February 4, 2016

TO:      THE HONORABLE VIRGINIA PRESSLER, M.D.
        DIRECTOR
        DEPARTMENT OF HEALTH

ATTN:    SCOTT GLENN, DIRECTOR
        OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM:    FORD N. FUCHIGAMI
        DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT AND ANTICIPATED FINDING OF
NO SIGNIFICANT IMPACT FOR HALONA STREET BRIDGE REPLACEMENT,
PROJECT NO. HI STP H1(1); H-1 INTERSTATE (ADJACENT), KALIHI
DISTRICT, ISLAND OF OAHU; TMK: [1] 1-6-002 (OLOMEA STREET
AND H-1 INTERSTATE HIGHWAY RIGHTS-OF-WAY, AND
KAPALAMA CANAL); [1] 1-6-006 (HALONA STREET, KOKEA
STREET, KOHOU STREET, AND H-1 INTERSTATE HIGHWAY
RIGHTS-OF-WAY, AND KAPALAMA CANAL)

The Department of Transportation has reviewed the Draft Environmental Assessment (EA) for the
subject project, and anticipates a Finding of No Significant Impact determination. Please publish a
notice of availability for the subject project in the February 23, 2016 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and two hardcopies of the Draft EA. The
enclosed compact disk contains the Publication Form (Word document) and a PDF version of the
Draft EA.

Should you have any questions, please call Kevin Ito of our Technical Design Section, Design
Branch, Highways Division at (808) 692-7548 or email at Kevin.ito@hawaii.gov and reference letter
number HWY-DD 2.0784 as noted above.

Enclosures

c: Nicole Winterton (FHWA-CFLHD). Kathleen Chu (CH2M HILL)
Project Name: Haiona Street Bridge Replacement, Interstate Route H-1 (Adjacent), Island of Oahu
HRS §343-5 Trigger(s): Use of State Lands and Funds
Island: Oahu
District: Honolulu
TMK: [1] 1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal);
[1] 1-6-006 (Haiona Street, Kokea Street, Kohou Street, and H-1 Interstate Highway Rights-of-Way,
and Kapalama Canal)
Permits: Department of the Army Permit (Rivers and Harbors Act Section 10 and Clean Water Act Section 404),
Section 401 Water Quality Certification, Stream Channel Alteration Permit, National Historic Preservation
Act Section 106/HRS 6E Consultation, Endangered Species Act Section 7 Consultation, Coastal Zone
Management Act Federal Consistency Review, National Pollutant Discharge Elimination System Permit,
Occupancy and Use of State Highway Right of Way Permit, Street Use Permit, Community Noise
Permit/Variance, Grading/Grubbing/Stockpiling Permit
Proposing/Determination Agency: State of Hawaii, Department of Transportation
(Address, Contact Person, Telephone) 869 Punchbowl Street
Honolulu, Hawaii 96813
Kevin Ito, 808-692-7548
Consultant: CH2M HILL (under contract to Federal Highway Administration,
Central Federal Lands Highway Division)
(Address, Contact Person, Telephone) 1132 Bishop Street, Ste. 1100
Honolulu, Hawaii 96813
Kathleen Chu, 808-943-1133
Status (check one only):
X DEA-AFNSI Submit the proposing agency notice of determination/transmittal on agency letterhead, a
hard copy of DEA, a completed OEQC publication form, along with an electronic word
processing summary and a PDF copy (you may send both summary and PDF to
oegchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the
periodic bulletin.
_FEA-FONSI Submit the proposing agency notice of determination/transmittal on agency letterhead, a
hard copy of the FEA, an OEQC publication form, along with an electronic word
processing summary and a PDF copy (send both summary and PDF to
oegchawaii@doh.hawaii.gov); no comment period ensues upon publication in the
periodic bulletin.
_FEA-EISPN Submit the proposing agency notice of determination/transmittal on agency letterhead, a
hard copy of the FEA, an OEQC publication form, along with an electronic word
processing summary and PDF copy (you may send both summary and PDF to
oegchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the
periodic bulletin.
_Act 172-12 EISPN Submit the proposing agency notice of determination on agency letterhead, an OEQC
publication form, and an electronic word processing summary (you may send the
summary to oegchawaii@doh.hawaii.gov). NO environmental assessment is required
and a 30-day consultation period upon publication in the periodic bulletin.
.DEIS The proposing agency simultaneously transmits to both the OEQC and the accepting
authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list,
along with an electronic word processing summary and PDF copy of the DEIS (you may
send both the summary and PDF to oegchawaii@doh.hawaii.gov); a 45-day comment
period ensues upon publication in the periodic bulletin.
FEIS

