34
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Hawaii volcanic-rock aquifers		
Formation type:	Koolau Volcanic Series, Lava Flows		

Aquifer type:	Confined single aquifer		
Construction date:	19580501	Welldepth:	460
Welldepth units:	ft	Wellholedepth:	460
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

U68
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000951**

Wid:	3-1952-033	Island:	Oahu
Well name:	Kapalama Battery	Old name:	Not Reported
Yr drilled:	1978		
Driller:	Roscoe Moss Hawaii Inc		
Quad map:	13		
Long83dd:	-157.868889		
Lat83dd:	21.315833		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	117-4	Well type:	Not Reported
Casing dia:	14	Ground el:	Not Reported
Well depth:	40		
Solid case:	20	Perf case:	Not Reported
Use:	IND - Industrial		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	17000		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-011:004
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-78
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	0	Site id:	HI9000000000951

S69
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269688**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211837157515101		
Monloc name:	3-1851-47 W103-2A DW		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3071136
Longitude:	-157.8614233	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	10.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19391030	Welldepth:	41
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

S70
South **FED USGS** **USGS40000269689**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211837157515102		
Monloc name:	3-1851.02 -48/103-2B		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3071136
Longitude:	-157.8614233	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	10.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19390101	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	40
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

V71
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269822**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211936157520001		
Monloc name:	3-1952-15 W122 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3235014
Longitude:	-157.863923	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	27.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19240501	Welldepth:	335
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

T72
SE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000790**

Wid:	3-1851-054	Island:	Oahu
Well name:	Queens Hospital	Old name:	Not Reported
Yr drilled:	1958		
Driller:	Goodfellow Construction, Inc. Corporate		
Quad map:	13		
Long83dd:	-157.853651		
Lat83dd:	21.308995		
Gps:	-1	Utm:	0
Owner user:	The Queens Medical Center		
Land owner:	The Queens Medical Center		
Pump insta:	Not Reported		
Old number:	98-1	Well type:	Not Reported
Casing dia:	10	Ground el:	34
Well depth:	460		
Solid case:	356	Perf case:	Not Reported
Use:	MUN - Private (but Public DOH definition)		
Use year:	Not Reported		
Init head:	28.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	41		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	750		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-426
Bot solid:	-322	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	1.08		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-035:003
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-58
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000790

W73
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269810**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211930157520901		
Monloc name:	3-1952-01 W121 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3218349
Longitude:	-157.8664232	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	21.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18820101	Welldepth:	384
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

V74
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000933**

Wid:	3-1952-015	Island:	Oahu
Well name:	Palama Settlement	Old name:	Vineyard Blvd
Yr drilled:	1924		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.863889		
Lat83dd:	21.323611		
Gps:	0	Utm:	-1
Owner user:	Palama Settlement		
Land owner:	Palama Settlement		
Pump insta:	Not Reported		
Old number:	122-	Well type:	Not Reported
Casing dia:	12	Ground el:	27
Well depth:	335		
Solid case:	200	Perf case:	Not Reported
Use:	IRR - Other		
Use year:	Not Reported		
Init head:	27.8	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	126		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	150		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-308
Bot solid:	-173	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	.216		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-7-045:001
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-24
Pir:	8/26/2010		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000933

W75
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000919**

Wid:	3-1952-001	Island:	Oahu
Well name:	N King St	Old name:	Not Reported
Yr drilled:	1882		
Driller:	Not Reported		
Quad map:	13		
Long83dd:	-157.866389		
Lat83dd:	21.321944		
Gps:	0	Utm:	-1
Owner user:	Hawaiian Evangelic		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	121-	Well type:	Not Reported
Casing dia:	5	Ground el:	21
Well depth:	384		
Solid case:	294	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	31.4	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	179		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-363
Bot solid:	-273	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000919

S76
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000781**

Wid:	3-1851-045	Island:	Oahu
Well name:	Merchant&Richard	Old name:	Not Reported
Yr drilled:	1939		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.861111		
Lat83dd:	21.306944		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	103-1A	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	80		
Solid case:	21	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	1040		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000781

S77
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000782**

Wid:	3-1851-046	Island:	Oahu
Well name:	Merchant&Richard	Old name:	Not Reported
Yr drilled:	1939		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.861111		
Lat83dd:	21.306944		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	103-1B	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	75		
Solid case:	8	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000782

S78
South **FED USGS** **USGS40000269682**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211836157515001		
Monloc name:	3-1851-45 W103-1A DW		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3068358
Longitude:	-157.8611456	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	8.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19391016	Welldepth:	80
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

S79
South **FED USGS** **USGS40000269683**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211836157515002		
Monloc name:	3-1851-46 W103-1B DW		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3068358
Longitude:	-157.8611456	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	8.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19391023	Welldepth:	75
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

P80
SSW **FED USGS** **USGS40000269692**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211837157515803		
Monloc name:	3-1851.05 -70/W90-8C		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3073914
Longitude:	-157.8633677	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19681025	Welldepth:	30
Welldepth units:	ft	Wellholedepth:	30
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1968-10-01	7.00	

P81
SSW **HI WELLS** **HI9000000000806**
1/2 - 1 Mile
Lower

Wid:	3-1851-070	Island:	Oahu
Well name:	Ft St Mall	Old name:	Not Reported
Yr drilled:	1968		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.863333		
Lat83dd:	21.307222		
Gps:	0	Utm:	-1
Owner user:	AMFAC		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	90-8C	Well type:	Not Reported
Casing dia:	24	Ground el:	7
Well depth:	30		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	0.3	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	550
Test ddown:	1.9	Test chlor:	17800
Test temp:	25.6	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-23
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	289		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-013:006
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-68
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000806

U82
West
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000944**

Wid:	3-1952-026	Island:	Oahu
Well name:	Kapalama Battery	Old name:	Not Reported
Yr drilled:	1950		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.869444		
Lat83dd:	21.316389		
Gps:	0	Utm:	-1
Owner user:	Lone Star Hawaii Prop., Inc.		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	114-A	Well type:	Not Reported
Casing dia:	18	Ground el:	Not Reported
Well depth:	36		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	IND - Industrial		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	600		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	.864		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:003
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-50
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000944

U83
West
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000946**

Wid:	3-1952-028	Island:	Oahu
Well name:	Kapalama Battery	Old name:	Not Reported
Yr drilled:	1950		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.869444		
Lat83dd:	21.316389		
Gps:	0	Utm:	-1
Owner user:	Lone Star Hawaii Prop., Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	114-C	Well type:	Not Reported
Casing dia:	18	Ground el:	Not Reported
Well depth:	35		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	IND - Industrial		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:003
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-50
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000946

U84
West
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000945**

Wid:	3-1952-027	Island:	Oahu
Well name:	Kapalama Battery	Old name:	Not Reported
Yr drilled:	1950		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.869444		
Lat83dd:	21.316389		
Gps:	0	Utm:	-1
Owner user:	Lone Star Hawaii Prop., Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	114-B	Well type:	Not Reported
Casing dia:	18	Ground el:	Not Reported
Well depth:	35		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	IND - Industrial		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RK		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:003
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-50
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000945

85
SSW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000804**

Wid:	3-1851-068	Island:	Oahu
Well name:	Bishop St	Old name:	Not Reported
Yr drilled:	1968		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.864		
Lat83dd:	21.307472		
Gps:	0	Utm:	-1
Owner user:	Topa Management Company		
Land owner:	Duesenberg Investment Company, LLC		
Pump insta:	Not Reported		
Old number:	90-8A	Well type:	Not Reported
Casing dia:	24	Ground el:	7
Well depth:	36		
Solid case:	8	Perf case:	Not Reported
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	440
Test ddown:	4.5	Test chlor:	16750
Test temp:	26.1	Test unit:	C
Pump gpm:	1400		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	1968		
Draft yr:	Not Reported	Bot hole:	-29
Bot solid:	-1	Bot perf:	Not Reported
Spec capac:	98		
Pump mgd:	2.016		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-013:006
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-68
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000804

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

U86
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269778**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211910157522001		
Monloc name:	3-1952-26 W114-A KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3162798
Longitude:	-157.8694786	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19500106	Welldepth:	36
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

U87
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269779**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211910157522002		
Monloc name:	3-1952-27 W114-B KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3162798
Longitude:	-157.8694786	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19500106	Welldepth:	35
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

U88
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269780**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211910157522003		
Monloc name:	3-1952-28 W114-C KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3162798
Longitude:	-157.8694786	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19500106	Welldepth:	35
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Q89
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000787**

Wid:	3-1851-051	Island:	Oahu
Well name:	Iolani Palace	Old name:	Not Reported
Yr drilled:	1952		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.857778		
Lat83dd:	21.306667		
Gps:	0	Utm:	-1
Owner user:	Division of State Parks Oahu, DLNR-SP		
Land owner:	Division of State Parks Oahu, DLNR-SP		
Pump insta:	Not Reported		
Old number:	99-1	Well type:	Not Reported
Casing dia:	8	Ground el:	18
Well depth:	71		
Solid case:	24	Perf case:	Not Reported
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	3.6	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	966		
Test date:	Not Reported	Test gpm:	300

Test ddown:	1.6	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-53
Bot solid:	-6	Bot perf:	Not Reported
Spec capac:	188		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-025:002
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-52
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000787

P90
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269690**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211837157515801		
Monloc name:	3-1851-68 W90-8A DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3071136
Longitude:	-157.8633677	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19680101	Welldepth:	36
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

P91
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269691**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211837157515802		
Monloc name:	3-1851-69 W90-8B DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3071136
Longitude:	-157.8633677	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19680101	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

X92
WNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000938**

Wid:	3-1952-020	Island:	Oahu
Well name:	Kapalama 3	Old name:	Not Reported
Yr drilled:	1927		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.869167		
Lat83dd:	21.318333		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	115-	Well type:	Not Reported
Casing dia:	10	Ground el:	5
Well depth:	540		
Solid case:	485	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-535
Bot solid:	-480	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:005
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-27
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000938

X93
WNW **FED USGS** **USGS40000269799**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211917157521901		
Monloc name:	3-1952-20 W115 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3182241
Longitude:	-157.8692009	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19270101	Welldepth:	540
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

X94
West **HI WELLS** **HI9000000000930**
1/2 - 1 Mile
Higher

Wid:	3-1952-012	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1920		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.869444		
Lat83dd:	21.317222		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	114-	Well type:	Not Reported
Casing dia:	9	Ground el:	6
Well depth:	599		
Solid case:	528	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	28.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	170		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	22.7	Test unit:	C
Pump gpm:	900		
Draft mgy:	85	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-593
Bot solid:	-522	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	1.296		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:001
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-20
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000930

X95
West
1/2 - 1 Mile
Higher

FED USGS **USGS40000269790**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211913157522001		
Monloc name:	3-1952-12 W114 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3171131
Longitude:	-157.8694786	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19200101	Welldepth:	610
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1923-12-21	-23.20	

Q96
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269681**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211835157513801		
Monloc name:	3-1851-51 W99-1 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.306558
Longitude:	-157.8578124	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	18.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19521202	Welldepth:	71
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

P97
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000805**

Wid:	3-1851-069	Island:	Oahu
Well name:	Bishop St	Old name:	Not Reported
Yr drilled:	1968		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.862806		
Lat83dd:	21.306833		
Gps:	0	Utm:	-1
Owner user:	Topa Management Company		
Land owner:	Duesenberg Investment Company, LLC		

Pump insta:	Not Reported		
Old number:	90-8B	Well type:	Not Reported
Casing dia:	24	Ground el:	7
Well depth:	40		
Solid case:	9	Perf case:	Not Reported
Use:	IND - Geothermal, Thermoelectric Cooling, Power De		
Use year:	Not Reported		
Init head:	0.3	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	425
Test ddown:	11.2	Test chlor:	17300
Test temp:	25.6	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-33
Bot solid:	-2	Bot perf:	Not Reported
Spec capac:	38		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-013:006
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-68
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000805

U98
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000949**

Wid:	3-1952-031	Island:	Oahu
Well name:	Kapalama Battery	Old name:	Not Reported
Yr drilled:	1954		
Driller:	Samson/Smock		
Quad map:	13		
Long83dd:	-157.869722		
Lat83dd:	21.315556		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	117-2	Well type:	Not Reported
Casing dia:	14	Ground el:	Not Reported
Well depth:	42		
Solid case:	20	Perf case:	Not Reported
Use:	IND - Industrial		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RT		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-011:004
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-54
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000949

U99
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269768**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211907157522101		
Monloc name:	3-1952-31 W117-2 KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3154465
Longitude:	-157.8697564	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19541127	Welldepth:	42
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

X100
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269800**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211917157522000		
Monloc name:	3-1952-11 ,13,20,21		
Monloc type:	Well: Multiple wells		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3182241
Longitude:	-157.8694786	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Unknown		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

S101
SSW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000763**

Wid:	3-1851-027	Island:	Oahu
Well name:	Queen St	Old name:	Not Reported
Yr drilled:	1910		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.861944		
Lat83dd:	21.306389		
Gps:	0	Utm:	-1
Owner user:	Hawaiian Electric Company, Inc., HECO		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	103-	Well type:	Not Reported
Casing dia:	12	Ground el:	2
Well depth:	1145		
Solid case:	805	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	27.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	55		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-1143
Bot solid:	-803	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-10
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000763

S102
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269679**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211834157515301		
Monloc name:	3-1851-27 W103 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3062803
Longitude:	-157.8619789	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	2.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19100101	Welldepth:	1145
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

U103
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000950**

Wid:	3-1952-032	Island:	Oahu
Well name:	Kapalama Battery	Old name:	Not Reported
Yr drilled:	1957		
Driller:	Samson/Smock		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.315278		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	117-3	Well type:	Not Reported
Casing dia:	14	Ground el:	Not Reported
Well depth:	40		
Solid case:	20	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	17000		
Test date:	Not Reported	Test gpm:	750
Test ddown:	1.5	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	500		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-011:004
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-57
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000950

X104
WNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000929**

Wid:	3-1952-011	Island:	Oahu
Well name:	Kapalama 1	Old name:	Not Reported
Yr drilled:	1913		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.869722		
Lat83dd:	21.318056		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	117-	Well type:	Not Reported
Casing dia:	8	Ground el:	5
Well depth:	513		
Solid case:	492	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	31	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	200		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	909	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-508
Bot solid:	-487	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:005
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-13
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000929

U105
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269771**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211908157522201		
Monloc name:	3-1952-33 W117-4 KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3157243
Longitude:	-157.8700342	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19570209	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

X106
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269796**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211916157522101		
Monloc name:	3-1952-11 W117 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3179463
Longitude:	-157.8697564	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19130301	Welldepth:	513
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

U107
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269763**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211906157522201		
Monloc name:	3-1952-32 W117-3 KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3151688
Longitude:	-157.8700342	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19570209	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID / Direction / Distance / Elevation		Database	EDR ID Number
X108 **WNW** **1/2 - 1 Mile** **Higher**		**HI WELLS**	**HI9000000000939**

Wid:	3-1952-021	Island:	Oahu
Well name:	Kapalama 4	Old name:	Not Reported
Yr drilled:	1927		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.869722		
Lat83dd:	21.318333		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	116-	Well type:	Not Reported
Casing dia:	10	Ground el:	4
Well depth:	612		
Solid case:	486	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	76		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-608
Bot solid:	-482	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:005
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-27
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000939

X109 **WNW** **1/2 - 1 Mile** **Higher**		**FED USGS**	**USGS40000269801**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211917157522101		
Monloc name:	3-1952-21 W116 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3182241
Longitude:	-157.8697564	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19270101	Welldepth:	612
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Y110
SE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000747**

Wid:	3-1851-011	Island:	Oahu
Well name:	Queens Hosp	Old name:	Not Reported
Yr drilled:	1894		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.853333		
Lat83dd:	21.307778		
Gps:	0	Utm:	-1
Owner user:	The Queens Medical Center		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	98-	Well type:	Not Reported
Casing dia:	8	Ground el:	24
Well depth:	521		
Solid case:	419	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	27.1	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	49		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-497
Bot solid:	-395	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000747

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

X111
WNW
1/2 - 1 Mile
Higher | **HI WELLS** | **HI9000000000931**

Wid:	3-1952-013	Island:	Oahu
Well name:	Kapalama 2	Old name:	Not Reported
Yr drilled:	1923		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.318333		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	118-	Well type:	Not Reported
Casing dia:	10	Ground el:	4
Well depth:	650		
Solid case:	550	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	28.4	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	156		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-646
Bot solid:	-546	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:005
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-23
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000931

X112
WNW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS40000269802**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211917157522201		
Monloc name:	3-1952-13 W118 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3182241
Longitude:	-157.8700342	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19230701	Welldepth:	650
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Z113
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000780**

Wid:	3-1851-044	Island:	Oahu
Well name:	Punchbowl St	Old name:	Not Reported
Yr drilled:	1939		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.856389		
Lat83dd:	21.306111		
Gps:	0	Utm:	-1
Owner user:	Medical Group		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	97-1	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	62		
Solid case:	40	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-39
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000780

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

Z114
SSE **FED USGS** **USGS40000269673**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211833157513301		
Monloc name:	3-1851-44 W97-1 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3060024
Longitude:	-157.8564236	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	15.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19390101	Welldepth:	62
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AA115
SSW **HI WELLS** **HI9000000000755**
1/2 - 1 Mile
Higher

Wid:	3-1851-019	Island:	Oahu
Well name:	Halekauwila St	Old name:	Not Reported
Yr drilled:	1900		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.8625		
Lat83dd:	21.305833		
Gps:	0	Utm:	-1
Owner user:	Hawaiian Electric Company, Inc., HECO		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	102-	Well type:	Not Reported
Casing dia:	1	Ground el:	6
Well depth:	1053		
Solid case:	1043	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	27.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	67		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-1047
Bot solid:	-1037	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-016:015
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	02-JAN-00
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000755

AB116
SW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000816**

Wid:	3-1852-004	Island:	Oahu
Well name:	Aloha Towers	Old name:	Not Reported
Yr drilled:	1947		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.865833		
Lat83dd:	21.307222		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	State of Hawaii DOT, Harbors Division		
Pump insta:	Not Reported		
Old number:	90-5	Well type:	Not Reported
Casing dia:	6	Ground el:	Not Reported
Well depth:	64		
Solid case:	34	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	150
Test ddown:	1.5	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	100		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-001:001
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-47
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000816

Y117
SSE **FED USGS** **USGS40000269687**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211837157512301		
Monloc name:	3-1851-11 W98 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3071134
Longitude:	-157.8536459	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	24.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18940101	Welldepth:	521
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AA118
SSW **FED USGS** **USGS40000269666**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211832157515501		
Monloc name:	3-1851-19 Halekauwila Street, Pipe A, Oahu, HI		
Monloc type:	Well		
Monloc desc:	former local no. W102		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3057222
Longitude:	-157.8625556	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Global positioning system (GPS), uncorrected		
Horiz coord refsys:	NAD83	Vert measure val:	6
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Hawaii volcanic-rock aquifers		
Formation type:	Koolau Volcanic Series, Lava Flows		
Aquifer type:	Confined single aquifer		
Construction date:	18970101	Welldepth:	1043
Welldepth units:	ft	Wellholedepth:	1053
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 27

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-10-15		5.30	2004-07-26		5.56
2004-06-17		5.77	2004-03-11		5.96
2004-01-07		5.27	2003-09-29		3.89
2003-01-23		4.90	2002-12-09		5.02
2002-10-10		4.20			
2002-09-17		4.61			
Note: A nearby site that taps the same aquifer was flowing.					
2002-07-18		4.83			
Note: A nearby site that taps the same aquifer was flowing.					
2002-05-16		5.60			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2002-03-25		5.60			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-12-27		5.26			
Note: A nearby site that taps the same aquifer was flowing.					
2001-09-25		4.44			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-08-09		4.49			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-09-28					
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-07-21					
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-05-23					
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-04-04					
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-01-21		5.84			
Note: A nearby site that taps the same aquifer was flowing.					
1999-11-03					
Note: The site was flowing, but the head could not be measured without additional equipment.					
1999-09-13					
Note: The site was flowing, but the head could not be measured without additional equipment.					
1999-08-02					
Note: The site was flowing, but the head could not be measured without additional equipment.					
1999-06-17					
Note: The site was flowing, but the head could not be measured without additional equipment.					
1999-02-25		5.75	1998-12-04		5.80

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AB119
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269693**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211837157520701		
Monloc name:	3-1852-04 W90-5 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3071137
Longitude:	-157.8658676	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	3.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19470501	Welldepth:	64
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AC120
SSW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000818**

Wid:	3-1852-006	Island:	Oahu
Well name:	Ala Moana Blvd	Old name:	Not Reported
Yr drilled:	1953		
Driller:	Samson/Smock		
Quad map:	13		
Long83dd:	-157.863889		
Lat83dd:	21.306111		
Gps:	0	Utm:	-1
Owner user:	Hawaiian Electric Company, Inc., HECO		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	102-1	Well type:	Not Reported
Casing dia:	24	Ground el:	Not Reported
Well depth:	94		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-016:015
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-53
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000818

AA121
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269667**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211832157515502		
Monloc name:	3-1851-19 Halekauwila Street, Pipe B, Oahu, HI		
Monloc type:	Well		
Monloc desc:	former local no. W102		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3056944
Longitude:	-157.8625833	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Global positioning system (GPS), uncorrected		
Horiz coord refsys:	NAD83	Vert measure val:	6
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Hawaii volcanic-rock aquifers		
Formation type:	Koolau Volcanic Series, Lava Flows		
Aquifer type:	Confined single aquifer		
Construction date:	18970101	Welldepth:	988
Welldepth units:	ft	Wellholedepth:	1053
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 32

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-10-15		12.28	2004-07-26		11.60
2004-06-17		12.44	2004-03-11		11.86
2004-01-07		11.14	2003-09-29		10.06
2003-07-10		10.59	2003-04-25		12.24
2003-03-10		12.20	2003-01-23		11.87
2002-10-10		10.75			
2002-09-17		11.24			

Note: The site was flowing, but the head could not be measured without additional equipment.

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2002-07-16		11.80			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2002-05-16		12.58			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2002-03-25		13.68			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-12-27		11.76			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-09-25		10.75			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-08-09		11.05			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-06-14		11.65			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-03-28		12.15			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-11-03		11.97			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-09-28		11.83			
Note: A nearby site that taps the same aquifer had been flowing recently.					
2000-07-21					
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-05-23		12.76			
Note: A nearby site that taps the same aquifer had been flowing recently.					
2000-04-04		13.62			
Note: A nearby site that taps the same aquifer had been flowing recently.					
2000-01-21		14.32			
Note: A nearby site that taps the same aquifer was flowing.					
1999-11-03		13.31			
Note: A nearby site that taps the same aquifer had been flowing recently.					
1999-09-13		13.08	1999-08-02		13.50
1999-06-02		13.66	1999-02-25		14.51
1998-12-04		14.30			

AD122
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000947**

Wid:	3-1952-029	Island:	Oahu
Well name:	Kapalama Battery	Old name:	Not Reported
Yr drilled:	1951		
Driller:	Samson/Smock		
Quad map:	13		
Long83dd:	-157.870833		
Lat83dd:	21.315833		
Gps:	0	Utm:	-1
Owner user:	Castle & Cooke, Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	117-1	Well type:	Not Reported
Casing dia:	14	Ground el:	Not Reported
Well depth:	40		
Solid case:	37	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-010:010
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-51
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000947

AD123
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269772**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211908157522501		
Monloc name:	3-1952-29 W117-1 KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3157243
Longitude:	-157.8708675	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19510607	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AE124
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000739**

Wid:	3-1851-003	Island:	Oahu
Well name:	King St	Old name:	Not Reported
Yr drilled:	1882		
Driller:	Not Reported		
Quad map:	13		
Long83dd:	-157.858611		
Lat83dd:	21.305278		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	97-	Well type:	Not Reported
Casing dia:	5	Ground el:	14
Well depth:	769		
Solid case:	715	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	30.8	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	55		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Qott		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-755
Bot solid:	-701	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-025:003
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000739

AB125
SSW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000817**

Wid:	3-1852-005	Island:	Oahu
Well name:	Aloha Tower	Old name:	Not Reported
Yr drilled:	1951		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.865833		
Lat83dd:	21.306944		
Gps:	0	Utm:	-1
Owner user:	J. Podmore		
Land owner:	State of Hawaii DOT, Harbors Division		

Pump insta:	Not Reported		
Old number:	90-6	Well type:	Not Reported
Casing dia:	8	Ground el:	Not Reported
Well depth:	40		
Solid case:	14	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	90
Test ddown:	3.4	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	26		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-001:001
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-51
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000817

AC126
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269674**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211833157520001		
Monloc name:	3-1852-06 W102-1 DWN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3060026
Longitude:	-157.8639233	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	3.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19530703	Welldepth:	94
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AE127
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269649**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211830157514101		
Monloc name:	3-1851-03 W97 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3051692
Longitude:	-157.8586457	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	14.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18820101	Welldepth:	767
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AB128
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269684**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211836157520701		
Monloc name:	3-1852-05 W90-6 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3068359
Longitude:	-157.8658676	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	3.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19510201	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

129
North
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000918**

Wid:	3-1951-005	Island:	Oahu
Well name:	Kunawai Springs	Old name:	Not Reported
Yr drilled:	0		
Driller:	Not Reported		
Quad map:	13		
Long83dd:	-157.8575		
Lat83dd:	21.326111		
Gps:	0	Utm:	-1
Owner user:	Department of Parks and Recreation, Honolulu, DPR		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	Not Reported	Ground el:	Not Reported
Well depth:	0		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	UNU - Unused		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-7-036:010
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000918

AE130
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000745**

Wid:	3-1851-009	Island:	Oahu
Well name:	Kawaihao Ch	Old name:	Not Reported
Yr drilled:	1893		
Driller:	Pinkham		
Quad map:	13		
Long83dd:	-157.858056		
Lat83dd:	21.305		
Gps:	0	Utm:	-1
Owner user:	Kawaiahao Church		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	96-	Well type:	Not Reported
Casing dia:	4	Ground el:	14
Well depth:	765		
Solid case:	715	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	26.1	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	52		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	100		
Draft mgy:	1	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-751
Bot solid:	-701	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	.144		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-032:017
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	9/1/1972		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000745

AF131
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269678**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211834157512301		
Monloc name:	3-1851-74 BERETANIA STA		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3062801
Longitude:	-157.8536459	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	19.0
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19880908	Welldepth:	598
Welldepth units:	ft	Wellholedepth:	598
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1988-09-23	-21.	

AF132
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000810**

Wid:	3-1851-074	Island:	Oahu
Well name:	Beretania Sta 1	Old name:	Not Reported
Yr drilled:	1988		
Driller:	Water Resources International, Inc.		
Quad map:	13		
Long83dd:	-157.853611		
Lat83dd:	21.306111		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	14	Ground el:	19
Well depth:	598		
Solid case:	498	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	21	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	9/26/1988	Test gpm:	1400
Test ddown:	1.9	Test chlor:	66
Test temp:	21.5	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-579
Bot solid:	-479	Bot perf:	Not Reported
Spec capac:	737		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:006
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	09-SEP-88
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000810

AE133
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269646**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211828157513901		
Monloc name:	3-1851-73 KAWAIHAO 2		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3046136
Longitude:	-157.8580902	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	13.
Vert measure units:	feet	Vertacc measure val:	.5
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19860522	Welldepth:	777
Welldepth units:	ft	Wellholedepth:	777
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1986-06-13	-6.17	

Note: The site was flowing, but the head could not be measured without additional equipment.

AD134
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000942**

Wid:	3-1952-024	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1947		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.871667		
Lat83dd:	21.316389		
Gps:	0	Utm:	-1
Owner user:	Gasco Inc.		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	119-1	Well type:	Not Reported
Casing dia:	16	Ground el:	Not Reported
Well depth:	80		
Solid case:	54	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	13000		
Test date:	Not Reported	Test gpm:	2000
Test ddown:	5	Test chlor:	16600
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	400		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:006
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-47
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000942

AF135
SSE **FED USGS** **USGS40000269672**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211833157512301		
Monloc name:	3-1851-75 BERETANIA W2		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3060023
Longitude:	-157.8536459	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	18.6
Vert measure units:	feet	Vertacc measure val:	.1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19890512	Welldepth:	625
Welldepth units:	ft	Wellholedepth:	625
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1989-05-12	-22.9	

AE136
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000809**

Wid:	3-1851-073	Island:	Oahu
Well name:	Kawaiahao Church	Old name:	Not Reported
Yr drilled:	1986		
Driller:	Water Resources International, Inc.		
Quad map:	13		
Long83dd:	-157.85775		
Lat83dd:	21.304611		
Gps:	0	Utm:	-1
Owner user:	Kawaiahao Church		
Land owner:	Kawaiahao Church		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	9	Ground el:	13
Well depth:	777		
Solid case:	709	Perf case:	Not Reported
Use:	IRR - Landscape/Water Features		
Use year:	Not Reported		
Init head:	19.17	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	5/28/1986	Test gpm:	102
Test ddown:	6	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-764
Bot solid:	-696	Bot perf:	Not Reported
Spec capac:	17		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-032:017
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	22-MAY-86
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000809

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AD137
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269773**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211908157522801		
Monloc name:	3-1952.01B		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3157243
Longitude:	-157.8717008	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19711001	Welldepth:	65
Welldepth units:	ft	Wellholedepth:	65
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AD138
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000943**

Wid:	3-1952-025	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1947		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.871667		
Lat83dd:	21.316667		
Gps:	0	Utm:	-1
Owner user:	Gasco Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	119-2	Well type:	Not Reported
Casing dia:	16	Ground el:	Not Reported
Well depth:	81		
Solid case:	42	Perf case:	Not Reported
Use:	ABN - Lost		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	16200		
Test date:	Not Reported	Test gpm:	1500

Test ddown:	3.2	Test chlor:	17600
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	Not Reported
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	469		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:006
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-47
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000943

AD139
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269781**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211910157522801		
Monloc name:	3-1952-24 W119-1 KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3162798
Longitude:	-157.8717008	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19470101	Welldepth:	80
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AD140
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269786**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211911157522801		
Monloc name:	3-1952-25 W119-2 KAP		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3165576
Longitude:	-157.8717008	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19470101	Welldepth:	81
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AG141
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000948**

Wid:	3-1952-030	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1951		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.871667		
Lat83dd:	21.316944		
Gps:	0	Utm:	-1
Owner user:	Gasco Inc.		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	119-3	Well type:	Not Reported
Casing dia:	16	Ground el:	7
Well depth:	75		
Solid case:	51	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	12600		
Test date:	Not Reported	Test gpm:	810
Test ddown:	3	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RF		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-68
Bot solid:	-44	Bot perf:	Not Reported
Spec capac:	270		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:006
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-51
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000948

AF142
SSE **HI WELLS** **HI9000000000793**
1/2 - 1 Mile
Higher

Wid:	3-1851-057	Island:	Oahu
Well name:	Beretania Deep Monitor	Old name:	Not Reported
Yr drilled:	1960		
Driller:	Goodfellow Construction, Inc. Corporate		
Quad map:	13		
Long83dd:	-157.853333		
Lat83dd:	21.306111		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	Board of Water Supply, BWS		
Pump insta:	Not Reported		
Old number:	T85-	Well type:	Not Reported
Casing dia:	6	Ground el:	23
Well depth:	1509		
Solid case:	450	Perf case:	Not Reported
Use:	OBS - Deep (through transition zone)		
Use year:	Not Reported		
Init head:	26.9	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-1486
Bot solid:	-427	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:005
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-60
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000793

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AG143
West
1/2 - 1 Mile
Lower | **FED USGS** | **USGS40000269788**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211912157522801		
Monloc name:	3-1952.01A -30/W119-		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3168354
Longitude:	-157.8717008	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	6.90
Vert measure units:	feet	Vertacc measure val:	.02
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19511214	Welldepth:	51
Welldepth units:	ft	Wellholedepth:	75
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AF144
SSE
1/2 - 1 Mile
Higher | **FED USGS** | **USGS40000269670**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211833157512201		
Monloc name:	3-1851-58 W86-1 DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3060023
Longitude:	-157.853368	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	6.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19600101	Welldepth:	720
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF145
SSE **FED USGS** **USGS40000269671**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211833157512202		
Monloc name:	3-1851-57 T85 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3060023
Longitude:	-157.853368	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	23.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19600101	Welldepth:	1509
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AH146
SSW **FED USGS** **USGS40000269647**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211828157515801		
Monloc name:	3-1851-22 Ala Moana Blvd, Oahu, HI		
Monloc type:	Well		
Monloc desc:	former local no. W101		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3047778
Longitude:	-157.8634167	Sourcemap scale:	24000
Horiz Acc measure:	.5	Horiz Acc measure units:	seconds
Horiz Collection method:	Global positioning system (GPS), uncorrected		
Horiz coord refsys:	NAD83	Vert measure val:	7
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Hawaii volcanic-rock aquifers		
Formation type:	Koolau Volcanic Series, Lava Flows		

Aquifer type: Not Reported
Construction date: 19010101 Welldepth: 1142
Welldepth units: ft Wellholedepth: 1142
Wellholedepth units: ft

Ground-water levels, Number of Measurements: 32

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-10-15		16.85	2004-07-26		16.12
2004-06-17		16.84	2004-03-11		16.34
2004-01-07		15.35	2003-09-29		14.17
2003-06-16		15.16	2003-04-18		16.23
2003-03-10		16.09	2003-01-23		15.85
2002-10-10		14.68			
2002-09-17		15.13			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2002-07-16		15.54			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2002-05-16		16.20			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2002-03-25		16.25			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-12-27		15.78			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-09-25		14.24			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-08-09		14.30			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-06-14		14.86			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2001-03-28		15.35			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-11-03		14.96			
Note: The site was flowing, but the head could not be measured without additional equipment.					
2000-09-27		14.74	2000-07-21		15.09
2000-05-23		15.73	2000-04-04		16.51
2000-01-21		16.83	1999-11-03		15.81
1999-09-24		15.37	1999-08-02		15.81
1999-06-02		15.86	1999-02-25		16.43
1998-12-04		16.08			

AH147
SSW
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000758**

Wid: 3-1851-022 Island: Oahu
Well name: Ala Moana Blvd Old name: Not Reported
Yr drilled: 1901
Driller: L. McCandless
Quad map: 13
Long83dd: -157.863333
Lat83dd: 21.304722
Gps: 0 Utm: -1
Owner user: Pacific Islands Water Science Center, USGS, U.S. Geological Survey
Land owner: State of Hawaii Aloha Tower Development Corp

Pump insta:	Not Reported		
Old number:	101-	Well type:	Not Reported
Casing dia:	8	Ground el:	4
Well depth:	1152		
Solid case:	1125	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	22.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	194		
Test date:	12/16/1982	Test gpm:	38
Test ddown:	6.2	Test chlor:	Not Reported
Test temp:	22.8	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-1148
Bot solid:	-1121	Bot perf:	Not Reported
Spec capac:	6		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-001:061
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-01
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000758

AI148
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269813**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211931157522201		
Monloc name:	3-1952-42 HON COMM COLLEGE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3221127
Longitude:	-157.8700342	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19870515	Welldepth:	39
Welldepth units:	ft	Wellholedepth:	39
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AI149
WNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269811**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211930157522301		
Monloc name:	3-1952-39 HON COMM COLLEGE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.321835
Longitude:	-157.870312	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	1981	Welldepth:	40
Welldepth units:	ft	Wellholedepth:	40
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AI150
WNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269812**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211930157522302		
Monloc name:	3-1952-45 HON COMM COLLEGE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.321835
Longitude:	-157.870312	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19870515	Welldepth:	39
Welldepth units:	ft	Wellholedepth:	39
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AI151
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269815**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211932157522201		
Monloc name:	3-1952-40 HON COMM COLLEGE P-1 dup1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3223905
Longitude:	-157.8700342	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19870512	Welldepth:	34
Welldepth units:	ft	Wellholedepth:	35
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1987-05-12	9.0	

AI152
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269816**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211932157522202		
Monloc name:	3-1952-41 HON COMM COLLEGE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3223905
Longitude:	-157.8700342	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19870515	Welldepth:	39
Welldepth units:	ft	Wellholedepth:	39
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AI153
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269817**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211932157522203		
Monloc name:	3-1952-46 HON COMM COLLEGE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3223905
Longitude:	-157.8700342	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19870515	Welldepth:	31
Welldepth units:	ft	Wellholedepth:	31
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AG154
West
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000932**

Wid:	3-1952-014	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1923		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.872222		
Lat83dd:	21.316944		
Gps:	0	Utm:	-1
Owner user:	Gasco Inc.		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	119-	Well type:	Not Reported
Casing dia:	8	Ground el:	4
Well depth:	682		
Solid case:	613	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	28.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	266		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	22.8	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-678
Bot solid:	-609	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-012:006
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-23
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000932

AI155
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000959**

Wid:	3-1952-041	Island:	Oahu
Well name:	HCC O-1	Old name:	Not Reported
Yr drilled:	1987		
Driller:	Walter Lum		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	2	Ground el:	9
Well depth:	39		
Solid case:	5	Perf case:	39
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-30
Bot solid:	4	Bot perf:	-30
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	15-MAY-87
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000959

AI156
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000960**

Wid:	3-1952-042	Island:	Oahu
Well name:	HCC O-2	Old name:	Not Reported
Yr drilled:	1987		
Driller:	Walter Lum		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	2	Ground el:	9
Well depth:	39		
Solid case:	5	Perf case:	39
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-30
Bot solid:	4	Bot perf:	-30
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	15-MAY-87
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000960

AI157
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000957**

Wid:	3-1952-039	Island:	Oahu
Well name:	HCC Aqua Cltr A	Old name:	Not Reported
Yr drilled:	1983		
Driller:	Frederick Page (Fred Page Drilling International, Inc.)		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	PER
Casing dia:	18	Ground el:	9
Well depth:	35		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	40		
Draft mgy:	37	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	QLS		
Pump yr:	1982		
Draft yr:	Not Reported	Bot hole:	-26
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	.057		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:001
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-83
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000957

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
AI158 **NW** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI9000000000958**

Wid:	3-1952-040	Island:	Oahu
Well name:	HCC P-1	Old name:	Not Reported
Yr drilled:	1987		
Driller:	Walter Lum		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	6	Ground el:	9
Well depth:	34		
Solid case:	10	Perf case:	34
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-25
Bot solid:	-1	Bot perf:	-25
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	15-MAY-87
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000958

	Database	EDR ID Number
AI159 **NW** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI9000000000963**

Wid:	3-1952-045	Island:	Oahu
Well name:	HCC O-5	Old name:	Not Reported
Yr drilled:	1987		
Driller:	Walter Lum		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	2	Ground el:	9
Well depth:	39		
Solid case:	5	Perf case:	39
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-30
Bot solid:	4	Bot perf:	-30
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	15-MAY-87
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000963

AI160
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000964**

Wid:	3-1952-046	Island:	Oahu
Well name:	HCC O-6	Old name:	Not Reported
Yr drilled:	1987		
Driller:	Walter Lum		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	1	Ground el:	9
Well depth:	31		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-22
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	15-MAY-87
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000964

AI161
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000961**

Wid:	3-1952-043	Island:	Oahu
Well name:	HCC O-3	Old name:	Not Reported
Yr drilled:	1987		
Driller:	Walter Lum		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	2	Ground el:	9
Well depth:	39		
Solid case:	5	Perf case:	39
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-30
Bot solid:	4	Bot perf:	-30
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	15-MAY-87
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000961

AI162
NW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000962**

Wid:	3-1952-044	Island:	Oahu
Well name:	HCC O-4	Old name:	Not Reported
Yr drilled:	1987		
Driller:	Walter Lum		
Quad map:	13		
Long83dd:	-157.87		
Lat83dd:	21.3225		
Gps:	0	Utm:	-1
Owner user:	Honolulu Community College		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	2	Ground el:	9
Well depth:	39		
Solid case:	5	Perf case:	39
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-30
Bot solid:	4	Bot perf:	-30
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-5-018:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	15-MAY-87
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000962

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AG163
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000269789**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211912157523001		
Monloc name:	3-1952-14 W119 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3168354
Longitude:	-157.8722563	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	.5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19231024	Welldepth:	682
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1923-12-12	-24.22	

AI164
WNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269814**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211931157522301		
Monloc name:	3-1952-44 HON COMM COLLEGE		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3221127
Longitude:	-157.870312	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.0
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19870515	Welldepth:	39
Welldepth units:	ft	Wellholedepth:	39
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AF165
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000811**

Wid:	3-1851-075	Island:	Oahu
Well name:	Beretania Station 2	Old name:	Not Reported
Yr drilled:	1989		
Driller:	Water Resources International, Inc.		
Quad map:	13		
Long83dd:	-157.853056		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	ROT
Casing dia:	14	Ground el:	18
Well depth:	625		
Solid case:	523	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	22.9	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	5/12/1989	Test gpm:	1400
Test ddown:	2.2	Test chlor:	102
Test temp:	20.4	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-607
Bot solid:	-505	Bot perf:	Not Reported
Spec capac:	636		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	14-MAY-89
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000811

AF166
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269664**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512101		
Monloc name:	3-1851-25 W88-B DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8530904	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	17.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19100101	Welldepth:	617
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF167
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000767**

Wid:	3-1851-031	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1924		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	88-C	Well type:	Not Reported
Casing dia:	12	Ground el:	20
Well depth:	600		
Solid case:	489	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	28	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-580
Bot solid:	-469	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-24
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000767

AF168
SSE **HI WELLS** **HI9000000000749**
1/2 - 1 Mile
Higher

Wid:	3-1851-013	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1895		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	88-I	Well type:	Not Reported
Casing dia:	10	Ground el:	22
Well depth:	616		
Solid case:	499	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-594
Bot solid:	-477	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000749

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AF169
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000748**

Wid:	3-1851-012	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1895		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	88-H	Well type:	Not Reported
Casing dia:	10	Ground el:	21
Well depth:	580		
Solid case:	499	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	32	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-559
Bot solid:	-478	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000748

AF170
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000771**

Wid:	3-1851-035	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1926		
Driller:	G Primmer		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		

Pump insta:	Not Reported		
Old number:	88-G	Well type:	Not Reported
Casing dia:	12	Ground el:	15
Well depth:	566		
Solid case:	488	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	23.3	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	47		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-551
Bot solid:	-473	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-26
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000771

AF171
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000803**

Wid:	3-1851-067	Island:	Oahu
Well name:	Beretania Obs	Old name:	Not Reported
Yr drilled:	1968		
Driller:	Layne International		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	88-J	Well type:	ROT
Casing dia:	20	Ground el:	18
Well depth:	619		
Solid case:	484	Perf case:	Not Reported
Use:	OBS - Deep (through transition zone)		
Use year:	Not Reported		
Init head:	3	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-601
Bot solid:	-466	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-68
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000803

AF172
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000769**

Wid:	3-1851-033	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1926		
Driller:	G Primmer		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	88-E	Well type:	Not Reported
Casing dia:	12	Ground el:	14
Well depth:	533		
Solid case:	479	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	23.6	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-519
Bot solid:	-465	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-26
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000769

AF173
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000770**

Wid:	3-1851-034	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1926		
Driller:	G Primmer		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	State of Hawaii		
Pump insta:	Not Reported		
Old number:	88-F	Well type:	Not Reported
Casing dia:	12	Ground el:	14
Well depth:	636		
Solid case:	484	Perf case:	Not Reported
Use:	MUN - County		
Use year:	Not Reported		
Init head:	23.6	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	55		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-622
Bot solid:	-470	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-26
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000770

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
AF174 **SSE** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI9000000000760**

Wid:	3-1851-024	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1910		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	88-A	Well type:	Not Reported
Casing dia:	12	Ground el:	20
Well depth:	616		
Solid case:	487	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	26.9	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-596
Bot solid:	-467	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-10
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000760

	Database	EDR ID Number
AF175 **SSE** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI9000000000761**