The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oedchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

Section 11-200-23 Determination

The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.

Section 11-200-27 Determination

The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.

Withdrawal (explain)

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

The State of Hawaii Department of Transportation proposes improvements to the Halona Street Bridge (crossing Kapalama Canal), adjacent to Interstate Route H-1 on the island of Oahu. This project would replace the existing five-span bridge with a three-span bridge that would have a similar length and narrower width than the existing bridge. It would improve mobility for highway users, address existing structural deficiencies, and meet current design standards for roadway width, load capacity, pedestrian and bicycle traffic, bridge railing and transitions, and bridge approaches.

Kapalama Canal (SIHP #50-80-14-7787) is eligible for listing on the National Register of Historic Places and the Hawaii Register of Historic Places. Removal of the existing bridge features could result in some minor, isolated damage to the lava rock walls, which are a contributing component to the significance of the canal. Photos would be taken before the start of construction. If the walls are physically affected during construction, the stone would be salvaged and repaired to match its existing condition. The endangered Hawaiian hoary bat could potentially occur within the project limits, but restrictions on the timing of construction and minimization of the project footprint would preclude any long-term effects to the species. Overall, no significant long-term environmental or cultural impacts are anticipated from construction and operation of the proposed project. Construction activities are anticipated to result in short-term noise, traffic, and air quality impacts, but implementation of best management practices would minimize the potential effects.
DRAFT ENVIRONMENTAL ASSESSMENT

Halona Street Bridge Replacement Project
Interstate Route H-1 (Adjacent)
Honolulu District, Oahu Island, Hawaii

Project No. HI STP H1(1)
TMKs: [1] 1-6-002; [1] 1-6-006

Submitted Pursuant to Hawaii Revised Statutes, Chapter 343

State of Hawaii, Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, HI 96813

February 2016
Halona Street Bridge Replacement Project
Interstate Route H-1 (Adjacent)
Honolulu District, Oahu Island, Hawaii

Project No. HI STP H1(1)
TMKs: [1] 1-6-002; [1] 1-6-006

Submitted Pursuant to Hawaii Revised Statutes, Chapter 343

Prepared for:
State of Hawaii, Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, HI 96813