Wid:	3-1851-025	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1910		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	88-B	Well type:	Not Reported
Casing dia:	12	Ground el:	17
Well depth:	617		
Solid case:	495	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	27.7	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-600
Bot solid:	-478	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-10
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000761

AF176
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000768**

Wid:	3-1851-032	Island:	Oahu
Well name:	Beretania P Station	Old name:	Not Reported
Yr drilled:	1924		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.305556		
Gps:	0	Utm:	-1
Owner user:	Board of Water Supply, BWS		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	88-D	Well type:	Not Reported
Casing dia:	12	Ground el:	20
Well depth:	600		
Solid case:	489	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	27.8	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-580
Bot solid:	-469	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-036:004
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-24
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000768

AJ177
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000269852**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211951157515201		
Monloc name:	3-1951-02 W123 KAM H		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3276679
Longitude:	-157.8617008	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	50.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18940101	Welldepth:	120
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF178
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269657**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512003		
Monloc name:	3-1851-24 W88-A DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	20.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19100101	Welldepth:	607
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF179
SSE **FED USGS** **USGS40000269658**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512004		
Monloc name:	3-1851-12,13,24,ETC		
Monloc type:	Well: Multiple wells		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	Not Reported
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	Not Reported
Vert measure units:	Not Reported	Vertacc measure val:	Not Reported
Vert accmeasure units:	Not Reported		
Vertcollection method:	Not Reported		
Vert coord refsys:	Not Reported	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AF180
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269656**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512002		
Monloc name:	3-1851-13 W88-I DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	22.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18950101	Welldepth:	616
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF181
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269654**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512000		
Monloc name:	3-1851-67 W88-J		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	18.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19680101	Welldepth:	652
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF182
SSE **FED USGS** **USGS40000269655**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512001		
Monloc name:	3-1851-12 W88-H DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	21.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18950101	Welldepth:	580
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF183
SSE **FED USGS** **USGS40000269662**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512008		
Monloc name:	3-1851-34 W88-F DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	14.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19260101	Welldepth:	636
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF184
SSE **FED USGS** **USGS40000269663**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512009		
Monloc name:	3-1851-35 W88-G DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	15.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19260101	Welldepth:	566
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF185
SSE **FED USGS** **USGS40000269661**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512007		
Monloc name:	3-1851-33 W88-E DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	14.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19260101	Welldepth:	533
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF186
SSE **FED USGS** **USGS40000269659**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512005		
Monloc name:	3-1851-31 W88-C DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	20.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19240101	Welldepth:	600
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AF187
SSE **FED USGS** **USGS40000269660**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211831157512006		
Monloc name:	3-1851-32 W88-D DWNT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3054468
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	20.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19240101	Welldepth:	600
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AJ188
North
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000915**

Wid:	3-1951-002	Island:	Oahu
Well name:	Lanakila	Old name:	Not Reported
Yr drilled:	1894		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.861667		
Lat83dd:	21.327778		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	123-	Well type:	Not Reported
Casing dia:	8	Ground el:	50
Well depth:	120		
Solid case:	90	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RA		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-70
Bot solid:	-40	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000915

AK189
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269850**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211950157520201		
Monloc name:	3-1952-04 W124 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3273902
Longitude:	-157.8644786	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	16.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19000101	Welldepth:	150
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AL190
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269636**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211823157513901		
Monloc name:	3-1851-09 W96 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3032248
Longitude:	-157.8580902	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	14.32
Vert measure units:	feet	Vertacc measure val:	.5
Vert accmeasure units:	feet		
Vertcollection method:	Level or other surveying method		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18930101	Welldepth:	748
Welldepth units:	ft	Wellholedepth:	765
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1919-02-03	-11.75	

AK191
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000922**

Wid:	3-1952-004	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1900		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.864444		
Lat83dd:	21.3275		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	124-	Well type:	Not Reported
Casing dia:	8	Ground el:	16
Well depth:	150		
Solid case:	Not Reported	Perf case:	Not Reported
Use:	OBS - Observation		
Use year:	Not Reported		
Init head:	30.1	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	118		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	22.5	Test unit:	C
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-134
Bot solid:	Not Reported	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 1-6-006:002
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	02-JAN-00
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000922

AL192
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000754**

Wid:	3-1851-018	Island:	Oahu
Well name:	American Brewery	Old name:	Not Reported
Yr drilled:	1900		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.859444		
Lat83dd:	21.303056		
Gps:	0	Utm:	-1
Owner user:	Hawaii Housing Finance & Development Corporation, HHFDC		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	95-	Well type:	Not Reported
Casing dia:	8	Ground el:	8
Well depth:	806		
Solid case:	774	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	27.7	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	89		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-798
Bot solid:	-766	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-031:021
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	02-JAN-00
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000754

AM193
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000756**

Wid:	3-1851-020	Island:	Oahu
Well name:	Beretania St.	Old name:	Not Reported
Yr drilled:	1901		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.304722		
Gps:	0	Utm:	-1
Owner user:	Mas Transit, Ltd.		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	87-	Well type:	Not Reported
Casing dia:	8	Ground el:	19
Well depth:	576		
Solid case:	532	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	31.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	75		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	36	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-557
Bot solid:	-513	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-042:011
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-01
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000756

194
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269635**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211822157514401		
Monloc name:	3-1851-18 W95 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3029471
Longitude:	-157.859479	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	8.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19000101	Welldepth:	799
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AM195
SSE **FED USGS** **USGS40000269645**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211828157512001		
Monloc name:	3-1851-20 W87 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3046135
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	19.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19010901	Welldepth:	574
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AL196
South **HI WELLS** **HI9000000000801**
1/2 - 1 Mile
Higher

Wid:	3-1851-065	Island:	Oahu
Well name:	Queen St	Old name:	Not Reported
Yr drilled:	1967		
Driller:	Roscoe Moss Hawaii Inc		
Quad map:	13		
Long83dd:	-157.858611		
Lat83dd:	21.302778		
Gps:	0	Utm:	-1
Owner user:	K&Y Service		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	95-1	Well type:	PER
Casing dia:	8	Ground el:	7
Well depth:	80		
Solid case:	12	Perf case:	Not Reported
Use:	Other		
Use year:	Not Reported		
Init head:	1.5	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	275

Test ddown:	0.7	Test chlor:	2100
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-73
Bot solid:	-5	Bot perf:	Not Reported
Spec capac:	393		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-67
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000801

AL197
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000269634**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211821157514101		
Monloc name:	3-1851.04 -65/W95-1		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3026693
Longitude:	-157.8586457	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19671201	Welldepth:	80
Welldepth units:	ft	Wellholedepth:	80
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1967-12-04	5.50	

Note: The site had been pumped recently.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AK198
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269853**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211952157520301		
Monloc name:	3-1952-05 W125 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3279457
Longitude:	-157.8647563	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	22.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19000101	Welldepth:	130
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AK199
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000923**

Wid:	3-1952-005	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1900		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.864722		
Lat83dd:	21.328056		
Gps:	0	Utm:	-1
Owner user:	Kamehameha Schools		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	125-	Well type:	Not Reported
Casing dia:	7	Ground el:	22
Well depth:	130		
Solid case:	64	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	32	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	123		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-108
Bot solid:	-42	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	02-JAN-00
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000923

AK200
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269854**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211952157520401		
Monloc name:	3-1952-10 W127 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3279457
Longitude:	-157.865034	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	22.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19010101	Welldepth:	251
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AK201
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000928**

Wid:	3-1952-010	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1901		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.865		
Lat83dd:	21.328056		
Gps:	0	Utm:	-1
Owner user:	T. Ishimoto		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	127-	Well type:	Not Reported
Casing dia:	12	Ground el:	22
Well depth:	251		
Solid case:	91	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	30.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	112		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-229
Bot solid:	-69	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-01
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000928

AK202
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269863**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211953157520301		
Monloc name:	3-1952-09 W126 KAPAL		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3282235
Longitude:	-157.8647563	Sourcemap scale:	24000

Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	21.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19010101	Welldepth:	127
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AN203
ENE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269807**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211928157505801		
Monloc name:	3-1950-01 W 111 P HT		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.321279
Longitude:	-157.8467013	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	131.00
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19180316	Welldepth:	220
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AN204
ENE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000913**

Wid:	3-1950-001	Island:	Oahu
Well name:	Pacific Heights	Old name:	Not Reported
Yr drilled:	1918		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.846667		
Lat83dd:	21.321389		
Gps:	0	Utm:	-1
Owner user:	Honolulu Sake Brewery		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	111-	Well type:	Not Reported
Casing dia:	12	Ground el:	131
Well depth:	220		
Solid case:	94	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	31	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	55		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	3	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-89
Bot solid:	37	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-2-011:075
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-18
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000913

AM205
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000744**

Wid:	3-1851-008	Island:	Oahu
Well name:	Hotel St	Old name:	Not Reported
Yr drilled:	1889		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.852778		
Lat83dd:	21.303889		
Gps:	0	Utm:	-1
Owner user:	Not Reported		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	86-	Well type:	Not Reported
Casing dia:	8	Ground el:	19
Well depth:	648		
Solid case:	584	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	27.2	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	56		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-629
Bot solid:	-565	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000744

AK206
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000927**

Wid:	3-1952-009	Island:	Oahu
Well name:	Kapalama	Old name:	Not Reported
Yr drilled:	1901		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.864722		
Lat83dd:	21.328333		
Gps:	0	Utm:	-1
Owner user:	Kamehameha Schools		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	126-	Well type:	Not Reported
Casing dia:	9	Ground el:	21
Well depth:	127		
Solid case:	65	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	31.9	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	122		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RA		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-106
Bot solid:	-44	Bot perf:	Not Reported
Spec capac:	Not Reported		

Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30103		
Latest hd:	Not Reported	Wcr:	01-JAN-01
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000927

AM207
SSE **FED USGS** **USGS40000269639**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211825157512001		
Monloc name:	3-1851-08 W86 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3037802
Longitude:	-157.8528126	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	19.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18890101	Welldepth:	648
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AO208
SSE **HI WELLS** **HI9000000000750**
1/2 - 1 Mile
Higher

Wid:	3-1851-014	Island:	Oahu
Well name:	Kapiolani Blvd	Old name:	Not Reported
Yr drilled:	1897		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.855		
Lat83dd:	21.3025		
Gps:	0	Utm:	-1
Owner user:	C&C of Honolulu		
Land owner:	Not Reported		

Pump insta:	Not Reported		
Old number:	91-	Well type:	Not Reported
Casing dia:	6	Ground el:	9
Well depth:	691		
Solid case:	650	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	24.9	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	80		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-682
Bot solid:	-641	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	30-DEC-99
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000750

AP209
South
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000757**

Wid:	3-1851-021	Island:	Oahu
Well name:	Kawaiahao St	Old name:	Not Reported
Yr drilled:	1901		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.857222		
Lat83dd:	21.301944		
Gps:	0	Utm:	-1
Owner user:	Magoon Estate, Limited		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	92-	Well type:	Not Reported
Casing dia:	8	Ground el:	4
Well depth:	791		
Solid case:	614	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	29.1	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	90		
Test date:	Not Reported	Test gpm:	Not Reported

Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-787
Bot solid:	-610	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	(1) 2-1-048:018
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-01
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000757

210
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000269730**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211853157523601		
Monloc name:	3-1852.01A-B		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.311558
Longitude:	-157.8739229	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	3
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19731123	Welldepth:	65
Welldepth units:	ft	Wellholedepth:	65
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

AO211
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269627**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211820157512801		
Monloc name:	3-1851-14 W91 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3023915
Longitude:	-157.8550348	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	9.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	18970101	Welldepth:	691
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AP212
South
1/2 - 1 Mile
Lower

FED USGS **USGS40000269621**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211818157513601		
Monloc name:	3-1851-21 W92 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.301836
Longitude:	-157.8572569	Sourcemap scale:	24000
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	4.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19010101	Welldepth:	789
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AQ213
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000772**

Wid:	3-1851-036	Island:	Oahu
Well name:	Hotel St	Old name:	Not Reported
Yr drilled:	1936		
Driller:	W. Mullin		
Quad map:	13		
Long83dd:	-157.851944		
Lat83dd:	21.303611		
Gps:	0	Utm:	-1
Owner user:	Hawaiian Juice Industries		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	80-	Well type:	Not Reported
Casing dia:	6	Ground el:	15
Well depth:	700		
Solid case:	603	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	29	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	38		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	TKB		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-685
Bot solid:	-588	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-36
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000772

AQ214
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269638**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211824157511701		
Monloc name:	3-1851-36 W80 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3035024
Longitude:	-157.8519793	Sourcemap scale:	24000

Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	15.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19360101	Welldepth:	700
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

AR215
South
1/2 - 1 Mile
Lower

HI WELLS **HI9000000000753**

Wid:	3-1851-017	Island:	Oahu
Well name:	Pohukaina	Old name:	Not Reported
Yr drilled:	1900		
Driller:	L. McCandless		
Quad map:	13		
Long83dd:	-157.862222		
Lat83dd:	21.301667		
Gps:	0	Utm:	-1
Owner user:	Honolulu Iron Works		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	Not Reported	Well type:	Not Reported
Casing dia:	8	Ground el:	5
Well depth:	1007		
Solid case:	803	Perf case:	Not Reported
Use:	ABN - Sealed		
Use year:	Not Reported		
Init head:	27.8	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	98		
Test date:	Not Reported	Test gpm:	Not Reported
Test ddown:	Not Reported	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	Not Reported		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-1002
Bot solid:	-798	Bot perf:	Not Reported
Spec capac:	Not Reported		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	02-JAN-00
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000753

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

AS216
SSE
1/2 - 1 Mile
Higher

HI WELLS **HI9000000000800**

Wid:	3-1851-064	Island:	Oahu
Well name:	King St	Old name:	Not Reported
Yr drilled:	1967		
Driller:	Roscoe Moss Hawaii Inc		
Quad map:	13		
Long83dd:	-157.853333		
Lat83dd:	21.302778		
Gps:	0	Utm:	-1
Owner user:	Berts Service		
Land owner:	Not Reported		
Pump insta:	Not Reported		
Old number:	85-2	Well type:	PER
Casing dia:	8	Ground el:	7
Well depth:	91		
Solid case:	27	Perf case:	35
Use:	Other		
Use year:	Not Reported		
Init head:	Not Reported	Init head2:	Not Reported
Init head3:	Not Reported		
Init cl:	0		
Test date:	Not Reported	Test gpm:	200
Test ddown:	0.3	Test chlor:	Not Reported
Test temp:	Not Reported	Test unit:	Not Reported
Pump gpm:	0		
Draft mgy:	Not Reported	Head feet:	Not Reported
Max chlor:	Not Reported	Min chlor:	Not Reported
Geology:	RTSP		
Pump yr:	0		
Draft yr:	Not Reported	Bot hole:	-84
Bot solid:	-20	Bot perf:	-28
Spec capac:	667		
Pump mgd:	0		
Draft mgd:	Not Reported	Pump elev:	Not Reported
Pump depth:	Not Reported	Tmk:	Not Reported
Aqui code:	30102		
Latest hd:	Not Reported	Wcr:	01-JAN-67
Pir:	Not Reported		
Surveyor:	Not Reported		
T:	Not Reported	Site id:	HI9000000000800

AS217
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS40000269633**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211821157512201		
Monloc name:	3-1851.03 -64/W85-2		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3026692
Longitude:	-157.8533682	Sourcemap scale:	24000

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	7.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19671008	Welldepth:	91
Welldepth units:	ft	Wellholedepth:	91
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1967-10-05	7.00	

Note: The site had been pumped recently.

AR218
South
1/2 - 1 Mile
Lower

FED USGS **USGS40000269617**

Org. Identifier:	USGS-HI		
Formal name:	USGS Hawaii Water Science Center		
Monloc Identifier:	USGS-211817157515401		
Monloc name:	3-1851-17 W94 DWNTN		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	20060000	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	21.3015584
Longitude:	-157.8622567	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	5.00
Vert measure units:	feet	Vertacc measure val:	2
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	HILOCAL	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19000101	Welldepth:	1007
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for HONOLULU County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96817

Number of sites tested: 10

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.110 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	0.200 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Well Index Database
Source: Commission on Water Resource Management
Telephone: 808-587-0214
CWRM maintains a Well Index Database to track specific information pertaining to the construction and installation of production wells in Hawaii

OTHER STATE DATABASE INFORMATION

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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APPENDIX I

HAWAIIAN ELECTRIC LETTER

TSC 2.5.1
Due Diligence Inquiries

June 26, 2015

Ms. Nicole Okino
Bureau Veritas North America, Inc.
841 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Transmitted via email: nicole.okino@us.bureauveritas.com

Dear Ms. Okino:

Subject: **Transformer Information**
1331 to 1347 River Street
Honolulu, Oahu, Hawaii

In response to your request for information regarding Hawaiian Electric transformers at the above referenced location, we are providing the following information below:

Pole / Vault Number	Transformer Number	Address	Date Purchased	PCB Status
V1109	82836	1333 River Street	06/16/10	Non-PCB

If you have any other questions, please contact me at 808.543.4523.

Sincerely,

Wray Kakugawa
Senior Environmental Scientist



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Appendix S

Phase II Environmental Site Assessment
April 2019

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Phase II
Environmental Site Assessment

Halewaiolu Residences Redevelopment Project
1331-1347 River Street
Tax Map Key [TMK]: [1] 1-7-006: Parcel 012
Honolulu, Oahu, Hawaii 96817

FAI Project No. 19-1438

April 11, 2019

Prepared for:

Halewaiolu Senior Development, LLC
737 Bishop Street, Suite 1520
Honolulu, Hawaii 96813

Prepared by:

Ford & Associates, Inc.
928 Nuuanu Avenue, Suite 505
Honolulu, Hawaii 96817
808.426.6927

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LIST OF ACRONYMS

AAL	Advanced Analytical Laboratory
bgs	below ground surface
BVNA	Bureau Veritas North America, Inc.
C/I EAL	HDOH Tier 1 Commercial/Industrial Environmental Action Level
COPC	Chemicals of potential concern
DPP	Department of Planning and Permitting
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FAI	Ford & Associates, Inc.
Geotek	Geotek Hawaii, Inc.
GPR	Ground Penetrating Radar
GRO	Gasoline Range Organics
HDOH	State of Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliter
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PID	Photoionization detector
ppmv	parts per million by volume
PVC	polyvinyl chloride
QA/QC	Quality Assurance/Quality Control
REC	Recognized Environmental Condition
RRO	Residual Range Organics
SOP	Standard Operating Procedure
TMK	Tax Map Key
TPH	Total Petroleum Hydrocarbons
UIC	Underground Injection Control
Unrestricted EAL	HDOH Tier 1 Unrestricted Environmental Action Level
USGS	United States Geologic Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Halewaiolu Senior Development, LLC retained Ford & Associates, Inc. (FAI) to perform a Phase II Environmental Site Assessment (ESA) for the Halewaiolu Residences Redevelopment Project, located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012), in Honolulu, Oahu, Hawaii (herein referred to as the "site"). A Site Location Map showing the location of the site is included as Figure 1, located behind the *Figures* tab.

The site is the current location of a two-story, multi-tenant commercial building intended for redevelopment. In July 2015, Bureau Veritas North America, Inc. (BVNA) conducted a Phase I ESA of the site to assess for the presence of recognized environmental conditions (RECs) related to historical use (BVNA, 2015). Based on this investigation, BVNA identified the former presence of automobile repair structures and an oil and grease storage area on the northeast adjacent property.

Therefore, the purpose of this investigation was to perform subsurface soil and groundwater sampling and analysis at the site to assess for the potential migration of chemicals of potential concern (COPC) from these historical features on the neighboring property.

FAI mobilized to the site on April 1, 2019 to perform soil and groundwater sampling activities. During this time, FAI supervised Geotek Hawaii, Inc. (Geotek), a drilling subcontractor, during the drilling of three borings at the site (identified as B-1 through B-3). Drilling and subsurface soil sampling were performed using the direct push drilling method. Soil samples were collected using the multi-increment sampling approach recommended by the State of Hawaii Department of Health (HDOH, 2017b). In each boring, one soil sample was collected from the capillary fringe. Following completion of each boring, Geotek installed a temporary groundwater well consisting of 1-inch diameter Schedule 40 PVC well casing, with 0.010 inch screen size. Groundwater purging and sampling was performed following installation, using a low-flow sampling technique (HDOH, 2017b).

In total, three soil samples (identified as *B-1*, *B-2*, and *B-3*) and three groundwater samples (identified as *MW-1* through *MW-3*) were collected from the site and analyzed for the following:

- Total Petroleum Hydrocarbons (TPH) as Gasoline Range Organics (GRO), Diesel Range Organics (DRO) and Residual Range Organics (RRO) using Environmental Protection Agency (EPA) Methods 8015M.
- Total Lead and Cadmium using EPA Methods 6020B/3050B/3005A.
- Polychlorinated Biphenyls (PCBs) using EPA Methods 8082A/3550C/3510C.
- Volatile Organic Compounds (VOCs) using EPA Methods 8260C/5030B.
- Polynuclear Aromatic Hydrocarbons (PAHs) using EPA Method 8270D/3550C/3010C.

Based upon the laboratory analytical results, no COPC were detected above the laboratory reporting limits, or the HDOH Tier 1 Unrestricted (residential) and Commercial/Industrial (C/I) Environmental

Action Levels (Unrestricted and C/I EALs, respectively) in either the soil samples or groundwater samples. Therefore, it does not appear that the site has been impacted by historical features on the neighboring property, and no further investigation appears necessary at this time.

1.0 INTRODUCTION AND PURPOSE

Halewaiolu Senior Development, LLC retained Ford & Associates, Inc. (FAI) to perform a Phase II Environmental Site Assessment (ESA) for the Halewaiolu Residences Redevelopment Project, located at 1331-1347 River Street (Tax Map Key Number [TMK]: [1] 1-7-006: Parcel 012), in Honolulu, Oahu, Hawaii (herein referred to as the "site"). A Site Location Map showing the location of the site is included as Figure 1, located behind the *Figures* tab.

The site is the current location of a two-story, multi-tenant commercial building intended for redevelopment. In July 2015, Bureau Veritas North America, Inc. (BVNA) conducted a Phase I ESA of the site to assess for the presence of recognized environmental conditions (RECs) related to historical use (BVNA, 2015). Based on this investigation, BVNA identified the former presence of automobile repair structures and an oil and grease storage area on the northeast adjacent property.

Therefore, the purpose of this investigation was to perform subsurface soil and groundwater sampling and analysis at the site to assess for the potential migration of chemicals of potential concern (COPC) from these historical features on the neighboring property.

2.0 BACKGROUND

2.1 SITE DESCRIPTION

The site is located at 1331-1347 River Street, in a commercial setting of Honolulu. The City and County of Honolulu Planning and Permitting (DPP) database lists the site as TMK: (1) 1-7-006: Parcel 012. It is an approximately 16,925 square-foot land parcel currently improved with a two-story multi-tenant commercial building and associated asphalt-paved parking areas. The building measures approximately 10,234 square feet in area, and was formerly occupied by restaurants, a florist, and offices. At the time of this investigation, the majority of the building was unoccupied. The approximate layout of the site is depicted on Figure 2, located behind the *Figures* tab.

2.2 PHYSICAL SETTING

2.2.1 Soils/Geology

According to the United States Geologic Survey (USGS), Honolulu, Hawaii, 7.5-minute topographic quadrangle map (USGS, 2013), the site lies at an elevation of approximately 5 to 8 feet above mean sea level. The topography of the site and surrounding region is generally level, with a slight slope east.

According to the Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai (Foote, D.E. et al., 1972), the type of soil underlying the site is classified as Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes. The Ewa series consists of well-drained soils in basins and on alluvial fans. They are nearly level to moderately sloping. On the silty clay loam, runoff is very slow, and the erosion hazard is no more than slight.

Based upon the borings completed as part of this investigation, there is a thin layer of asphalt pavement and base course, beneath which is approximately six inches to 1.5 feet of fill. At approximately one to two feet below ground surface (bgs), the soil becomes native, dark brown, sandy clay. At approximately seven to eight feet bgs, the soil becomes wet, brown clayey gravel with sand.

2.2.2 Surface Water

The nearest surface water body is Nuuanu Stream, which is located approximately 50 feet (15 meters) northwest of the site, just beyond River Street.

2.2.3 Groundwater

The Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii (Mink, J.F. and L.S. Lau, 1990), published by the Water Resources Research Center at the University of Hawaii, was reviewed for information on groundwater conditions below the site. The report describes the aquifers below the site as part of the Nuuanu aquifer system of the Honolulu sector, on the Island of Oahu.

The upper aquifer is an unconfined basal aquifer of the sedimentary type, occurring in non- volcanic lithology. Its status is described as a replaceable water supply with moderate salinity (1,000 - 5,000

milligrams per liter [mg/L] Chloride). It is currently used, but is not considered ecologically important or a drinking water supply. This aquifer is highly vulnerability to contamination.

The lower aquifer is a confined basal aquifer of the flank type, occurring in horizontally extensive lavas. Its status is described as an irreplaceable, fresh (<250 mg/L Chloride) drinking water supply. It is currently used, and has low vulnerability to contamination.

The site is located above the State of Hawaii Department of Health (HDOH) Safe Drinking Water Branch defined Underground Injection Control (UIC) line. Areas above the UIC line denote potential underground drinking water sources. Areas below the UIC line generally denote groundwater that is unsuitable for drinking water purposes. Consequently, the groundwater underlying the site is considered a potential drinking water source. However, as noted above, based on review of the Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii, the upper aquifer at the site is not considered a drinking water source.

Based upon the investigation described herein, groundwater was encountered at depths of 7 to 8 feet bgs.

2.3 HISTORIC/FUTURE LAND USE

Based upon review of a previous Phase I ESA at the site (BVNA, 2015), as early as 1914 the site was divided into several lots that were developed with stores and residences. In 1959, the site was redeveloped with the current structure, which has since been used as commercial tenant spaces for a variety of businesses.

Halewaiolu Senior Development, LLC intends to demolish the current structure and develop the site with a 17-story apartment building and associated parking structure (referred to as the Halewaiolu Residences).

3.0 SUMMARY OF INVESTIGATION HISTORY

In July 2015, BVNA conducted a Phase I ESA of the site to assess for the presence of RECs associated with historical use (BVNA, 2015). As part of this investigation, BVNA reviewed available Sanborn fire insurance maps for the general area of the site. Fire insurance maps typically depict either the locations of manufacturing and industrial facilities within the city limits or potential hazards existing within individual building structures. In many cases, evidence of environmental concern, such as locations of underground storage tanks (UST), can be found by reviewing fire insurance maps. Fire insurance maps were available for the years 1914, 1927, 1950, 1955, 1963, 1974, 1975, 1976, 1978, 1985, 1991, and 1993.

Based on review of the fire insurance maps from 1950 and 1955, the northeast adjoining property was occupied by a structure labeled "Auto Repair." Furthermore, on the 1955 fire insurance map, there was an additional structure on the northeast adjoining property labeled "Oil and Grease Storage." These structures are not depicted on the remaining fire insurance maps. The locations of the former auto repair and oil/grease storage facilities are depicted on Figure 3, located behind the *Figures* tab.

This finding was considered a REC because of the potential for past releases of petroleum hydrocarbons other chemicals from these structures to migrate and impact the site. Therefore, BVNA recommended conducting a subsurface investigation at the site to assess for the presence of COPC.

Note that in reviewing the fire insurance maps from the BVNA report, FAI identified a fuel station structure labeled "Gas & Oils" located further northeast of the site, at the corner of River Street and Vineyard Boulevard. It was identified on the 1927, 1950, and 1955 maps. The location of this structure is also depicted on Figure 3, located behind the *Figures* tab.

4.0 APPLICABLE ACTION LEVELS

The applicable action levels for this project were established using the HDOH guidance document entitled "Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater" (HDOH, 2017a), which is published by the Hazard Evaluation and Emergency Response (HEER) of the HDOH.

The site lies above the HDOH designated UIC line; therefore, the underlying groundwater would be considered a potential drinking water source. However, based on review of the Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii, the upper aquifer at the site is not considered a drinking water source. Additionally, the nearest surface water body is Nuuanu Stream, which is located approximately 50 feet (15 meters) away from the site. Therefore, the analytical results were compared the HDOH Tier 1 Unrestricted (residential) and Commercial/Industrial (C/I) Environmental Action Levels (Unrestricted and C/I EALs, respectively) where groundwater is not a current or potential source of drinking water, and the nearest surface water body is within 150 meters of the site (HDOH, 2017a).

5.0 SCOPE OF WORK

5.1 BORING LOCATION SELECTION

FAI established three boring locations at the site to facilitate the collection of soil and groundwater samples. The three borings (identified as B-1 through B-3) were positioned at spacing intervals of 30 feet along the north side of the site closest to the former location of the auto repair and oil/grease storage structures noted in Section 3.0. The approximate locations of the borings are depicted on Figure 4, located behind the *Figures* tab.

5.2 UTILITY CLEARANCE

In preparation for drilling, FAI submitted a Hawaii One Call locate request, which provides public utility companies with a notification of the intent to drill, and the proposed location of borings. The utility companies then mark any public utilities in proximity of the borings. No utilities were identified as a result of the Hawaii One Call locate request.

FAI also retained Geotek Hawaii, Inc. (Geotek) to perform a geophysical survey at the site on April 1, 2019 to further assess for the potential presence of subsurface utilities. The survey consisted of radio detection and ground penetrating radar (GPR). Once FAI selected the location of the borings, Geotek scanned the area using GPR. No subsurface utilities were identified in the survey.

5.3 SUBSURFACE SOIL SAMPLING ACTIVITIES

FAI conducted drilling and soil sampling activities on April 1, 2019, as well. During this time, FAI supervised Geotek during the drilling of the three borings at the site. Drilling and subsurface soil sampling were performed using the direct push drilling method. Geotek drilled the borings using a track-mounted rig equipped with a 5-foot long open-barrel sampler, with an inside diameter of 1.5 inches. The sampler was fitted with a disposable acetate liner. Once the soil was retrieved from the subsurface, the acetate liner was cut open to expose the soil and facilitate the collection of the samples. No drilling difficulties were encountered.

Soil samples were collected using the multi-increment sampling approach recommended by the HDOH (HDOH, 2017b). In each boring, one soil sample was collected from the capillary fringe. The depth of samples varied depending on depth to groundwater. To collect each soil sample for volatile analysis, 30, 5-gram soil subsamples, evenly spaced over the sampling interval, were collected from each boring using a disposable, adjustable T-handle fitted with a core sample collector. The 5-gram soil subsamples were ejected from the sample collector into a glass jar containing 150 milliliters (mL) of methanol preservative. Following collection of soil for volatile analysis, the remainder of the sample interval was collected in a new, 1-gallon-sized Zip-lock™ bag for non-volatile analytical testing, referred to as the bulk sample. The samples were placed into a cooler containing wet ice. Both the volatile and non-volatile samples were logged on a chain-of custody form that accompanied the samples to the laboratory.

During the sample collection process, a hand-held RAE Systems MiniRAE 2000 organic vapor analyzer photoionization detector (PID) was used to monitor for volatile organic vapors in the soil headspace. The

PID was calibrated using 100 parts per million by volume (ppmv) isobutylene span gas and ambient air prior to use. Soil dedicated for headspace analysis was placed into a self-sealing plastic bag. The bag was filled until approximately one third full and the soil was crushed. The sample was allowed to volatilize for approximately 15 minutes at ambient temperature, prior to being analyzed. After the designated time, the tip of the PID was inserted into the plastic bag, and a measurement was taken. Organic vapor readings were detected in the soil samples subjected to field screening by the PID, as listed in the table below. No significant evidence of petroleum hydrocarbon contamination (i.e., odor, staining, etc.) was noted in the three borings drilled at the site, though some minimal PID readings were noted in the soil sample collected from B-1.

A summary of the soil sample collection information is presented in the following table:

Table 5-1: Summary of Soil Sample Collection Information

Sample ID	Boring ID	Date/Time	Sample Interval	PID Reading (ppm)
B-1	B-1	4-1-19 / 0926 hrs	5.5 to 7.5 feet	0.9
B-2	B-2	4-1-19 / 0951 hrs	6.5 to 8.0 feet	0.0
B-3	B-3	4-1-19 / 1037 hrs	6.5 to 8.5 feet	0.0

5.4 GROUNDWATER SAMPLING ACTIVITIES

Following completion of drilling, Geotek installed temporary groundwater wells in the three borings (identified as MW-1 through MW-3). The groundwater monitoring wells consisted of 1-inch diameter Schedule 40 polyvinyl chloride (PVC) well casing, with 0.010-inch screen size. Approximately 10 feet of screen and 5 feet of riser were inserted into the borings. Details of the well diagrams are included on the boring logs in Appendix A.

FAI performed groundwater purging and sampling using a low-flow sampling technique (HDOH, 2017b). FAI used a down-hole bladder pump with new polyethylene tubing to purge each well and collect the groundwater sample. The depth to water was measured and recorded before well purging. To purge the well and collect the groundwater sample, the bladder pump was positioned near the middle area of the screened interval. The flow rate was limited to approximately one liter per minute, or less, during purging and sampling, to minimize drawdown.

FAI purged the wells until the water quality parameters (temperature, pH, conductivity, and dissolved oxygen) reached equilibrium (i.e., plus or minus 10 percent of the previous reading), or at least three casing volumes were removed. Water quality was measured with a YSI Professional Plus water quality instrument and a Hach turbidity meter. FAI did not encounter any issues with purging the groundwater wells. Relevant information regarding the purging and sampling activities was recorded on the groundwater sampling field data sheet presented in Appendix B. Purge water was stored in a 55-gallon drum onsite.

Groundwater for VOC-related analyses was collected using the bladder pump and transferred to pre-cleaned laboratory-supplied, 40-mL vials. The vials were filled and sealed, so that there was no headspace present. Groundwater for non-volatile analysis was collected using the bladder pump and

transferred into 500 mL amber jars and 250 mL polypropylene containers with no preservative and solid polypropylene caps. The sample containers were filled nearly to the top and then the cap was screwed on tightly. Upon collection, the groundwater samples were immediately labeled and placed on ice to chill the samples and keep the samples at a temperature of 4 degrees ºC or below. The samples were logged on a chain-of-custody form that accompanied the samples and delivered to the laboratory.

A summary of the groundwater sample collection information is presented in the following table:

Table 5-2: Summary of Groundwater Sample Collection Information

Sample ID	Well ID	Boring ID	Date/Time	Depth to Groundwater	Petroleum Odor Noted?
MW-1	MW-1	B-1	4-1-19 / 1053 hrs	7.2 feet	No
MW-2	MW-2	B-2	4-1-19 / 1159 hrs	7.5 feet	No
MW-3	MW-3	B-3	4-1-19 / 1303 hrs	7.85 feet	No

After sampling the groundwater, the PVC well casing was removed from the boring. The boring was subsequently backfilled with the soil cuttings, bentonite chips, and capped with asphalt cold patch.

5.5 DECONTAMINATION PROCEDURES

The majority of the equipment used for soil and groundwater sampling was dedicated and disposable to prevent cross contamination between samples. In the field, new disposable gloves were donned prior to the collection of each sample. After the sample was collected, the disposable gloves were removed and discarded. New polyethylene tubing and bladders were used to collect each groundwater sample, and discarded after use. Decontamination of field tools (i.e., trowels, water level meter etc.) was conducted prior to, and after, sample collection as follows:

- Removed large clumps of soil or matter attached to sampling equipment;
- Washed with Alconox™;
- Double rinsed with distilled water; and
- Air dried.

5.6 CHAIN-OF-CUSTODY PROCEDURES

A chain-of-custody was used for the tracking of the soil and groundwater samples from the field to the laboratory until the time they are analyzed. FAI retained one copy of the chain-of-custody form, while the original remained with the sample and the laboratory performing the analysis. The samples were hand-delivered to Advanced Analytical Laboratory (AAL), located in Honolulu, Hawaii, under standard chain-of-custody procedures.

The chain-of-custody form includes:

- Name, address and telephone number of sender;
- Project number and name;

- Sample identification number and number of containers;
- Date sampled and sample matrix;
- Requested analytes by Environmental Protection Agency (EPA) method;
- Turnaround time information;
- Any special instructions or explanation of preservatives;
- Sign off on chain-of-custody (samplers' name/ initials); and
- Authorized signature (samplers' or other signature shipping the samples).

6.0 LABORATORY ANALYTICAL RESULTS

The soil and groundwater samples collected as part of this investigation were submitted to AAL under Chain-of-Custody procedures. A copy of the analytical reports and Chain-of-Custody documents for the samples are presented in Appendix C. The laboratory analytical results for the soil and groundwater samples are summarized in Tables 1 and 2, respectively, located behind the *Tables* tab.

The soil and groundwater samples collected from the site were analyzed for the following COPC:

- Total Petroleum Hydrocarbons (TPH) as Gasoline Range Organics (GRO), Diesel Range Organics (DRO) and Residual Range Organics (RRO) using EPA Methods 8015M.
- Total Lead and Cadmium using EPA Methods 6020B/3050B/3005A.
- Polychlorinated Biphenyls (PCBs) using EPA Methods 8082A/3550C/3510C.
- Volatile Organic Compounds (VOCs) using EPA Methods 8260C/5030B.
- Polynuclear Aromatic Hydrocarbons (PAHs) using EPA Method 8270D/3550C/3010C.

Details of the analytical results are described in the following sections.

6.1 SOIL SAMPLE ANALYTICAL RESULTS

A total of three multi-increment soil samples (identified as *B-1, B-2,* and *B-3*) were collected from the borings drilled at the site. Key findings from the analytical results are as follows:

- TPH-GRO, TPH-DRO, TPH-RRO, Cadmium, PCBs, VOCs, and PAHs were not detected above the laboratory reporting limits.
- Lead was detected in samples *B-1*, *B-2*, and *B-3* at concentrations ranging from 3.3 to 7.6 milligrams per kilogram (mg/kg), which are below the Unrestricted EAL of 200 mg/kg.

6.2 GROUNDWATER ANALYTICAL RESULTS

A total of three groundwater samples (identified as *MW-1*, *MW-2,* and *MW-3*) were collected from the site. Key findings from the analytical results are as follows:

- TPH-GRO, TPH-DRO, TPH-RRO, Lead, Cadmium, PCBs, VOCs, and PAHs were not detected above the laboratory reporting limits.

6.3 SUB-SAMPLING FOR LABORATORY ANALYSIS

The collection of each bulk soil sample for analysis resulted in approximately one to two pounds of soil, which is then processed for non-volatile testing using the multi-increment sub-sampling procedure, as

recommended by the HDOH. For this procedure, the bulk sample is spread out and air dried, after which it is processed through a No. 10 (2-millimeter) sieve. The sample is then spread out in a thin, even layer. Using a small spatula, the lab then collects approximately 30 equal volume sub-samples of the fine fraction of soil from systematic random locations of the dried sample. The analyses are then performed on this representative sub-sample.

6.4 LABORATORY QUALITY CONTROL

The soil and groundwater samples were submitted to AAL for laboratory analyses. Analytical data was generated following EPA methods (SW-846 protocols), and laboratory standard operating procedures (SOP) and quality assurance/quality control (QA/QC) guidelines for sample analysis. Common laboratory QC checks include the use of Method Blank, Matrix Spike and Matrix Spike Duplicate, and Laboratory Control and Laboratory Control Duplicate samples. The complete laboratory analytical reports and chain-of-custody forms are presented in Appendix C. QA/QC notes are attached to the laboratory reports.

7.0 GENERATED WASTE DISPOSAL

As part of this investigation, the following waste was generated:

- Nitrile gloves, acetate liners, and polyethylene tubing. These items were considered non-hazardous waste, and placed in a general refuse dumpster for disposal.

- One 55-gallon drum of groundwater well purge water and field decontamination water (a mixture of distilled water and Alconox). The drum of purge water was temporarily stored onsite until receipt of the analytical results. As noted in Section 6.2, COPC were not detected above the laboratory reporting limits in the groundwater. Additionally, the groundwater did not contain any free product or exhibit a sheen. Therefore, per the HDOH Technical Guidance Manual (HDOH, 2017b), the groundwater can be disposed on the asphalt-paved ground surface and allowed to evaporate, so long as it is not allowed to run off into a surface water body or storm drain.

- Soil cuttings generated from the drilling process. As noted in Section 5.3 and 5.4 of the report, no significant evidence of petroleum hydrocarbon contamination (i.e., odor, staining, etc.) was noted during the drilling process, and the borings were backfilled with the soil cuttings. Additionally, per Section 6.1, COPC were not detected above the laboratory reporting limits or EALs in the soil. Therefore, per the HDOH Technical Guidance Manual (HDOH, 2017b), for soil that meets the Unrestricted EAL there are no use restrictions on reuse.

8.0 SUMMARY AND CONCLUSIONS

Based on review of the fire insurance maps from 1950 and 1955, the northeast adjoining property was occupied by a structure labeled "Auto Repair." Furthermore, on the 1955 fire insurance map, there was an additional structure on the northeast adjoining property labeled "Oil and Grease Storage." Therefore, the purpose of this investigation was to perform subsurface soil and groundwater sampling and analysis at the site to assess for the potential migration of COPC from these historical features on the neighboring property.

FAI mobilized to the site on April 1, 2019 to perform soil and groundwater sampling activities. During this time, FAI supervised Geotek, a drilling subcontractor, during the drilling of three borings at the site (identified as B-1 through B-3). Drilling and subsurface soil sampling were performed using the direct push drilling method. Soil samples were collected using the multi-increment sampling approach recommended by the HDOH (HDOH, 2017b). In each boring, one soil sample was collected from the capillary fringe. Following completion of each boring, Geotek installed a temporary groundwater well consisting of 1-inch diameter Schedule 40 PVC well casing, with 0.010 inch screen size. Groundwater purging and sampling was performed following installation, using a low-flow sampling technique (HDOH, 2017b).

In total, three soil samples (identified as *B-1*, *B-2*, and *B-3*) and three groundwater samples (identified as *MW-1* through *MW-3*) were collected from the site and analyzed for the following:

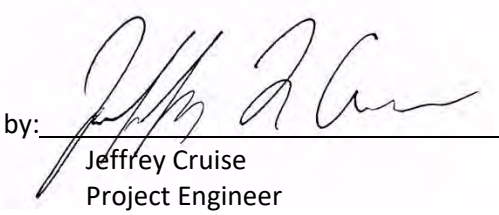
- TPH-GRO, DRO, and RRO using EPA Methods 8015M.
- Total Lead and Cadmium using EPA Methods 6020B/3050B/3005A.
- PCBs using EPA Methods 8082A/3550C/3510C.
- VOCs using EPA Methods 8260C/5030B.
- PAHs using EPA Method 8270D/3550C/3010C.

Based upon the laboratory analytical results, no COPC were detected above the laboratory reporting limits, or the Unrestricted and C/I EALs in either the soil samples or groundwater samples. Therefore, it does not appear that the site has been impacted by historical features on the neighboring property, and no further investigation appears necessary at this time.

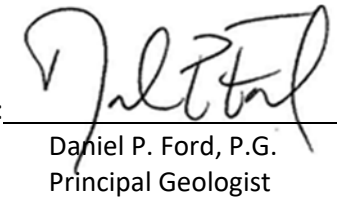
9.0 LIMITATIONS

This report is for the exclusive use of Halewaiolu Senior Development, LLC and no other party shall have any right to rely on any service provided by FAI without prior written consent. The information and opinions expressed in this report are given in response to a limited assignment and should be considered and implemented only in light of that assignment.

The services provided by FAI in completing this project were consistent with normal standards of the profession. No other warranty, expressed or implied, is made. FAI will not distribute or publish this report without consent except as required by law or court order.