Prepared by:
CH2M HILL
1132 Bishop Street, Suite 1100
Honolulu, HI 96813
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acronyms and Abbreviations</strong></td>
<td>ix</td>
</tr>
<tr>
<td><strong>Project Summary</strong></td>
<td>xi</td>
</tr>
<tr>
<td><strong>Preface.</strong></td>
<td>xiii</td>
</tr>
<tr>
<td><strong>1 Introduction</strong></td>
<td>1-1</td>
</tr>
<tr>
<td>1.1 Proposing Agency and Action</td>
<td>1-1</td>
</tr>
<tr>
<td>1.2 Existing Conditions</td>
<td>1-1</td>
</tr>
<tr>
<td>1.3 Project Purpose and Need</td>
<td>1-1</td>
</tr>
<tr>
<td>1.4 Purpose of the Environmental Assessment</td>
<td>1-2</td>
</tr>
<tr>
<td>1.5 Public Comment on the Environmental Assessment</td>
<td>1-2</td>
</tr>
<tr>
<td>1.6 Permits, Approvals, and Compliance Required or Potentially Required</td>
<td>1-2</td>
</tr>
<tr>
<td>1.6.1 Federal</td>
<td>1-2</td>
</tr>
<tr>
<td>1.6.2 State</td>
<td>1-2</td>
</tr>
<tr>
<td>1.6.3 County</td>
<td>1-3</td>
</tr>
<tr>
<td>1.7 References</td>
<td>1-3</td>
</tr>
<tr>
<td><strong>2 Project Description</strong></td>
<td>2-1</td>
</tr>
<tr>
<td>2.1 Project Location</td>
<td>2-1</td>
</tr>
<tr>
<td>2.1.1 Surrounding Land Uses</td>
<td>2-1</td>
</tr>
<tr>
<td>2.1.2 Other Nearby State and County Projects</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2 Existing Conditions along the Project Corridor</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2.1 Right-of-Way and Surrounding Elevations</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2.2 Bridge Structure and Approaches</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2.3 Utilities</td>
<td>2-2</td>
</tr>
<tr>
<td>2.3 Proposed Project</td>
<td>2-2</td>
</tr>
<tr>
<td>2.3.1 Replacement Bridge</td>
<td>2-3</td>
</tr>
<tr>
<td>2.3.2 Construction Activities</td>
<td>2-4</td>
</tr>
<tr>
<td>2.3.3 Traffic Control during Construction</td>
<td>2-4</td>
</tr>
<tr>
<td>2.3.4 Properties Affected by the Project</td>
<td>2-4</td>
</tr>
<tr>
<td>2.4 No Action Alternative</td>
<td>2-5</td>
</tr>
<tr>
<td>2.5 Bridge Alternatives Considered and Dismissed</td>
<td>2-5</td>
</tr>
<tr>
<td>2.5.1 Rehabilitation</td>
<td>2-5</td>
</tr>
<tr>
<td>2.5.2 Bridge Replacement (Cast-in-Place Concrete Slab Bridge)</td>
<td>2-5</td>
</tr>
<tr>
<td>2.5.3 Construction Period Alternatives</td>
<td>2-6</td>
</tr>
<tr>
<td>2.6 Statewide Transportation Improvement Program</td>
<td>2-6</td>
</tr>
<tr>
<td>2.7 Preliminary Cost and Schedule</td>
<td>2-6</td>
</tr>
<tr>
<td>2.8 References</td>
<td>2-6</td>
</tr>
<tr>
<td><strong>3 Affected Environment, Impacts, and Mitigation</strong></td>
<td>3-1</td>
</tr>
<tr>
<td>3.1 Topography, Geology, and Soils</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.1 Existing Conditions</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.2 Potential Impacts and Mitigation Measures</td>
<td>3-2</td>
</tr>
<tr>
<td>3.2 Climate and Air Quality</td>
<td>3-2</td>
</tr>
<tr>
<td>3.2.1 Existing Conditions</td>
<td>3-2</td>
</tr>
<tr>
<td>3.2.2 Potential Impacts and Mitigation Measures</td>
<td>3-3</td>
</tr>
<tr>
<td>3.3 Wetlands, Hydrology, and Water Quality</td>
<td>3-4</td>
</tr>
<tr>
<td>Section</td>
<td>Topic</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>3.3.1</td>
<td>Wetlands</td>
</tr>
<tr>
<td>3.3.2</td>
<td>Non-wetland Waters</td>
</tr>
<tr>
<td>3.3.3</td>
<td>Clean Water Act, Section 303(d)</td>
</tr>
<tr>
<td>3.3.4</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.4</td>
<td>Natural Hazards</td>
</tr>
<tr>
<td>3.4.1</td>
<td>Flooding</td>
</tr>
<tr>
<td>3.4.2</td>
<td>Seismic Activity</td>
</tr>
<tr>
<td>3.4.3</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.5</td>
<td>Noise</td>
</tr>
<tr>
<td>3.5.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.5.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.6</td>
<td>Hazardous Materials</td>
</tr>
<tr>
<td>3.6.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.6.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.7</td>
<td>Flora</td>
</tr>
<tr>
<td>3.7.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.7.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.8</td>
<td>Fauna</td>
</tr>
<tr>
<td>3.8.1</td>
<td>Avifauna</td>
</tr>
<tr>
<td>3.8.2</td>
<td>Mammalian Species</td>
</tr>
<tr>
<td>3.8.3</td>
<td>Terrestrial Invertebrates</td>
</tr>
<tr>
<td>3.8.4</td>
<td>Fish</td>
</tr>
<tr>
<td>3.8.5</td>
<td>Marine Species</td>
</tr>
<tr>
<td>3.8.6</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.9</td>
<td>Archaeological Resources</td>
</tr>
<tr>
<td>3.9.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.9.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.10</td>
<td>Historic Architectural Resources</td>
</tr>
<tr>
<td>3.10.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.10.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.11</td>
<td>Cultural Resources</td>
</tr>
<tr>
<td>3.11.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.11.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.12</td>
<td>Population and Demographic Factors</td>
</tr>
<tr>
<td>3.12.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.12.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.13</td>
<td>Economic and Fiscal Resources</td>
</tr>
<tr>
<td>3.13.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.13.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.14</td>
<td>Visual and Aesthetic Resources</td>
</tr>
<tr>
<td>3.14.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.14.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.15</td>
<td>Land Use and Right-of-Way</td>
</tr>
<tr>
<td>3.15.1</td>
<td>Existing Conditions</td>
</tr>
<tr>
<td>3.15.2</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.16</td>
<td>Roads and Traffic</td>
</tr>
<tr>
<td>3.16.1</td>
<td>Vehicular Traffic</td>
</tr>
<tr>
<td>3.16.2</td>
<td>Bicycle and Pedestrian Traffic</td>
</tr>
<tr>
<td>3.16.3</td>
<td>Potential Impacts and Mitigation Measures</td>
</tr>
<tr>
<td>3.17</td>
<td>Parks and Recreation Facilities</td>
</tr>
</tbody>
</table>
3.18 Public Health and Safety ................................................................. 3-21
  3.18.1 Police Services ......................................................................... 3-21
  3.18.2 Fire and Emergency Medical Services ........................................ 3-21
  3.18.3 Potential Impacts and Mitigation Measures ................................. 3-21
3.19 Public Utilities and Services .............................................................. 3-22
  3.19.1 Existing Conditions .................................................................... 3-22
  3.19.2 Potential Impacts and Mitigation Measures ................................. 3-22
3.20 Secondary and Cumulative Impacts .................................................... 3-23
  3.20.1 Secondary Impacts ....................................................................... 3-23
  3.20.2 Cumulative Impacts ...................................................................... 3-23
3.21 References ...................................................................................... 3-24