This report prepared by: 

Jeffrey Cruise
Project Engineer

This report reviewed by: 

Daniel P. Ford, P.G.
Principal Geologist

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REFERENCES

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FIGURES



USGS Topographic Map
7.5-Minute Series
Honolulu Quandrangle
1998

FORD & ASSOCIATES, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS		Site Location Map	Figure
Job Number: 19-1438	Created by: JRC	Project: 1331-1347 River Street TMK Number (1): 1-7-006: Parcel 012 Honolulu, Oahu, Hawaii	1
Date: 4/11/19	Reviewed By: DF	Client: Halewaiolu Senior Development, LLC	



0 40 80

Scale in Feet

N

FORD & ASSOCIATES, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS		Site Layout Map	Figure
Job Number: 19-1438	Created by: JRC	Project: 1331-1347 River Street TMK Number (1): 1-7-006: Parcel 012 Honolulu, Oahu, Hawaii	**2**
Date: 4/11/19	Reviewed By: DF	Client: Halewaiolu Senior Development, LLC	



0 40 80

Scale in Feet

N

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

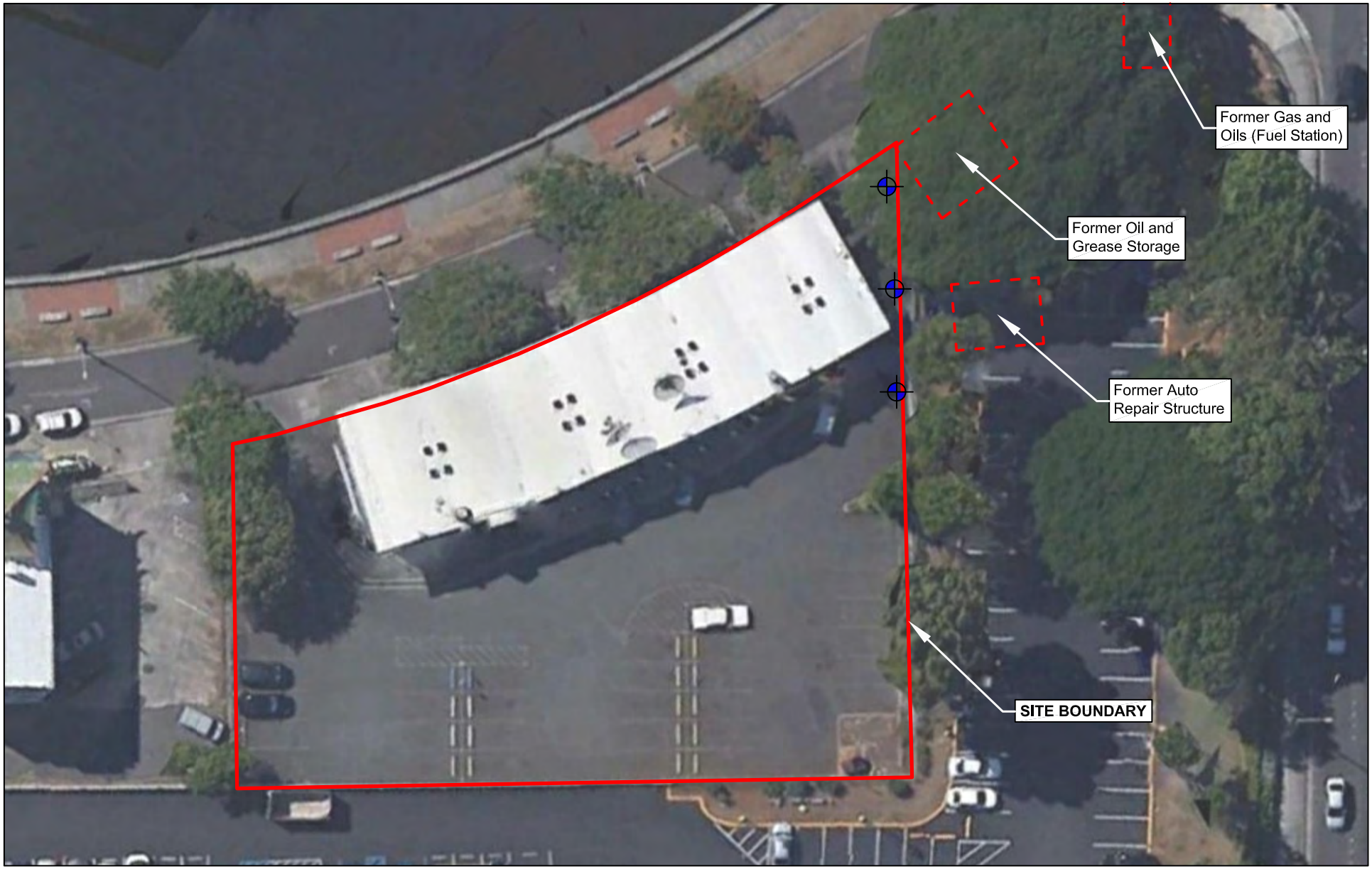
Job Number:	19-1438	Created by:	JRC
Date:	4/11/19	Reviewed By:	DF

Historical Features Map

Project: 1331-1347 River Street
TMK Number (1): 1-7-006: Parcel 012
Honolulu, Oahu, Hawaii

Client: Halewaiolu Senior Development, LLC

Figure **3**



0 40 80

Scale in Feet

LEGEND:

Boring/Well Location

N

FORD & ASSOCIATES, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS		Boring/Well Location Map	Figure 4
Job Number: 19-1438	Created by: JRC	Project: 1331-1347 River Street TMK Number (1): 1-7-006: Parcel 012 Honolulu, Oahu, Hawaii	
Date: 4/11/19	Reviewed By: DF	Client: Halewaiolu Senior Development, LLC	

TABLES

Table 1
Summary of Soil Analytical Results
Halewaiolu Residences Redevelopment Project
1331-1347 River Street
Honolulu, Oahu, Hawaii

Project No. 19-1438

Sample ID: / Sample Date: / Depth (feet): / Analyte / Units:	B-1 04/01/19 5.5 to 7.5 (mg/kg)	B-2 04/01/19 6.5 to 8.0 (mg/kg)	B-3 04/01/19 6.5 to 8.5 (mg/kg)	HDOH Tier 1 EALs Unrest. (mg/kg)	HDOH Tier 1 EALs C/I (mg/kg)
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015M					
Gasoline Range Organics	ND< 10.0	ND< 10.0	ND< 10.0	100	500
Diesel Range Organics	ND< 50	ND< 50	ND< 50	220	680
Residual Range Organics	ND< 100	ND< 100	ND< 100	500	1,500
Metals / EPA Methods 6020B/3050B					
Cadmium	ND< 1.0	ND< 1.0	ND< 1.0	14	72
Lead	3.3	4.8	7.6	200	800
Polychlorinated Biphenyls (PCBs) / EPA Method 8082A/3550C					
Aroclor 1016	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1221	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1232	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1242	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1248	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1254	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1260	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Aroclor 1262	ND< 0.10	ND< 0.10	ND< 0.10	1.2	8.6
Volatile Organic Compounds (VOCs) / EPA Method 8260C/5030B					
Chloromethane	ND< 0.050	ND< 0.050	ND< 0.050	4.0	11
Vinyl chloride	ND< 0.020	ND< 0.020	ND< 0.020	0.036	0.99
Bromomethane	ND< 0.050	ND< 0.050	ND< 0.050	0.22	0.76
Chloroethane	ND< 0.050	ND< 0.050	ND< 0.050	12	12
Trichlorofluoromethane	ND< 0.050	ND< 0.050	ND< 0.050	NS	NS
1,1-Dichloroethene	ND< 0.050	ND< 0.050	ND< 0.050	4.2	4.2
Methylene Chloride	ND< 0.020	ND< 0.020	ND< 0.020	22	36
Methyl Tert-Butyl Ether	ND< 0.020	ND< 0.020	ND< 0.020	2.3	4.1
trans-1,2-Dichloroethene	ND< 0.020	ND< 0.020	ND< 0.020	3.6	25
1,1-Dichloroethane	ND< 0.020	ND< 0.020	ND< 0.020	0.38	1.9
2,2-Dichloropropane	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
cis-1,2-Dichloroethene	ND< 0.020	ND< 0.020	ND< 0.020	0.36	2.5
Chloroform	ND< 0.020	ND< 0.020	ND< 0.020	0.026	0.19
1,1,1-Trichloroethane	ND< 0.020	ND< 0.020	ND< 0.020	1.2	1.2
Carbon tetrachloride	ND< 0.020	ND< 0.020	ND< 0.020	0.10	0.73
1,1-Dichloropropene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
Benzene	ND< 0.020	ND< 0.020	ND< 0.020	0.77	4.3
1,2-Dichloroethane (EDC)	ND< 0.020	ND< 0.020	ND< 0.020	0.023	0.17
Trichloroethene	ND< 0.020	ND< 0.020	ND< 0.020	0.089	0.62

Notes on Page 3

Table 1 (Continued)

Analyte / Sample ID: / Sample Date: / Depth (feet): / Units:	B-1 04/01/19 5.5 to 7.5 (mg/kg)	B-2 04/01/19 6.5 to 8.0 (mg/kg)	B-3 04/01/19 6.5 to 8.5 (mg/kg)	HDOH Tier 1 EALs Unrest. (mg/kg)	HDOH Tier 1 EALs C/I (mg/kg)
VOCs / EPA Method 8260C/5030B					
1,2-Dichloropropane	ND< 0.020	ND< 0.020	ND< 0.020	0.16	1.2
Dibromomethane	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
Bromodichloromethane	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.016*	0.12
Toluene	ND< 0.040	ND< 0.040	ND< 0.040	0.78	0.78
1,1,2-Trichloroethane	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.0089*	*0.062*
Tetrachloroethene	ND< 0.020	ND< 0.020	ND< 0.020	0.098	0.72
1,3-Dichloropropane	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
Dibromochloromethane	ND< 0.020	ND< 0.020	ND< 0.020	0.34	0.34
1,2-Dibromoethane (EDB)	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.0010*	*0.0073*
Chlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	1.5	1.5
1,1,1,2-Tetrachloroethane	ND< 0.020	ND< 0.020	ND< 0.020	0.32	0.32
Ethylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	0.90	0.90
m,p-Xylenes	ND< 0.050	ND< 0.050	ND< 0.050	1.4	1.4
Styrene	ND< 0.020	ND< 0.020	ND< 0.020	2.9	2.9
o-Xylene	ND< 0.040	ND< 0.040	ND< 0.040	1.4	1.4
Bromoform	ND< 0.100	ND< 0.100	ND< 0.100	2.0	2.0
Isopropyl benzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,2,3-Trichloropropane	*ND< 0.020*	*ND< 0.020*	*ND< 0.020*	*0.0050*	0.095
Bromobenzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,1,2,2-Tetrachloroethane	*ND< 0.040*	*ND< 0.040*	*ND< 0.040*	*0.010*	0.075
n-Propylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
2-Chlorotoluene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
4-Chlorotoluene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,3,5-Trimethylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
tert-Butylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,2,4-Trimethylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
sec-Butylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,3-Dichlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	2.5	2.5
Isopropyltoluene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,4-Dichlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	0.055	0.40
1,2-Dichlorobenzene	ND< 0.020	ND< 0.020	ND< 0.020	1.1	1.1
n-Butylbenzene	ND< 0.020	ND< 0.020	ND< 0.020	NS	NS
1,2-Dibromo-3-Chloropropane	*ND< 0.100*	*ND< 0.100*	*ND< 0.100*	*0.00081*	*0.00081*
1,2,4-Trichlorobenzene	ND< 0.050	ND< 0.050	ND< 0.050	0.18	1.4
Hexachlorobutadiene	*ND< 0.100*	*ND< 0.100*	*ND< 0.100*	*0.061*	*0.061*
Naphthalene	ND< 0.100	ND< 0.100	ND< 0.100	3.1	3.1
1,2,3-Trichlorobenzene	ND< 0.100	ND< 0.100	ND< 0.100	NS	NS
Polynuclear Aromatic Hydrocarbons (PAHs) / EPA Methods 8270D/3550C					
Naphthalene	ND< 0.05	ND< 0.05	ND< 0.05	3.1	3.1
2-Methylnaphthalene	ND< 0.05	ND< 0.05	ND< 0.05	1.9	1.9
1-Methylnaphthalene	ND< 0.05	ND< 0.05	ND< 0.05	0.89	0.89
Acenaphthylene	ND< 0.05	ND< 0.05	ND< 0.05	5.5	5.5

Notes on Page 3

Table 1 (Continued)

Analyte	Sample ID: / Sample Date: / Depth (feet): / Units:	B-1 04/01/19 5.5 to 7.5 (mg/kg)	B-2 04/01/19 6.5 to 8.0 (mg/kg)	B-3 04/01/19 6.5 to 8.5 (mg/kg)	HDOH Tier 1 EALs Unrest. (mg/kg)	HDOH Tier 1 EALs C/I (mg/kg)
PAHs / EPA Methods 8270D/3550C						
Acenaphthene		ND< 0.05	ND< 0.05	ND< 0.05	120	120
Fluorene		ND< 0.05	ND< 0.05	ND< 0.05	93	93
Phenanthrene		ND< 0.05	ND< 0.05	ND< 0.05	69	69
Anthracene		ND< 0.05	ND< 0.05	ND< 0.05	4.2	4.2
Fluoranthene		ND< 0.05	ND< 0.05	ND< 0.05	87	87
Pyrene		ND< 0.05	ND< 0.05	ND< 0.05	44	44
Benzo(a)anthracene		ND< 0.05	ND< 0.05	ND< 0.05	10	10
Chrysene		ND< 0.05	ND< 0.05	ND< 0.05	30	30
Benzo(b)fluoranthene		ND< 0.10	ND< 0.10	ND< 0.10	11	68
Benzo(k)fluoranthene		ND< 0.10	ND< 0.10	ND< 0.10	39	39
Benzo(a)pyrene		ND< 0.10	ND< 0.10	ND< 0.10	3.6	5.9
Indeno(123-cd)pyrene		ND< 0.095	ND< 0.095	ND< 0.095	11	31
Dibenzo(a,h)anthracene		ND< 0.10	ND< 0.10	ND< 0.10	1.1	18
Benzo(ghi)perylene		ND< 0.10	ND< 0.10	ND< 0.10	35	35

NOTES:

HDOH Tier 1 EAL	Hawaii State Department of Health (HDOH) Tier 1 Unrestricted Environmental Action Levels (EALs) at sites where drinking water is not threatened and the site is located within 150 meters of a surface water body.
Unrest.	Unrestricted Action Level
C/I	Commercial/Industrial Action Level
mg/kg	Milligrams per kilogram
NS	No Standard
EPA	Environmental Protection Agency
ND<	Analyte not detected. The value after the '<' is the laboratory Reporting Limit
Italics	The laboratory reporting limit is above the action level.
BOLD*	Analyte detected at a concentration greater than the HDOH Tier 1 Unrestricted EAL.
BOLD**	Analyte detected at a concentration greater than the HDOH Tier 1 C/I EAL.

Table 2
Summary of Groundwater Analytical Results
Halewaiolu Residences Redevelopment Project
1331-1347 River Street
Honolulu, Oahu, Hawaii

Project No. 19-1438

Sample ID:	MW-1	MW-2	MW-3	HDOH Tier 1 EALs	
Sample Date:	04/01/19	04/01/19	04/01/19	Unrest.	C/I
Analyte Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Total Petroleum Hydrocarbons (TPH) / EPA Method 8015M					
Gasoline Range Organics	ND< 100	ND< 100	ND< 100	500	500
Diesel Range Organics	ND< 50	ND< 50	ND< 50	640	640
Residual Range Organics	ND< 100	ND< 100	ND< 100	640	640
Metals / EPA Methods 6020B/3005A					
Cadmium	ND< 1.0	ND< 1.0	ND< 1.0	3.0	3.0
Lead	ND< 1.0	ND< 1.0	ND< 1.0	5.6	5.6
Polychlorinated Biphenyls (PCBs) / EPA Method 8082A/3510C					
Aroclor 1016	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1221	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1232	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1242	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1248	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1254	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1260	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Aroclor 1262	*ND< 0.10*	*ND< 0.10*	*ND< 0.10*	*0.014*	*0.014*
Volatile Organic Compounds (VOCs) / EPA Method 8260C/5030B					
Chloromethane	ND< 2.0	ND< 2.0	ND< 2.0	190	190
Vinyl chloride	ND< 2.0	ND< 2.0	ND< 2.0	18	610
Bromomethane	ND< 2.0	ND< 2.0	ND< 2.0	16	16
Chloroethane	ND< 2.0	ND< 2.0	ND< 2.0	160	160
Trichlorofluoromethane	ND< 2.0	ND< 2.0	ND< 2.0	NS	NS
1,1-Dichloroethene	ND< 2.0	ND< 2.0	ND< 2.0	25	25
Methylene Chloride	ND< 2.0	ND< 2.0	ND< 2.0	1,500	1,500
Methyl Tert-Butyl Ether	ND< 0.5	ND< 0.5	ND< 0.5	730	730
trans-1,2-Dichloroethene	ND< 0.5	ND< 0.5	ND< 0.5	560	560
1,1-Dichloroethane	ND< 0.5	ND< 0.5	ND< 0.5	47	47
2,2-Dichloropropane	ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
cis-1,2-Dichloroethene	ND< 0.5	ND< 0.5	ND< 0.5	620	620
Chloroform	ND< 0.5	ND< 0.5	ND< 0.5	28	28
1,1,1-Trichloroethane	ND< 0.5	ND< 0.5	ND< 0.5	11	11
Carbon tetrachloride	ND< 0.5	ND< 0.5	ND< 0.5	9.8	9.8
1,1-Dichloropropene	ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
Benzene	ND< 0.5	ND< 0.5	ND< 0.5	71	71
1,2-Dichloroethane (EDC)	ND< 0.5	ND< 0.5	ND< 0.5	180	910
Trichloroethene	ND< 0.5	ND< 0.5	ND< 0.5	47	47
1,2-Dichloropropane	ND< 0.5	ND< 0.5	ND< 0.5	100	100

Notes on Page 3

Table 1 (Continued)

Analyte	Sample ID: / Sample Date: / Units:	MW-1 04/01/19 (µg/L)	MW-2 04/01/19 (µg/L)	MW-3 04/01/19 (µg/L)	HDOH Tier 1 EALs Unrest. (µg/L)	HDOH Tier 1 EALs C/I (µg/L)
VOCs / EPA Method 8260C/5030B						
Dibromomethane		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
Bromodichloromethane		ND< 0.5	ND< 0.5	ND< 0.5	110	340
Toluene		ND< 0.5	ND< 0.5	ND< 0.5	9.8	9.8
1,1,2-Trichloroethane		ND< 0.5	ND< 0.5	ND< 0.5	110	730
Tetrachloroethene		ND< 0.5	ND< 0.5	ND< 0.5	53	53
1,3-Dichloropropane		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
Dibromochloromethane		ND< 0.5	ND< 0.5	ND< 0.5	34	34
1,2-Dibromoethane (EDB)*		ND< 0.5	ND< 0.5	ND< 0.5	19	160
Chlorobenzene		ND< 0.5	ND< 0.5	ND< 0.5	25	25
1,1,1,2-Tetrachloroethane		ND< 0.5	ND< 0.5	ND< 0.5	11	11
Ethylbenzene		ND< 0.5	ND< 0.5	ND< 0.5	7.3	7.3
m,p-Xylenes		ND< 2.0	ND< 2.0	ND< 2.0	13	13
Styrene		ND< 0.5	ND< 0.5	ND< 0.5	32	32
o-Xylenes		ND< 1.0	ND< 1.0	ND< 1.0	13	13
Bromoform		ND< 2.0	ND< 2.0	ND< 2.0	230	230
Isopropyl benzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
1,2,3-Trichloropropane		ND< 1.0	ND< 1.0	ND< 1.0	14	14
Bromobenzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
1,1,2,2-Tetrachloroethane		ND< 0.5	ND< 0.5	ND< 0.5	200	200
n-Propylbenzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
2-Chlorotoluene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
4-Chlorotoluene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
1,3,5-Trimethylbenzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
tert-Butylbenzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
1,2,4-Trimethylbenzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
sec-Butylbenzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
1,3-Dichlorobenzene		ND< 0.5	ND< 0.5	ND< 0.5	22	22
Isopropyltoluene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
1,4-Dichlorobenzene		ND< 0.5	ND< 0.5	ND< 0.5	9.4	9.4
1,2-Dichlorobenzene		ND< 0.5	ND< 0.5	ND< 0.5	14	14
n-Butylbenzene		ND< 0.5	ND< 0.5	ND< 0.5	NS	NS
1,2-Dibromo-3-Chloropropane		*ND< 2.0*	*ND< 2.0*	*ND< 2.0*	*0.040*	*0.040*
Hexachlorobutadiene		*ND< 2.0*	*ND< 2.0*	*ND< 2.0*	*0.30*	*0.30*
1,2,4-Trichlorobenzene		ND< 2.0	ND< 2.0	ND< 2.0	110	110
Naphthalene		ND< 2.0	ND< 2.0	ND< 2.0	12	12
1,2,3-Trichlorobenzene		ND< 2.0	ND< 2.0	ND< 2.0	NS	NS
Polynuclear Aromatic Hydrocarbons (PAHs) / EPA Methods 8270D/3010C						
Naphthalene		ND< 0.05	ND< 0.05	ND< 0.05	12	12
2-Methylnaphthalene		ND< 0.05	ND< 0.05	ND< 0.05	4.7	4.7
1-Methylnaphthalene		ND< 0.05	ND< 0.05	ND< 0.05	2.1	2.1
Acenaphthylene		ND< 0.05	ND< 0.05	ND< 0.05	13	13
Acenaphthene		ND< 0.05	ND< 0.05	ND< 0.05	15	15
Fluorene		ND< 0.05	ND< 0.05	ND< 0.05	3.9	3.9

Notes on Page 3

Table 1 (Continued)

Analyte	Sample ID: / Sample Date: / Units:	MW-1 04/01/19 (µg/L)	MW-2 04/01/19 (µg/L)	MW-3 04/01/19 (µg/L)	HDOH Tier 1 EALs Unrest. (µg/L)	HDOH Tier 1 EALs C/I (µg/L)
PAHs / EPA Methods 8270D/3010C						
Phenanthrene		ND< 0.05	ND< 0.05	ND< 0.05	2.3	2.3
Anthracene		*ND< 0.05*	*ND< 0.05*	*ND< 0.05*	*0.020*	*0.020*
Fluoranthene		ND< 0.05	ND< 0.05	ND< 0.05	0.80	0.80
Pyrene		ND< 0.05	ND< 0.05	ND< 0.05	4.6	4.6
Benzo(a)anthracene		ND< 0.025	ND< 0.025	ND< 0.025	0.027	0.027
Chrysene		ND< 0.10	ND< 0.10	ND< 0.10	1.0	1.0
Benzo(b)fluoranthene		ND< 0.10	ND< 0.10	ND< 0.10	0.68	0.68
Benzo(k)fluoranthene		ND< 0.10	ND< 0.10	ND< 0.10	0.40	0.40
Benzo(a)pyrene		ND< 0.025	ND< 0.025	ND< 0.025	0.060	0.060
Indeno(123-cd)pyrene		ND< 0.10	ND< 0.10	ND< 0.10	0.095	0.095
Dibenzo(a,h)anthracene		ND< 0.10	ND< 0.10	ND< 0.10	0.80	0.80
Benzo(ghi)perylene		ND< 0.10	ND< 0.10	ND< 0.10	0.13	0.13

NOTES:

HDOH Tier 1 EAL	Hawaii State Department of Health (HDOH) Tier 1 Unrestricted Environmental Action Levels (EALs) at sites where drinking water is not threatened and the site is located within 150 meters of a surface water body.
Unrest.	Unrestricted Action Level
C/I	Commercial/Industrial Action Level
µg/L	Micrograms per Liter
NS	No Standard
EPA	Environmental Protection Agency
ND<	Analyte not detected. The value after the '<' is the laboratory Reporting
Italics	The laboratory reporting limit is above the action level.
BOLD*	Analyte detected at a concentration greater than the HDOH Tier 1 Unrestricted EAL.
BOLD**	Analyte detected at a concentration greater than the HDOH Tier 1 C/I EAL.