4 Relationships to Plans, Policies, and Controls ....................................... 4-1
  4.1 Federal ............................................................................................ 4-1
    4.1.1 National Environmental Policy Act of 1970 ................................. 4-1
    4.1.2 Section 106 of the National Historic Preservation Act of 1966 ...... 4-1
    4.1.3 Section 4(f) of the Department of Transportation Act of 1966 ...... 4-2
    4.1.4 Uniform Relocation Assistance and Real Property Acquisition Act of 1970 ................................................................................... 4-2
    4.1.5 Endangered Species Act of 1973 .................................................. 4-2
    4.1.6 Migratory Bird Treaty Act ............................................................. 4-3
    4.1.7 Fish and Wildlife Coordination Act ............................................... 4-3
    4.1.8 Magnuson-Stevens Fishery Conservation and Management Act .... 4-3
    4.1.9 Clean Water Act of 1972 .............................................................. 4-4
    4.1.10 Clean Air Act of 1970 .................................................................. 4-4
    4.1.11 Rivers and Harbors Act of 1899 .................................................... 4-5
    4.1.12 Floodplain Management, Executive Orders 11988 and 12148 ....... 4-5
    4.1.13 Protection of Wetlands, Executive Order 11990 .......................... 4-5
    4.1.14 Invasive Species, Executive Order 13112 ................................. 4-5
    4.1.15 Coastal Zone Management Act (16 U.S.C. §1456 (C) (1)) ......... 4-6
    4.1.16 Environmental Justice, Executive Order 12898 ......................... 4-6
    4.1.17 Title VI of the Civil Rights Act of 1964 ...................................... 4-7
  4.2 State of Hawaii .................................................................................. 4-7
    4.2.1 Hawaii State Plan ........................................................................ 4-7
    4.2.2 State Functional Plans .................................................................. 4-7
    4.2.3 State Land Use Law ................................................................. 4-8
    4.2.4 Coastal Zone Management Program and Federal Consistency Determination ................................................................. 4-8
    4.2.5 Act 50, Cultural Practices ............................................................ 4-10
    4.2.6 City and County of Honolulu General Plan .................................. 4-10
    4.2.7 Community Development Plans ................................................. 4-10
    4.2.8 Zoning ....................................................................................... 4-10
    4.2.9 Special Management Area ......................................................... 4-10
  4.3 Transportation Plans ........................................................................ 4-11
    4.3.1 Statewide Federal-aid Highways 2035 Transportation Plan ......... 4-11
    4.3.2 Oahu Regional Transportation Plan 2035 ................................. 4-11
    4.3.3 Oahu Bike Plan ........................................................................... 4-11
    4.3.4 Statewide Pedestrian Master Plan .............................................. 4-12
  4.4 References ...................................................................................... 4-12