PHOTOGRAPHS

Client:	Halewaiolu Senior Development, LLC	**Project No.:**	19-1438
Site Name:	Halewaiolu Residences Redevelopment Project 1331-1347 River Street, Honolulu, Oahu, Hawaii	**Date:**	April 1, 2019



Geotek Hawaii, Inc (Geotek) used ground penetrating radar to assess for the presence of subsurface utilities at the site.	PHOTO **1**



Geotek used a track-mounted, direct-push drill rig to drill the borings and collect the soil cores.	PHOTO **2**

Client:	Halewaiolu Senior Development, LLC	**Project No.:**	19-1438
Site Name:	Halewaiolu Residences Redevelopment Project 1331-1347 River Street, Honolulu, Oahu, Hawaii	**Date:**	April 1, 2019



Example of soil core removed from the subsurface.	PHOTO **3**



Following drilling, Geotek installed a temporary groundwater well in the open boring.	PHOTO **4**

Client:	Halewaiolu Senior Development, LLC	**Project No.:**	19-1438
Site Name:	Halewaiolu Residences Redevelopment Project 1331-1347 River Street, Honolulu, Oahu, Hawaii	**Date:**	April 1, 2019

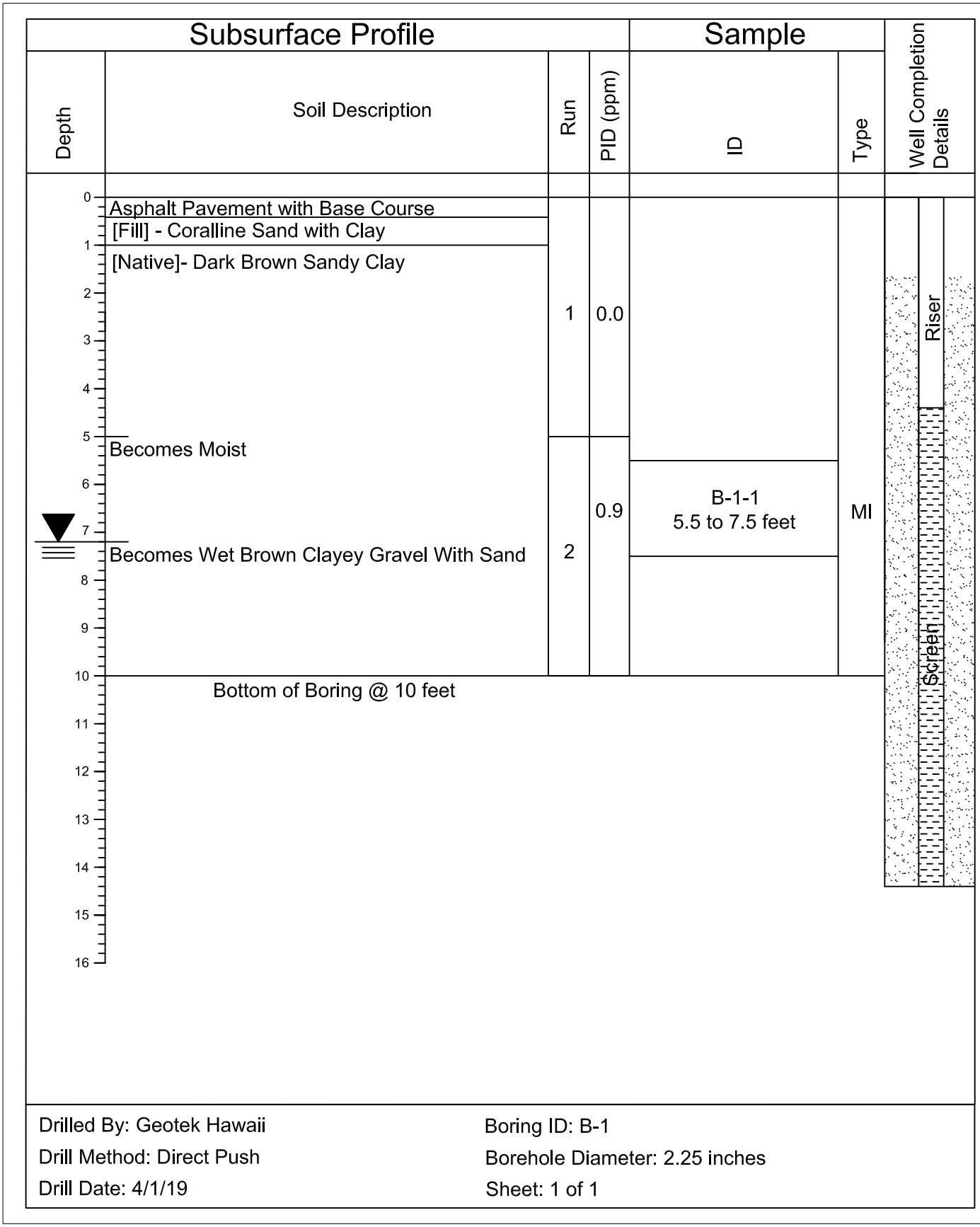


Ford & Associates, Inc. (FAI) used a bladder pump to purge the wells and collect the groundwater sample (MW-1 collection shown above).	PHOTO **5**



Following groundwater sampling, the polyvinyl chloride (PVC) well casing was removed from the subsurface, and the boring was backfilled with soil cuttings and asphalt-cold patch.	PHOTO **6**

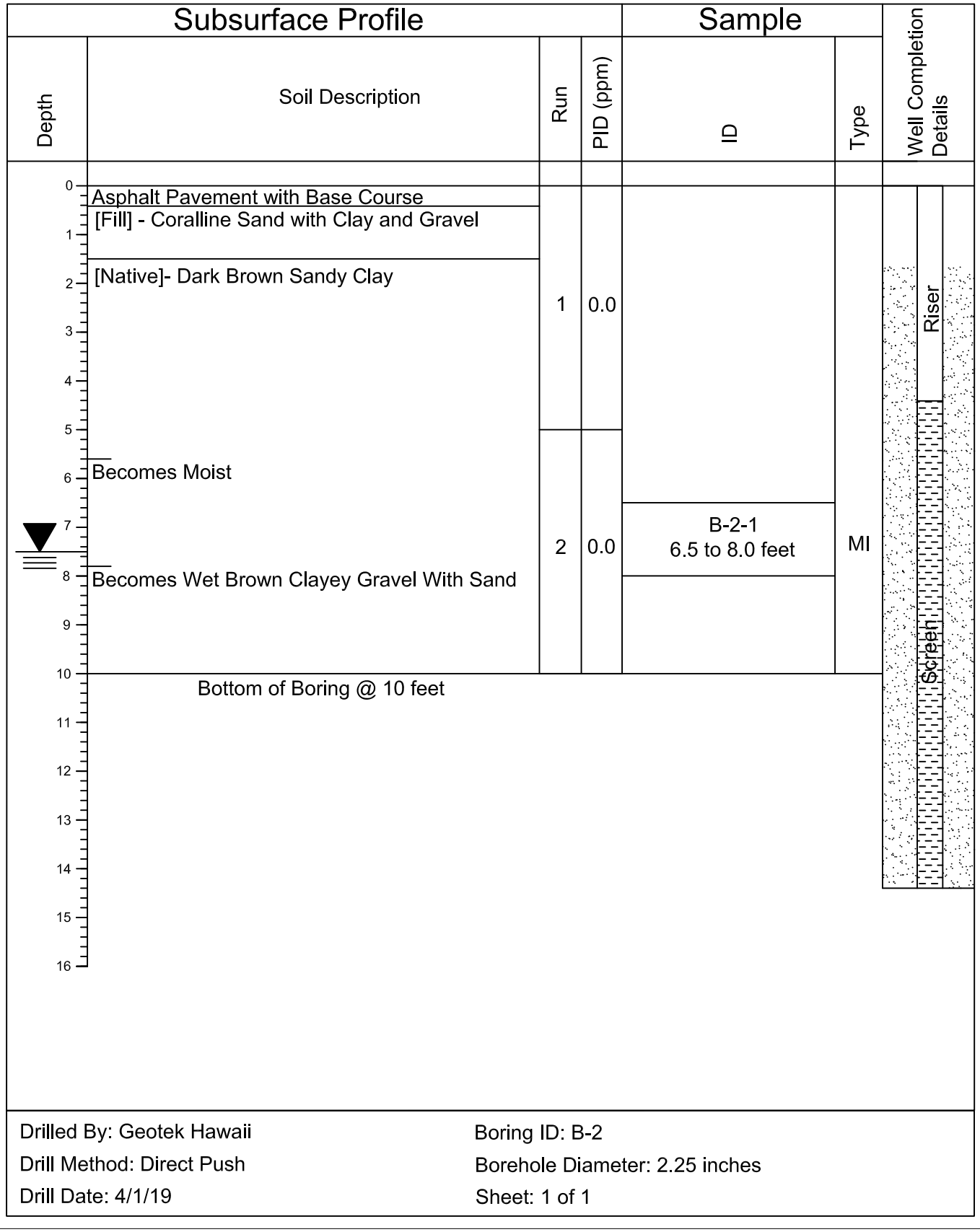
APPENDIX A
BORING LOGS/WELL DIAGRAMS



Drilled By: Geotek Hawaii
Drill Method: Direct Push
Drill Date: 4/1/19

Boring ID: B-1
Borehole Diameter: 2.25 inches
Sheet: 1 of 1

FORD & ASSOCIATES, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS		Boring Log/Well Diagram for B-1	Boring **B-1**
Job Number: 19-1438	Created by: JRC	Project: 1331-1347 River Street TMK Number (1): 1-1-006: Parcel 012 Honolulu, Oahu, Hawaii	
Date: 4/1/19	Reviewed By: DPF	Client: Halewaiolu Senior Development, LLC	



Drilled By: Geotek Hawaii
Drill Method: Direct Push
Drill Date: 4/1/19

Boring ID: B-2
Borehole Diameter: 2.25 inches
Sheet: 1 of 1

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

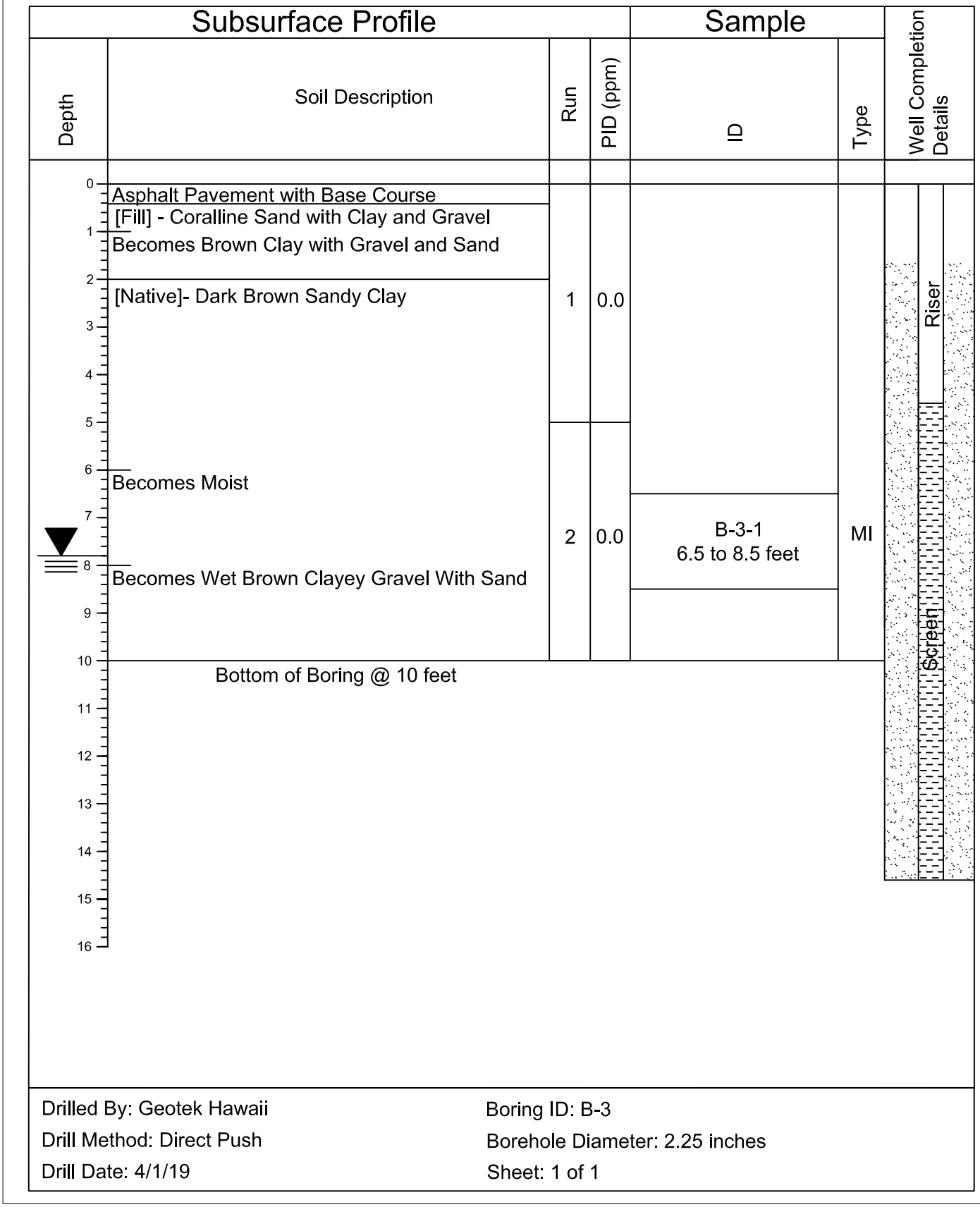
Job Number:	Created by:
19-1438	JRC
Date:	Reviewed By:
4/1/19	DPF

Boring Log/Well Diagram for B-2

Project: 1331-1347 River Street
TMK Number (1): 1-1-006: Parcel 012
Honolulu, Oahu, Hawaii

Client: Halewaiolu Senior Development, LLC

Boring
B-2



Drilled By: Geotek Hawaii
Drill Method: Direct Push
Drill Date: 4/1/19

Boring ID: B-3
Borehole Diameter: 2.25 inches
Sheet: 1 of 1

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Job Number:	Created by:
19-1438	JRC
Date:	Reviewed By:
4/1/19	DPF

Boring Log/Well Diagram for B-3

Project:
1331-1347 River Street
TMK Number (1): 1-1-006: Parcel 012
Honolulu, Oahu, Hawaii

Client:
Halewaiolu Senior Development, LLC

Boring
B-3

APPENDIX B
GROUNDWATER SAMPLING FIELD DATA SHEETS

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Groundwater Sampling Field Data Sheet

Project:	Halewaiolu Residences Redevelopment	**Site:**	1331-1347 River Street
Project No.:	19-1438	**Well ID:**	MW-1
Field Crew:	J. Cruise	**Development Date:**	N/A - Temp Well
Screened Interval (ft):	4.4 - 14.4 ft	**Climatic Conditions:**	Sunny
Well Diameter (in.):	1 inch	**Purge Method:**	Bladder Pump
PID Reading (ppm):	0.0 ppm @ well head	**Pump Placement (ft):**	11.5 ft
Total Well Depth (ft):	14.4 ft	**Length of Saturated Zone (ft):**	7.2 ft
Depth to Water (ft):	7.2 ft		
Depth to Product (ft):	N/A ft	**Casing Volume (gal)**	0.59 gallons
		x 3:	1.77 gallons

Field Parameters

Time	Depth to Water (ft)	Purge Rate (L/min)	Gallons Removed	pH	EC (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (deg C)	ORP (mv)	Comments
1013	7.2	0.2	0.00	6.87	1.81	Turbid	0.75	26.6	-50.3	
1019	7.2	0.2	0.25	6.86	1.80	251	0.70	26.5	-47.2	
1024	7.2	0.2	0.50	6.87	1.79	334	0.45	26.5	-54.9	
1029	7.2	0.2	0.75	6.87	1.78	166	0.42	26.5	-60.9	
1034	7.2	0.2	1.00	6.88	1.78	92.5	0.43	26.5	-60.7	
1039	7.2	0.2	1.25	6.88	1.77	70.4	0.39	26.5	-62.3	
1044	7.2	0.2	1.50	6.90	1.76	154.0	0.41	26.6	-65.8	
1049	7.2	0.2	1.75	6.90	1.76	101.0	0.34	26.6	-66.5	

Purge Information

Color:	Clear		
Odor:	None		
Turbidity:	Slight to clear		
Sample ID:	MW-1	**Total No. of Bottles:**	9
Sample Date and Time:	4/1/19 @ 1053 hrs		
Notes:			

Capacity of Casing (gal/linear feet): 1" = 0.082; 2" = .16;

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Groundwater Sampling Field Data Sheet

Project:	Halewaiolu Residences Redevelopment	**Site:**	1331-1347 River Street
Project No.:	19-1438	**Well ID:**	MW-2
Field Crew:	J. Cruise	**Development Date:**	N/A - Temp Well
Screened Interval (ft):	4.4 - 14.4 ft	**Climatic Conditions:**	Sunny
Well Diameter (in.):	1 inch	**Purge Method:**	Bladder Pump
PID Reading (ppm):	0.3 ppm @ well head	**Pump Placement (ft):**	11.5 ft
Total Well Depth (ft):	14.4 ft	**Length of Saturated Zone (ft):**	6.9 ft
Depth to Water (ft):	7.5 ft		
Depth to Product (ft):	N/A ft	**Casing Volume (gal)**	0.566 gallons
		x 3:	1.70 gallons

Field Parameters

Time	Depth to Water (ft)	Purge Rate (L/min)	Gallons Removed	pH	EC (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (deg C)	ORP (mv)	Comments
1122	7.5	0.2	0.00	6.86	1.99	Turbid	1.38	27.0	-57.3	
1127	7.5	0.2	0.25	6.89	1.99	763	3.69	27.3	-145.3	
1132	7.5	0.2	0.50	6.88	1.97	505	3.36	27.4	-139.2	
1137	7.5	0.2	0.75	6.90	1.95	448	0.60	27.5	-50.3	
1142	7.5	0.2	1.00	6.91	1.94	388	0.57	27.6	-32.1	
1147	7.5	0.2	1.25	6.91	1.97	298	0.75	27.7	-38.0	
1152	7.5	0.2	1.50	6.93	1.92	348	0.85	27.8	-30.1	
1157	7.5	0.2	1.75	6.93	1.92	224	0.82	27.6	-30.7	

Purge Information

Color:	Clear		
Odor:	None		
Turbidity:	Slight to None		
Sample ID:	MW-2	**Total No. of Bottles:**	9
Sample Date and Time:	4/1/19 @ 1159 hours		
Notes:			

Capacity of Casing (gal/linear feet): 1" = 0.082; 2" = .16;

FORD & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Groundwater Sampling Field Data Sheet

Project:	Halewaiolu Residences Redevelopment	**Site:**	1331-1347 River Street
Project No.:	19-1438	**Well ID:**	MW-3
Field Crew:	J. Cruise	**Development Date:**	N/A - Temp Well
Screened Interval (ft):	4.6 - 14.6 ft	**Climatic Conditions:**	Sunny
Well Diameter (in.):	1 inch	**Purge Method:**	Bladder Pump
PID Reading (ppm):	5.0 ppm @ well head	**Pump Placement (ft):**	11.5 ft
Total Well Depth (ft):	14.6 ft	**Length of Saturated Zone (ft):**	6.8 ft
Depth to Water (ft):	7.85 ft		
Depth to Product (ft):	N/A ft	**Casing Volume (gal)**	0.55 gallons
		x 3:	1.66 gallons

Field Parameters

Time	Depth to Water (ft)	Purge Rate (L/min)	Gallons Removed	pH	EC (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (deg C)	ORP (mv)	Comments
1227	7.85	0.2	0.00	6.82	2.24	Turbid	0.07	28.7	-228.4	
1232	7.85	0.2	0.25	6.84	2.28	Turbid	0.25	28.4	-270.1	
1237	7.85	0.2	0.50	6.85	2.27	Turbid	0.29	28.2	-217.0	
1242	7.85	0.2	0.75	6.86	2.27	550	0.30	28.3	-195.1	
1247	7.85	0.2	1.00	6.85	2.26	375	0.29	28.2	-178.9	
1252	7.85	0.2	1.25	6.85	2.27	369	0.31	28.3	-157.3	
1257	7.85	0.2	1.50	6.85	2.27	378	0.32	28.5	-159.0	
1302	7.85	0.2	1.75	6.84	2.26	116	0.34	28.3	-151.6	

Purge Information

Color:	Clear		
Odor:	None		
Turbidity:	Slight to clear		
Sample ID:	MW-3	**Total No. of Bottles:**	9
Sample Date and Time:	4/1/19 @ 1303		
Notes:			

Capacity of Casing (gal/linear feet): 1" = 0.082; 2" = .16;

APPENDIX C
LABORATORY ANALYTICAL REPORT AND CHAIN-OF-CUSTODY FORM

ADVANCED ANALYTICAL LABORATORY INC

April 9, 2019

Ford & Associates, Inc
173 Kuuala Rd.
Kailua, HI
96732

Dear Jeff Cruise,

Please find enclosed the analytical report for:

Project Name:	1313 River Street
AAL Project #:	U205
Date Received:	04/01/2019
MIS Prep:	Yes (3 samples)

The results, applicable reporting limits, QA/QC data, invoice, and copy of COC are included. If Multi-incremental preparation was needed for this project, it was completed by Advanced Analytical Laboratory, Honolulu, HI.