5 Findings and Reasons Supporting the Anticipated Determination ................ 5-1
  5.1 Significance Criteria ......................................................................... 5-1
  5.2 Conclusion ...................................................................................... 5-2
Anticipated Determination

Consultation and Coordination

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Organizations Consulted During Preparation of the Draft Environmental Assessment</td>
</tr>
<tr>
<td>7.1.1</td>
<td>Federal</td>
</tr>
<tr>
<td>7.1.2</td>
<td>State of Hawaii</td>
</tr>
<tr>
<td>7.1.3</td>
<td>City and County of Honolulu</td>
</tr>
<tr>
<td>7.1.4</td>
<td>Utilities</td>
</tr>
<tr>
<td>7.1.5</td>
<td>Organizations</td>
</tr>
<tr>
<td>7.1.6</td>
<td>Property Owners/Residents</td>
</tr>
<tr>
<td>7.2</td>
<td>Early Consultation Comment Letters Received</td>
</tr>
<tr>
<td>7.2.1</td>
<td>State Agencies</td>
</tr>
<tr>
<td>7.3</td>
<td>Public Involvement</td>
</tr>
<tr>
<td>7.4</td>
<td>Agencies, Organizations, and Individuals to Be Contacted During the Draft EA Review Period</td>
</tr>
<tr>
<td>7.4.1</td>
<td>Federal</td>
</tr>
<tr>
<td>7.4.2</td>
<td>State of Hawaii</td>
</tr>
<tr>
<td>7.4.3</td>
<td>City and County of Honolulu</td>
</tr>
<tr>
<td>7.4.4</td>
<td>Utilities</td>
</tr>
<tr>
<td>7.4.5</td>
<td>Organizations</td>
</tr>
<tr>
<td>7.4.6</td>
<td>Individuals</td>
</tr>
<tr>
<td>7.4.7</td>
<td>Media</td>
</tr>
<tr>
<td>7.4.8</td>
<td>Public Library</td>
</tr>
</tbody>
</table>