Advanced Analytical Laboratory appreciates the opportunity to provide analytical services for this project. If you have any questions regarding this project, please don't hesitate to contact AAL.

Thank you for your business and continuing support.

Sincerely,

Uwe Baumgartner, Ph.D
Owner

Elisa M. Young
Owner

3210 Koapaka Street, #A, HONOLULU HAWAII 96819
tel (808) 836-2252 fax (808) 836-2250

ADVANCED ANALYTICAL LABORATORY INC

AAL Project #U205

Ford & Associates Inc.

Client Project #: 19-1438 Method: 8015M
Client Project Name: 1331 River Street Matrix: Soil

CLIENT SAMPLE ID	TPH-GASOLINE [mg/kg]	SURROGATE RECOVERY	FLAGS	DATE ANALYZED
Blank	nd	114%		4/3/2019
B-1	nd	107%		4/3/2019
B-2	nd	102%		4/3/2019
B-3	nd	107%		4/3/2019
PQL	10.0	Acceptable Range		
MDL	0.10	70%-130%		

QA/QC DATA

QC BATCH #040319	TPH-GASOLINE [mg/kg]	Acceptable Range
Lab Control Spike (LCS)	9.9	7.0-13.0
Matrix Spike (MS)	10.9	7.0-13.0
Matrix Spike Dup (MSD)	11.0	7.0-13.0
Recovery LCS	99%	70%-130%
Recovery MS	109%	70%-130%
Recovery MSD	110%	70%-130%
RPD of MS/MSD	0.9%	20%

Analyst: E. Young
Data review: U. Baumgartner, Ph.D.

544 Ohohia Street #10 Honolulu Hawaii 96819
tel (808) 836-2252 fax (808) 836-2250

ADVANCED ANALYTICAL LABORATORY INC

AAL Project #U205

Ford & Associates Inc.

Client Project #: 19-1438 Method: 8015M

Client Project Name: 1331 River Street Matrix: Soil

CLIENT SAMPLE ID	TPH-DIESEL [mg/kg]	TPH-OIL [mg/kg]	SURROGATE RECOVERY	FLAGS	DATE ANALYZED
Blank	nd	nd	97%		4/2/2019
B-1	nd	nd	108%		4/2/2019
B-2	nd	nd	105%		4/2/2019
B-3	nd	nd	108%		4/2/2019
PQL	50	100	Acceptable Range		
MDL	20	35	70%-130%		

QA/QC DATA

QC BATCH # 040219	TPH-DIESEL [mg/kg]	TPH-OIL [mg/kg]	Acceptable Range
Lab Control Spike (LCS)	493	477	350-650
Matrix Spike (MS)	525	497	350-650
Matrix Spike Dup (MSD)	553	526	350-650
Recovery LCS	99%	95%	70%-130%
Recovery MS	105%	99%	70%-130%
Recovery MSD	111%	105%	70%-130%
RPD of MS/MSD	5.2%	5.7%	20%

Analyst: U. Baumgartner, Ph.D.

Data review: E. Young

544 Ohohia Street #10 Honolulu Hawaii 96819

TEL (808) 836-2252 FAX (808) 836-2250

ADVANCED ANALYTICAL LABORATORY INC

AAL Project #U205

Ford & Associates Inc.

Client Project #: 19-1438 Method: 8015M
Client Project Name: 1331 River Street Matrix: Water

CLIENT SAMPLE ID	TPH-GASOLINE [mg/L]	SURROGATE RECOVERY	FLAGS	DATE ANALYZED
Blank	nd	109%		4/1/2019
MW-1	nd	108%		4/1/2019
MW-2	nd	105%		4/1/2019
MW-3	nd	111%		4/1/2019
PQL	0.10	Acceptable Range		
MDL	0.10	70%-130%		

QA/QC DATA

QC BATCH # 040119	TPH-GASOLINE [mg/L]	Acceptable Range
Lab Control Spike (LCS)	10.5	7.0-13.0
Matrix Spike (MS)	11.1	7.0-13.0
Matrix Spike Dup (MSD)	10.7	7.0-13.0
Recovery LCS	105%	70%-130%
Recovery MS	111%	70%-130%
Recovery MSD	107%	70%-130%
RPD of MS/MSD	3.0%	20%

Analyst: E. Young
Data review: U. Baumgartner, Ph.D.

544 Ohohia Street #10 Honolulu Hawaii 96819
tel (808) 836-2252 fax (808) 836-2250

ADVANCED ANALYTICAL LABORATORY INC

AAL Project #U205

Ford & Associates Inc.

Client Project #: 19-1438 Method: 8015M

Client Project Name: 1331 River Street Matrix: Water

CLIENT SAMPLE ID	TPH-DIESEL [mg/L]	TPH-OIL [mg/L]	SURROGATE RECOVERY	FLAGS	DATE ANALYZED
Blank	nd	nd	104%		4/4/2019
MW-1	nd	nd	91%		4/4/2019
MW-2	nd	nd	87%		4/4/2019
MW-3	nd	nd	86%		4/4/2019
PQL	0.050	0.100	Acceptable Range		
MDL	0.010	0.032	70%-130%		

QA/QC DATA

QC BATCH #040419	TPH-DIESEL [mg/L]	TPH-OIL [mg/L]	Acceptable Range
Lab Control Spike (LCS)	0.534	0.517	0.350-0.650
Matrix Spike (MS)	0.542	0.522	0.350-0.650
Matrix Spike Dup (MSD)	0.571	0.564	0.350-0.650
Recovery LCS	107%	103%	70%-130%
Recovery MS	108%	104%	70%-130%
Recovery MSD	114%	113%	70%-130%
RPD of MS/MSD	5.2%	7.7%	20%

Analyst: U. Baumgartner, Ph.D.

Data review: E. Young

544 Ohohia Street #10 Honolulu Hawaii 96819
tel (808) 836-2252 Fax (808) 836-2250

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Soil by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

Client sample ID					**B-1**	**B-2**	**B-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-1	19-AL0403-1-2	19-AL0403-1-3
Matrix			Soil	Soil	Soil	Soil	Soil
Date Extracted			4/4/2019	4/4/2019	4/1/2019	4/1/2019	4/1/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Moisture (%)					39%	38%	32%
Chloromethane	50	ug/Kg	nd		nd	nd	nd
Vinyl chloride	20	ug/Kg	nd	102%	nd	nd	nd
Bromomethane	50	ug/Kg	nd		nd	nd	nd
Chloroethane	50	ug/Kg	nd		nd	nd	nd
Trichlorofluoromethane	50	ug/Kg	nd		nd	nd	nd
1,1-Dichloroethene	50	ug/Kg	nd		nd	nd	nd
Methylene Chloride	20	ug/Kg	nd		nd	nd	nd
Methyl T-Butyl Ether (MTBE)	20	ug/Kg	nd		nd	nd	nd
trans-1,2-Dichloroethene	20	ug/Kg	nd		nd	nd	nd
1,1-Dichloroethane	20	ug/Kg	nd	104%	nd	nd	nd
2,2-Dichloropropane	20	ug/Kg	nd		nd	nd	nd
cis-1,2-Dichloroethene	20	ug/Kg	nd		nd	nd	nd
Chloroform	20	ug/Kg	nd		nd	nd	nd
1,1,1-Trichloroethane	20	ug/Kg	nd		nd	nd	nd
Carbon tetrachloride	20	ug/Kg	nd		nd	nd	nd
1,1-Dichloropropene	20	ug/Kg	nd		nd	nd	nd
Benzene	20	ug/Kg	nd	96%	nd	nd	nd
1,2-Dichloroethane (EDC)	20	ug/Kg	nd		nd	nd	nd
Trichloroethene	20	ug/Kg	nd	96%	nd	nd	nd
1,2-Dichloropropane	20	ug/Kg	nd		nd	nd	nd
Dibromomethane	20	ug/Kg	nd		nd	nd	nd
Bromodichloromethane	20	ug/Kg	nd		nd	nd	nd
Toluene	40	ug/Kg	nd	94%	nd	nd	nd
1,1,2-Trichloroethane	20	ug/Kg	nd		nd	nd	nd
Tetrachloroethene	20	ug/Kg	nd	90%	nd	nd	nd
1,3-Dichloropropane	20	ug/Kg	nd		nd	nd	nd
Dibromochloromethane	20	ug/Kg	nd		nd	nd	nd
1,2-Dibromoethane (EDB)	20	ug/Kg	nd		nd	nd	nd

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ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Soil by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

Client sample ID					**B-1**	**B-2**	**B-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-1	19-AL0403-1-2	19-AL0403-1-3
Matrix			Soil	Soil	Soil	Soil	Soil
Date Extracted			4/4/2019	4/4/2019	4/1/2019	4/1/2019	4/1/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Moisture (%)					39%	38%	32%
Chlorobenzene	20	ug/Kg	nd	94%	nd	nd	nd
1,1,1,2-Tetrachloroethane	20	ug/Kg	nd		nd	nd	nd
Ethyl benzene	20	ug/Kg	nd	91%	nd	nd	nd
m,p-Xylenes	50	ug/Kg	nd	91%	nd	nd	nd
Styrene	20	ug/Kg	nd		nd	nd	nd
o-Xylene	40	ug/Kg	nd	92%	nd	nd	nd
Bromoform	100	ug/Kg	nd		nd	nd	nd
Isopropyl benzene	20	ug/Kg	nd		nd	nd	nd
1,2,3-Trichloropropane	20	ug/Kg	nd		nd	nd	nd
Bromobenzene	20	ug/Kg	nd		nd	nd	nd
1,1,2,2-Tetrachloroethane	40	ug/Kg	nd		nd	nd	nd
n-Propylbenzene	20	ug/Kg	nd		nd	nd	nd
2-Chlorotoluene	20	ug/Kg	nd		nd	nd	nd
4-Chlorotoluene	20	ug/Kg	nd		nd	nd	nd
1,3,5-TrimEthylbenzene	20	ug/Kg	nd		nd	nd	nd
tert-Butylbenzene	20	ug/Kg	nd		nd	nd	nd
1,2,4-TrimEthylbenzene	20	ug/Kg	nd		nd	nd	nd
sec-Butylbenzene	20	ug/Kg	nd		nd	nd	nd
1,3-Dichlorobenzene	20	ug/Kg	nd		nd	nd	nd
p-Isopropyltoluene	20	ug/Kg	nd		nd	nd	nd
1,4-Dichlorobenzene	20	ug/Kg	nd		nd	nd	nd
1,2-Dichlorobenzene	20	ug/Kg	nd		nd	nd	nd
n-Butylbenzene	20	ug/Kg	nd		nd	nd	nd
1,2-Dibromo-3-Chloropropane	100	ug/Kg	nd		nd	nd	nd
1,2,4-Trichlorobenzene	50	ug/Kg	nd		nd	nd	nd
Hexachlorobutadiene	100	ug/Kg	nd		nd	nd	nd
Naphthalene	100	ug/Kg	nd	85%	nd	nd	nd
1,2,3-Trichlorobenzene	100	ug/Kg	nd		nd	nd	nd

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ACCU LABORATORY

12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Soil by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

Client sample ID					**B-1**	**B-2**	**B-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-1	19-AL0403-1-2	19-AL0403-1-3
Matrix			Soil	Soil	Soil	Soil	Soil
Date Extracted			4/4/2019	4/4/2019	4/1/2019	4/1/2019	4/1/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Moisture (%)					39%	38%	32%
Surrogate Recoveries							
Dibromofluoromethane			99%	96%	82%	80%	80%
1,2-Dichloroethane-d4			104%	110%	109%	110%	112%
Toluene-d8			99%	97%	100%	102%	101%
4-Bromofluorobenzene			99%	102%	93%	98%	95%

Acceptable Recovery Limits:

Surrogates/LCS	*70-130%*
MS/MSD	*65-135%*
Acceptable RPD limit:	*30%*

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Analytical Report

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	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Soil by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

Client sample ID			**MS DU-7**	**MSD DU-7**	**RPD DU-7**
Lab ID	**MRL**	**Unit**	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Soil	Soil	Soil
Date Extracted			4/1/2019	4/1/2019	4/1/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Moisture (%)			8%	8%	8%
Chloromethane	50	ug/Kg			
Vinyl chloride	20	ug/Kg	106%	108%	1%
Bromomethane	50	ug/Kg			
Chloroethane	50	ug/Kg			
Trichlorofluoromethane	50	ug/Kg			
1,1-Dichloroethene	50	ug/Kg			
Methylene Chloride	20	ug/Kg			
Methyl T-Butyl Ether (MTBE)	20	ug/Kg			
trans-1,2-Dichloroethene	20	ug/Kg			
1,1-Dichloroethane	20	ug/Kg	98%	103%	6%
2,2-Dichloropropane	20	ug/Kg			
cis-1,2-Dichloroethene	20	ug/Kg			
Chloroform	20	ug/Kg			
1,1,1-Trichloroethane	20	ug/Kg			
Carbon tetrachloride	20	ug/Kg			
1,1-Dichloropropene	20	ug/Kg			
Benzene	20	ug/Kg	95%	97%	2%
1,2-Dichloroethane (EDC)	20	ug/Kg			
Trichloroethene	20	ug/Kg	104%	99%	5%
1,2-Dichloropropane	20	ug/Kg			
Dibromomethane	20	ug/Kg			
Bromodichloromethane	20	ug/Kg			
Toluene	40	ug/Kg	96%	93%	3%
1,1,2-Trichloroethane	20	ug/Kg			
Tetrachloroethene	20	ug/Kg	91%	87%	5%
1,3-Dichloropropane	20	ug/Kg			
Dibromochloromethane	20	ug/Kg			
1,2-Dibromoethane (EDB)	20	ug/Kg			

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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Soil by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

			MS	MSD	RPD
Client sample ID			**DU-7**	**DU-7**	**DU-7**
Lab ID	**MRL**	**Unit**	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Soil	Soil	Soil
Date Extracted			4/1/2019	4/1/2019	4/1/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Moisture (%)			8%	8%	8%
Chlorobenzene	20	ug/Kg	96%	95%	1%
1,1,1,2-Tetrachloroethane	20	ug/Kg			
Ethyl benzene	20	ug/Kg	93%	93%	0.4%
m,p-Xylenes	50	ug/Kg	92%	93%	1%
Styrene	20	ug/Kg			
o-Xylene	40	ug/Kg	90%	93%	3%
Bromoform	100	ug/Kg			
Isopropyl benzene	20	ug/Kg			
1,2,3-Trichloropropane	20	ug/Kg			
Bromobenzene	20	ug/Kg			
1,1,2,2-Tetrachloroethane	40	ug/Kg			
n-Propylbenzene	20	ug/Kg			
2-Chlorotoluene	20	ug/Kg			
4-Chlorotoluene	20	ug/Kg			
1,3,5-TrimEthylbenzene	20	ug/Kg			
tert-Butylbenzene	20	ug/Kg			
1,2,4-TrimEthylbenzene	20	ug/Kg			
sec-Butylbenzene	20	ug/Kg			
1,3-Dichlorobenzene	20	ug/Kg			
p-Isopropyltoluene	20	ug/Kg			
1,4-Dichlorobenzene	20	ug/Kg			
1,2-Dichlorobenzene	20	ug/Kg			
n-Butylbenzene	20	ug/Kg			
1,2-Dibromo-3-Chloropropane	100	ug/Kg			
1,2,4-Trichlorobenzene	50	ug/Kg			
Hexachlorobutadiene	100	ug/Kg			
Naphthalene	100	ug/Kg	96%	99%	2%
1,2,3-Trichlorobenzene	100	ug/Kg			

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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Soil by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

			MS	MSD	RPD
Client sample ID			**DU-7**	**DU-7**	**DU-7**
Lab ID	**MRL**	**Unit**	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Soil	Soil	Soil
Date Extracted			4/1/2019	4/1/2019	4/1/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Moisture (%)			8%	8%	8%

Surrogate Recoveries		
Dibromofluoromethane	88%	93%
1,2-Dichloroethane-d4	112%	113%
Toluene-d8	98%	97%
4-Bromofluorobenzene	103%	100%

Acceptable Recovery Limits:

Surrogates/LCS	*70-130%*
MS/MSD	*65-135%*
Acceptable RPD limit:	*30%*

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Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

PAHs in Soil by EPA 8270D SIM/3550C

Accu Lab Batch# AL040419-2

Client sample ID					**B-1**	**B-2**	**B-3**
Lab ID	MRL	Unit	**MTH BLK**	**LCS**	19-AL0403-1-1	19-AL0403-1-2	19-AL0403-1-3
Matrix			Soil	Soil	Soil	Soil	Soil
Date Extracted			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Moisture (%)					39%	38%	32%
Naphthalene	0.05	mg/Kg	nd	101%	nd	nd	nd
2-Methylnaphthalene	0.05	mg/Kg	nd		nd	nd	nd
1-Methylnaphthalene	0.05	mg/Kg	nd		nd	nd	nd
Acenaphthylene	0.05	mg/Kg	nd		nd	nd	nd
Acenaphthene	0.05	mg/Kg	nd	60%	nd	nd	nd
Fluorene	0.05	mg/Kg	nd		nd	nd	nd
Phenanthrene	0.05	mg/Kg	nd		nd	nd	nd
Anthracene	0.05	mg/Kg	nd		nd	nd	nd
Fluoranthene	0.05	mg/Kg	nd	123%	nd	nd	nd
Pyrene	0.05	mg/Kg	nd	137%	nd	nd	nd
Benzo(a)anthracene	0.05	mg/Kg	nd		nd	nd	nd
Chrysene	0.05	mg/Kg	nd		nd	nd	nd
Benzo(b)fluoranthene	0.10	mg/Kg	nd		nd	nd	nd
Benzo(k)fluoranthene	0.10	mg/Kg	nd		nd	nd	nd
Benzo(a)pyrene	0.10	mg/Kg	nd	78%	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.095	mg/Kg	nd		nd	nd	nd
Dibenzo(a,h)anthracene	0.10	mg/Kg	nd		nd	nd	nd
Benzo(ghi)perylene	0.10	mg/Kg	nd		nd	nd	nd
Surrogate Recoveries							
Nitrobenzene-d5			99%	103%	73%	126%	108%
Terphenyl-d14			88%	74%	92%	89%	86%

Acceptable Recovery Limits:

Surrogates/LCS	*50-150%*
MS/MSD	*45-150%*
Acceptable RPD Limit:	*30%*

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Kirkland WA 98034

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(425) 214-5868
Email: lisa@accu-lab.com
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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

PAHs in Soil by EPA 8270D SIM/3550C

Accu Lab Batch# AL040419-2

Client sample ID			**MS DU-7**	**MSD DU-7**	**RPD DU-7**
Lab ID	MRL	Unit	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Soil	Soil	Soil
Date Extracted			4/4/2019	4/4/2019	4/4/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Moisture (%)			8%	8%	8%
Naphthalene	0.05	mg/Kg	102%	105%	3%
2-Methylnaphthalene	0.05	mg/Kg			
1-Methylnaphthalene	0.05	mg/Kg			
Acenaphthylene	0.05	mg/Kg			
Acenaphthene	0.05	mg/Kg	53%	59%	10%
Fluorene	0.05	mg/Kg			
Phenanthrene	0.05	mg/Kg			
Anthracene	0.05	mg/Kg			
Fluoranthene	0.05	mg/Kg	87%	115%	28%
Pyrene	0.05	mg/Kg	97%	130%	29%
Benzo(a)anthracene	0.05	mg/Kg			
Chrysene	0.05	mg/Kg			
Benzo(b)fluoranthene	0.10	mg/Kg			
Benzo(k)fluoranthene	0.10	mg/Kg			
Benzo(a)pyrene	0.10	mg/Kg	53%	58%	9%
Indeno(1,2,3-cd)pyrene	0.095	mg/Kg			
Dibenzo(a,h)anthracene	0.10	mg/Kg			
Benzo(ghi)perylene	0.10	mg/Kg			
Surrogate Recoveries					
Nitrobenzene-d5			101%	92%	
Terphenyl-d14			83%	86%	

Acceptable Recovery Limits:

Surrogates/LCS	*50-150%*
MS/MSD	*45-150%*
Acceptable RPD Limit:	*30%*

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	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Polychlorinated Biphenyls in Soil by EPA 8082A/3550C

Accu Lab Batch# AL040419-3

Client sample ID					**B-1**	**B-2**	**B-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-1	19-AL0403-1-2	19-AL0403-1-3
Matrix			Soil	Soil	Soil	Soil	Soil
Date Extracted			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
A1016	0.10	mg/Kg	nd		nd	nd	nd
A1221	0.10	mg/Kg	nd		nd	nd	nd
A1232	0.10	mg/Kg	nd		nd	nd	nd
A1242	0.10	mg/Kg	nd		nd	nd	nd
A1248	0.10	mg/Kg	nd		nd	nd	nd
A1254	0.10	mg/Kg	nd		nd	nd	nd
A1260	0.10	mg/Kg	nd	95%	nd	nd	nd
A1262	0.10	mg/Kg	nd		nd	nd	nd
Surrogate Recoveries							
Decachlorobiphenyl			98%	127%	106%	106%	102%
Tetrachloro-m-xylene			101%	91%	83%	92%	87%