Appendixes

A  U.S. Army Corps of Engineers Preliminary Jurisdictional Determination and Delineation of Wetlands and Other Waters of the U.S. for the Halona Street Bridge Replacement Project (March 2015)
B  Summary of EDR Radius Map Report™ with GeoCheck® (May 13, 2015)
C  Endangered Species Act Section 7 Consultation Documentation
   - Consultation Letters Requesting Species and Critical Habitat List (dated November 21, 2014)
   - Hawaii Bridges Program Summary Map Set (Halona Street Bridge only)
   - Correspondence from U.S. Fish and Wildlife Service (dated December 22, 2014)
   - Correspondence from Division of Aquatic Resources (dated January 9, 2015)
   - Consultation Letters (dated February 2, 2016)
   - Biological Assessment for the Proposed Halona Street Bridge Project in Kalihi, Oahu (January 2016)
D  National Historic Preservation Act Section 106 and Hawaii Revised Statutes Chapter 6E Consultation Documentation
   - Legal Notice
   - Correspondence with Potential Consulting Parties
   - Area of Potential Effects (U.S. Geological Survey Map and Aerial Imagery)
   - Draft Archaeological Inventory Survey Report for the Halona Street Bridge, (H-1 on-ramp at Vineyard Street) Kapalama Ahupuaa, Honolulu (Kona) District, Oahu (August 2015)
   - Historic Inventory Form
   - Consultation Letter with Determination of Eligibility and Effects (dated January 12, 2016)
E  Draft Cultural Impact Assessment for the Halona Street Bridge (December 2015)
Tables

PS-1  Project Summary
2-1  Project Design Criteria
2-2  Right-of-Way Requirements
3-1  Island of Oahu Air Monitoring Station (Honolulu) Readings (2013)
3-2  Resident Population, Selected Census Block Groups: 2000 and 2010
4-1  Statewide Land Transportation Goals and Objectives