Acceptable Recovery Limits:

Surrogates/LCS	*65-135%*
MS/MSD	*60-140%*
Acceptable RPD limit:	*30%*

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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Polychlorinated Biphenyls in Soil by EPA 8082A/3550C

Accu Lab Batch# AL040419-3

Client sample ID			**MS DU-7**	**MSD DU-7**	**RPD DU-7**
Lab ID	**MRL**	**Unit**	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Soil	Soil	Soil
Date Extracted			4/4/2019	4/4/2019	4/4/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
A1016	0.10	mg/Kg			
A1221	0.10	mg/Kg			
A1232	0.10	mg/Kg			
A1242	0.10	mg/Kg			
A1248	0.10	mg/Kg			
A1254	0.10	mg/Kg			
A1260	0.10	mg/Kg	99%	109%	10%
A1262	0.10	mg/Kg			
Surrogate Recoveries					
Decachlorobiphenyl			103%	104%	
Tetrachloro-m-xylene			98%	98%	

Acceptable Recovery Limits:

Surrogates/LCS	*65-135%*
MS/MSD	*60-140%*
Acceptable RPD limit:	*30%*

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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Metals in Soil by EPA 6020B/EPA3050B

Accu Lab Batch# AL040519-11

Client sample ID					**B-1**	**B-2**	**B-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-1	19-AL0403-1-2	19-AL0403-1-3
Matrix			Soil	Soil	Soil	Soil	Soil
Date Digested			4/5/2019	4/5/2019	4/5/2019	4/5/2019	4/5/2019
Date Analyzed			4/5/2019	4/5/2019	4/5/2019	4/5/2019	4/5/2019
Cadmium (Cd)	1.0	mg/Kg	nd	98%	nd	nd	nd
Lead (Pb)	1.0	mg/Kg	nd	90%	3.3	4.8	7.6

Acceptable Recovery Limits:

LCS	*80-120%*
MS/MSD	*75-125%*
Acceptable RPD limit:	*20%*

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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Metals in Soil by EPA 6020B/EPA3050B

Accu Lab Batch# AL040519-11

Client sample ID			**MS 301895-03-soil-08**	**MSD 301895-03-soil-08**	**RPD 301895-03-soil-08**
Lab ID	**MRL**	**Unit**	19-AL0402-1-1	19-AL0402-1-1	19-AL0402-1-1
Matrix			Soil	Soil	Soil
Date Digested			4/5/2019	4/5/2019	4/5/2019
Date Analyzed			4/5/2019	4/5/2019	4/5/2019
Cadmium (Cd)	1.0	mg/Kg	98%	94%	5%
Lead (Pb)	1.0	mg/Kg	99%	82%	19%

Acceptable Recovery Limits:

LCS	*80-120%*
MS/MSD	*75-125%*
Acceptable RPD limit:	*20%*

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Kirkland WA 98034

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(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

Client sample ID					**MW-1**	**MW-2**	**MW-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-4	19-AL0403-1-5	19-AL0403-1-6
Matrix			Liquid	Liquid	Water	Water	Water
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Chloromethane	2.0	ug/L	nd		nd	nd	nd
Vinyl chloride	2.0	ug/L	nd	102%	nd	nd	nd
Bromomethane	2.0	ug/L	nd		nd	nd	nd
Chloroethane	2.0	ug/L	nd		nd	nd	nd
Trichlorofluoromethane	2.0	ug/L	nd		nd	nd	nd
1,1-Dichloroethene	2.0	ug/L	nd		nd	nd	nd
Methylene Chloride	2.0	ug/L	nd		nd	nd	nd
Methyl t-butyl ether	0.5	ug/L	nd		nd	nd	nd
trans-1,2-Dichloroethene	0.5	ug/L	nd		nd	nd	nd
1,1-Dichloroethane	0.5	ug/L	nd	104%	nd	nd	nd
2,2-Dichloropropane	0.5	ug/L	nd		nd	nd	nd
cis-1,2-Dichloroethene	0.5	ug/L	nd		nd	nd	nd
Chloroform	0.5	ug/L	nd		nd	nd	nd
1,1,1-Trichloroethane	0.5	ug/L	nd		nd	nd	nd
Carbon tetrachloride	0.5	ug/L	nd		nd	nd	nd
1,1-Dichloropropene	0.5	ug/L	nd		nd	nd	nd
Benzene	0.5	ug/L	nd	96%	nd	nd	nd
1,2-Dichloroethane (EDC)	0.5	ug/L	nd		nd	nd	nd
Trichloroethene	0.5	ug/L	nd	96%	nd	nd	nd
1,2-Dichloropropane	0.5	ug/L	nd		nd	nd	nd
Dibromomethane	0.5	ug/L	nd		nd	nd	nd
Bromodichloromethane	0.5	ug/L	nd		nd	nd	nd
Toluene	0.5	ug/L	nd	94%	nd	nd	nd
1,1,2-Trichloroethane	0.5	ug/L	nd		nd	nd	nd
Tetrachloroethene	0.5	ug/L	nd	90%	nd	nd	nd
1,3-Dichloropropane	0.5	ug/L	nd		nd	nd	nd
Dibromochloromethane	0.5	ug/L	nd		nd	nd	nd
1,2-Dibromoethane (EDB)	0.5	ug/L	nd		nd	nd	nd

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12524 130th Lane NE
Kirkland WA 98034

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Analytical Report

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	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

Client sample ID					**MW-1**	**MW-2**	**MW-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-4	19-AL0403-1-5	19-AL0403-1-6
Matrix			Liquid	Liquid	Water	Water	Water
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Chlorobenzene	0.5	ug/L	nd	94%	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.5	ug/L	nd		nd	nd	nd
Ethyl benzene	0.5	ug/L	nd	91%	nd	nd	nd
m,p-Xylenes	2.0	ug/L	nd	91%	nd	nd	nd
Styrene	0.5	ug/L	nd		nd	nd	nd
o-Xylene	1.0	ug/L	nd	92%	nd	nd	nd
Bromoform	2.0	ug/L	nd		nd	nd	nd
Isopropyl benzene	0.5	ug/L	nd		nd	nd	nd
1,2,3-Trichloropropane	1.0	ug/L	nd		nd	nd	nd
Bromobenzene	0.5	ug/L	nd		nd	nd	nd
1,1,2,2-Tetrachloroethane	0.5	ug/L	nd		nd	nd	nd
n-Propylbenzene	0.5	ug/L	nd		nd	nd	nd
2-Chlorotoluene	0.5	ug/L	nd		nd	nd	nd
4-Chlorotoluene	0.5	ug/L	nd		nd	nd	nd
1,3,5-TrimEthylbenzene	0.5	ug/L	nd		nd	nd	nd
tert-Butylbenzene	0.5	ug/L	nd		nd	nd	nd
1,2,4-TrimEthylbenzene	0.5	ug/L	nd		nd	nd	nd
sec-Butylbenzene	0.5	ug/L	nd		nd	nd	nd
1,3-Dichlorobenzene	0.5	ug/L	nd		nd	nd	nd
p-Isopropyltoluene	0.5	ug/L	nd		nd	nd	nd
1,4-Dichlorobenzene	0.5	ug/L	nd		nd	nd	nd
1,2-Dichlorobenzene	0.5	ug/L	nd		nd	nd	nd
n-Butylbenzene	0.5	ug/L	nd		nd	nd	nd
1,2-Dibromo-3-Chloropropane	2.0	ug/L	nd		nd	nd	nd
Hexachlorobutadiene	2.0	ug/L	nd		nd	nd	nd
1,2,4-Trichlorobenzene	2.0	ug/L	nd		nd	nd	nd
Naphthalene	2.0	ug/L	nd	85%	nd	nd	nd
1,2,3-Trichlorobenzene	2.0	ug/L	nd		nd	nd	nd

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	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

Client sample ID					**MW-1**	**MW-2**	**MW-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-4	19-AL0403-1-5	19-AL0403-1-6
Matrix			Liquid	Liquid	Water	Water	Water
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Surrogate Recoveries							
Dibromofluoromethane			99%	96%	102%	104%	104%
1,2-Dichloroethane-d4			104%	110%	105%	107%	107%
Toluene-d8			99%	97%	97%	95%	95%
4-Bromofluorobenzene			99%	102%	101%	100%	100%

Acceptable Recovery Limits:

Surrogates/LCS	*70-130%*
MS/MSD	*60-150%*
Acceptable RPD limit:	*30%*

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	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

			MS	MSD	RPD
Client sample ID			**DU-7**	**DU-7**	**DU-7**
Lab ID	**MRL**	**Unit**	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Liquid	Liquid	Liquid
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Chloromethane	2.0	ug/L			
Vinyl chloride	2.0	ug/L	106%	108%	1%
Bromomethane	2.0	ug/L			
Chloroethane	2.0	ug/L			
Trichlorofluoromethane	2.0	ug/L			
1,1-Dichloroethene	2.0	ug/L			
Methylene Chloride	2.0	ug/L			
Methyl t-butyl ether	0.5	ug/L			
trans-1,2-Dichloroethene	0.5	ug/L			
1,1-Dichloroethane	0.5	ug/L	98%	103%	6%
2,2-Dichloropropane	0.5	ug/L			
cis-1,2-Dichloroethene	0.5	ug/L			
Chloroform	0.5	ug/L			
1,1,1-Trichloroethane	0.5	ug/L			
Carbon tetrachloride	0.5	ug/L			
1,1-Dichloropropene	0.5	ug/L			
Benzene	0.5	ug/L	95%	97%	2%
1,2-Dichloroethane (EDC)	0.5	ug/L			
Trichloroethene	0.5	ug/L	104%	99%	5%
1,2-Dichloropropane	0.5	ug/L			
Dibromomethane	0.5	ug/L			
Bromodichloromethane	0.5	ug/L			
Toluene	0.5	ug/L	96%	93%	3%
1,1,2-Trichloroethane	0.5	ug/L			
Tetrachloroethene	0.5	ug/L	91%	87%	5%
1,3-Dichloropropane	0.5	ug/L			
Dibromochloromethane	0.5	ug/L			
1,2-Dibromoethane (EDB)	0.5	ug/L			

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Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

			MS	MSD	RPD
Client sample ID			**DU-7**	**DU-7**	**DU-7**
Lab ID	**MRL**	**Unit**	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Liquid	Liquid	Liquid
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Chlorobenzene	0.5	ug/L	96%	95%	1%
1,1,1,2-Tetrachloroethane	0.5	ug/L			
Ethyl benzene	0.5	ug/L	93%	93%	0.4%
m,p-Xylenes	2.0	ug/L	92%	93%	1%
Styrene	0.5	ug/L			
o-Xylene	1.0	ug/L	90%	93%	3%
Bromoform	2.0	ug/L			
Isopropyl benzene	0.5	ug/L			
1,2,3-Trichloropropane	1.0	ug/L			
Bromobenzene	0.5	ug/L			
1,1,2,2-Tetrachloroethane	0.5	ug/L			
n-Propylbenzene	0.5	ug/L			
2-Chlorotoluene	0.5	ug/L			
4-Chlorotoluene	0.5	ug/L			
1,3,5-TrimEthylbenzene	0.5	ug/L			
tert-Butylbenzene	0.5	ug/L			
1,2,4-TrimEthylbenzene	0.5	ug/L			
sec-Butylbenzene	0.5	ug/L			
1,3-Dichlorobenzene	0.5	ug/L			
p-Isopropyltoluene	0.5	ug/L			
1,4-Dichlorobenzene	0.5	ug/L			
1,2-Dichlorobenzene	0.5	ug/L			
n-Butylbenzene	0.5	ug/L			
1,2-Dibromo-3-Chloropropane	2.0	ug/L			
Hexachlorobutadiene	2.0	ug/L			
1,2,4-Trichlorobenzene	2.0	ug/L			
Naphthalene	2.0	ug/L	96%	99%	2%
1,2,3-Trichlorobenzene	2.0	ug/L			

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	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Volatiles in Water by EPA 8260C/5030B

Accu Lab Batch# AL040419-1

			MS	MSD	RPD
Client sample ID			**DU-7**	**DU-7**	**DU-7**
Lab ID	**MRL**	**Unit**	19-AL0403-2-1	19-AL0403-2-1	19-AL0403-2-1
Matrix			Liquid	Liquid	Liquid
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Surrogate Recoveries					
Dibromofluoromethane			88%	93%	
1,2-Dichloroethane-d4			112%	113%	
Toluene-d8			98%	97%	
4-Bromofluorobenzene			103%	100%	

Acceptable Recovery Limits:

Surrogates/LCS	*70-130%*
MS/MSD	*60-150%*
Acceptable RPD limit:	*30%*

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	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

PAHs in Water by EPA 8270D SIM/3010C

Accu Lab Batch# AL040519-5

Client sample ID				**MW-1**	**MW-2**	**MW-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	19-AL0403-1-4	19-AL0403-1-5	19-AL0403-1-6
Matrix			Water	Water	Water	Water
Date Extracted			4/5/2019	4/5/2019	4/5/2019	4/5/2019
Date Analyzed			4/8/2019	4/8/2019	4/8/2019	4/8/2019
Naphthalene	0.05	ug/L	nd	nd	nd	nd
2-Methylnaphthalene	0.05	ug/L	nd	nd	nd	nd
1-Methylnaphthalene	0.05	ug/L	nd	nd	nd	nd
Acenaphthylene	0.05	ug/L	nd	nd	nd	nd
Acenaphthene	0.05	ug/L	nd	nd	nd	nd
Fluorene	0.05	ug/L	nd	nd	nd	nd
Phenanthrene	0.05	ug/L	nd	nd	nd	nd
Anthracene	0.05	ug/L	nd	nd	nd	nd
Fluoranthene	0.05	ug/L	nd	nd	nd	nd
Pyrene	0.05	ug/L	nd	nd	nd	nd
Benzo(a)anthracene	0.025	ug/L	nd	nd	nd	nd
Chrysene	0.10	ug/L	nd	nd	nd	nd
Benzo(b)fluoranthene	0.10	ug/L	nd	nd	nd	nd
Benzo(k)fluoranthene	0.10	ug/L	nd	nd	nd	nd
Benzo(a)pyrene	0.025	ug/L	nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.10	ug/L	nd	nd	nd	nd
Dibenzo(a,h)anthracene	0.10	ug/L	nd	nd	nd	nd
Benzo(ghi)perylene	0.10	ug/L	nd	nd	nd	nd
Surrogate Recoveries						
2-Florobiphenyl			116%	78%	81%	68%
Terphenyl-d14			114%	89%	87%	80%

Acceptable Recovery Limits:

Surrogates/LCS	*50-150%*
MS/MSD	*45-150%*
Acceptable RPD Limit:	*30%*

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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

PAHs in Water by EPA 8270D SIM/3010C

Accu Lab Batch# AL040519-5

Client sample ID				**DUP**	**RPD**
Lab ID	**MRL**	**Unit**	**LCS/MS**	**LCS/MS**	**LCS/MS**
Matrix			Water	Water	Water
Date Extracted			4/5/2019	4/5/2019	4/5/2019
Date Analyzed			4/8/2019	4/8/2019	4/8/2019
Naphthalene	0.05	ug/L	97%	88%	9%
2-Methylnaphthalene	0.05	ug/L			
1-Methylnaphthalene	0.05	ug/L			
Acenaphthylene	0.05	ug/L			
Acenaphthene	0.05	ug/L	100%	88%	12%
Fluorene	0.05	ug/L			
Phenanthrene	0.05	ug/L			
Anthracene	0.05	ug/L			
Fluoranthene	0.05	ug/L	98%	112%	14%
Pyrene	0.05	ug/L	125%	100%	22%
Benzo(a)anthracene	0.025	ug/L			
Chrysene	0.10	ug/L			
Benzo(b)fluoranthene	0.10	ug/L			
Benzo(k)fluoranthene	0.10	ug/L			
Benzo(a)pyrene	0.025	ug/L	116%	105%	10%
Indeno(1,2,3-cd)pyrene	0.10	ug/L			
Dibenzo(a,h)anthracene	0.10	ug/L			
Benzo(ghi)perylene	0.10	ug/L			
Surrogate Recoveries					
2-Florobiphenyl			84%	123%	
Terphenyl-d14			78%	97%	

Acceptable Recovery Limits:

Surrogates/LCS	*50-150%*
MS/MSD	*45-150%*
Acceptable RPD Limit:	*30%*

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Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
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	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Polychlorinated Biphenyls in Water by EPA 8082A/3510C

Accu Lab Batch# AL040519-6

Client sample ID				**MW-1**	**MW-2**	**MW-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	19-AL0403-1-4	19-AL0403-1-5	19-AL0403-1-6
Matrix			Water	Water	Water	Water
Date Extracted			4/5/2019	4/5/2019	4/5/2019	4/5/2019
Date Analyzed			4/8/2019	4/8/2019	4/8/2019	4/8/2019
A1016	0.10	ug/L	nd	nd	nd	nd
A1221	0.10	ug/L	nd	nd	nd	nd
A1232	0.10	ug/L	nd	nd	nd	nd
A1242	0.10	ug/L	nd	nd	nd	nd
A1248	0.10	ug/L	nd	nd	nd	nd
A1254	0.10	ug/L	nd	nd	nd	nd
A1260	0.10	ug/L	nd	nd	nd	nd
A1262	0.10	ug/L	nd	nd	nd	nd
Surrogate Recoveries						
Decachlorobiphenyl			89%	82%	98%	78%
Tetrachloro-m-xylene			97%	84%	110%	96%

Acceptable Recovery Limits:

Surrogates	*50-150%*
LCS/ MS/MSD	*50-150%*
Acceptable RPD limit:	*30%*

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	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Polychlorinated Biphenyls in Water by EPA 8082A/3510C

Accu Lab Batch# AL040519-6

Client sample ID				**DUP**	**RPD**
Lab ID	**MRL**	**Unit**	**LCS/MS**	**LCS/MS**	**LCS/MS**
Matrix			Water	Water	Water
Date Extracted			4/5/2019	4/5/2019	4/5/2019
Date Analyzed			4/8/2019	4/8/2019	4/8/2019
A1016	0.10	ug/L			
A1221	0.10	ug/L			
A1232	0.10	ug/L			
A1242	0.10	ug/L			
A1248	0.10	ug/L			
A1254	0.10	ug/L			
A1260	0.10	ug/L	97%	97%	0.6%
A1262	0.10	ug/L			
Surrogate Recoveries					
Decachlorobiphenyl			128%	128%	
Tetrachloro-m-xylene			94%	97%	

Acceptable Recovery Limits:

Surrogates	*50-150%*
LCS/ MS/MSD	*50-150%*
Acceptable RPD limit:	*30%*

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12524 130th Lane NE
Kirkland WA 98034

Tel: (425) 214-5858
(425) 214-5868
Email: lisa@accu-lab.com
website: www.accu-lab.com

Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Dissolved Metals in Water by EPA 6020B/3005A

Accu Lab Batch# AL0040519-12

Client sample ID					**MW-1**	**MW-2**	**MW-3**
Lab ID	**MRL**	**Unit**	**MTH BLK**	**LCS**	19-AL0403-1-4	19-AL0403-1-5	19-AL0403-1-6
Matrix			Water	Water	Water	Water	Water
Date Digested			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019	4/4/2019	4/4/2019
Cadmium (Cd)	1.0	ug/L	nd	105%	nd	nd	nd
Lead (Pb)	1.0	ug/L	nd	104%	nd	nd	nd

Acceptable Recovery Limits:

LCS	*80-120%*
MS/MSD	*75-125%*
Acceptable RPD limit:	*20%*

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Analytical Report

Client	**Advanced Analytical Laboratory**	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Dissolved Metals in Water by EPA 6020B/3005A

Accu Lab Batch# AL0040519-12

Client sample ID			**MS NAN-WP-040319**	**MSD NAN-WP-040319**	**RPD NAN-WP-040319**
Lab ID	**MRL**	**Unit**	19-AL0404-3-1	19-AL0404-3-1	19-AL0404-3-1
Matrix			Water	Water	Water
Date Digested			4/4/2019	4/4/2019	4/4/2019
Date Analyzed			4/4/2019	4/4/2019	4/4/2019
Cadmium (Cd)	1.0	ug/L	98%	100%	2%
Lead (Pb)	1.0	ug/L	90%	96%	6%

Acceptable Recovery Limits:

LCS	*80-120%*
MS/MSD	*75-125%*
Acceptable RPD limit:	*20%*

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Analytical Report

Client	Advanced Analytical Laboratory	**Acculab WO#**	**19-AL0403-1**
	544 Ohohia Street #10		
	Honolulu, HI, 96819	Date Sampled	4/1/2019
Project Manager	Uwe Baumgartner/ Elisa Young	Date Received	4/3,4/2019
Project Name	**1331 River Street**	Date Reported	4/9/2019
Client Project#	**19-1438**		
Project#	**U205**		

Data Qualifiers and Comments:

Results reported on dry-weight basis for soil samples.

MRL- Method Reporting Limit
nd- Indicates the analyte is not detected at the listing reporting limit.
C- Coelution with other compounds.
M- % Recovery of surrogate, MS/MSD is out of the acceptable limit due to matrix effect.
B- Indicates the analyte is detected in the method blank associated with the sample.
J- The analyte is detected at below the reporting limit.
E- The result reported exceeds the calibration range, and is an estimate.
D- Sample required dilution due to matrix. Method Reporting Limits were elevated due to dilutions.
H- Sample was received or analyzed past holding time
Q- Sample was received with head space, improper preserved or above recommended temperature.
I- Due to insufficient sample, LCS/LCS DUP were analyzed in place of MS/MSD.
R- The recovery of this analyte in QC sample failed high, but the analyte was not detected in all related samples. No action was taken.
R-1- The RPD value for the MS/MSD was outside of QC acceptance limits however both recoveries were acceptable. All related samples were "nd". No action was taken.
R-2- The recovery of the surogate in sample failed high, but all related analytes were not detected in the sample. No action was taken.

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