Figures

1-1  Project Location
1-2  Project Area Photos
2-1  Project Limits
2-2  Surrounding Land Use
2-3  Typical Section – Existing Halona Street Bridge
2-4  Typical Section – Proposed Halona Street Bridge
2-5  Detour Route: Kokea Street and Kohou Street Intersections Open
2-6  Detour Route: Kokea Street Intersection Closed
2-7  Temporary Pedestrian and Bicyclist Route During Construction
2-8  Tax Map Key 1
2-9  Tax Map Key 2
3-1  Soils
3-2  Waters of the U.S.
3-3  Cultural Resources
3-4  Demographic Characteristics (Minority/Low-Income Populations)
3-5  Visual Simulation
4-1  State Land Use District Boundaries
4-2  Zoning
4-3  Special Management Areas (SMA)
## Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>degrees Fahrenheit</td>
</tr>
<tr>
<td>µg/m³</td>
<td>micrograms per cubic meter</td>
</tr>
<tr>
<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials</td>
</tr>
<tr>
<td>ACM</td>
<td>asbestos-containing material</td>
</tr>
<tr>
<td>ahupuaa</td>
<td>traditional land division</td>
</tr>
<tr>
<td>ALISH</td>
<td>Agricultural Lands of Importance to the State of Hawaii</td>
</tr>
<tr>
<td>amsl</td>
<td>above mean sea level</td>
</tr>
<tr>
<td>APE</td>
<td>Area of Potential Effects</td>
</tr>
<tr>
<td>BMP</td>
<td>Best Management Practice</td>
</tr>
<tr>
<td>BWS</td>
<td>Board of Water Supply</td>
</tr>
<tr>
<td>CAA</td>
<td>Clean Air Act</td>
</tr>
<tr>
<td>CDP</td>
<td>census-designated place</td>
</tr>
<tr>
<td>CE</td>
<td>Categorical Exclusions</td>
</tr>
<tr>
<td>CEQ</td>
<td>Council of Environmental Quality</td>
</tr>
<tr>
<td>CER</td>
<td>computerized environmental report</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>CFLHD</td>
<td>Central Federal Lands Highway Division</td>
</tr>
<tr>
<td>CIA</td>
<td>cultural impact assessment</td>
</tr>
<tr>
<td>CIP</td>
<td>cast-in-place</td>
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<tr>
<td>CO</td>
<td>carbon monoxide</td>
</tr>
<tr>
<td>CWA</td>
<td>Clean Water Act</td>
</tr>
<tr>
<td>CZM</td>
<td>Coastal Zone Management</td>
</tr>
<tr>
<td>dBA</td>
<td>A-weighted decibels</td>
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<td>DLNR</td>
<td>State of Hawaii Department of Land and Natural Resources</td>
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<td>DPP</td>
<td>City and County of Honolulu Department of Planning and Permitting</td>
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<td>DTS</td>
<td>City and County of Honolulu Department of Transportation Services</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<td>EFH</td>
<td>Essential Fish Habitat</td>
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<td>EIS</td>
<td>Environmental Impact Statement</td>
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<td>ESA</td>
<td>Endangered Species Act</td>
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<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
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<td>FFY</td>
<td>Federal Fiscal Year</td>
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<td>FHWA</td>
<td>Federal Highway Administration</td>
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<td>FIRM</td>
<td>Flood Insurance Rate Map</td>
</tr>
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<td>FPPA</td>
<td>Farmland Protection Policy Act</td>
</tr>
<tr>
<td>FWCA</td>
<td>Fish and Wildlife Coordination Act</td>
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<td>FWPCA</td>
<td>Federal Water Pollution Control Act</td>
</tr>
<tr>
<td>H-1</td>
<td>Interstate H-1</td>
</tr>
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<td>HAR</td>
<td>Hawaii Administrative Rules</td>
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<td>HDOH</td>
<td>State of Hawaii Department of Health</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
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<td>---------</td>
<td>-------------</td>
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<td>HDOT</td>
<td>State of Hawaii Department of Transportation</td>
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<td>HECO</td>
<td>Hawaiian Electric Company</td>
</tr>
<tr>
<td>HRS</td>
<td>Hawaii Revised Statutes</td>
</tr>
<tr>
<td>LBP</td>
<td>lead-based paint</td>
</tr>
<tr>
<td>LRFD</td>
<td>Load and Resistance Factor Design</td>
</tr>
<tr>
<td><em>makai</em></td>
<td>oceanward</td>
</tr>
<tr>
<td><em>mauka</em></td>
<td>mountainward</td>
</tr>
<tr>
<td>MBTA</td>
<td>Migratory Bird Treaty Act</td>
</tr>
<tr>
<td>MP</td>
<td>Milepost</td>
</tr>
<tr>
<td>mph</td>
<td>miles per hour</td>
</tr>
<tr>
<td>MSAT</td>
<td>mobile source air toxics</td>
</tr>
<tr>
<td>N/A</td>
<td>not applicable</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
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<td>NHPA</td>
<td>National Historic Preservation Act</td>
</tr>
<tr>
<td>NMFS</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>NPDES</td>
<td>National Pollutant Discharge Elimination System</td>
</tr>
<tr>
<td>NRCS</td>
<td>Natural Resources Conservation Service</td>
</tr>
<tr>
<td>OEQC</td>
<td>State of Hawaii Office of Environmental Quality Control</td>
</tr>
<tr>
<td>ORTP</td>
<td>Oahu Regional Transportation Plan</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>particulate matter &lt;2.5 microns</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>particulate matter &lt;10 microns</td>
</tr>
<tr>
<td>ppb</td>
<td>parts per billion</td>
</tr>
<tr>
<td>ppm</td>
<td>parts per million</td>
</tr>
<tr>
<td>SHPO</td>
<td>State Historic Preservation Officer</td>
</tr>
<tr>
<td>SIHP</td>
<td>State Inventory of Historic Properties</td>
</tr>
<tr>
<td>SMA</td>
<td>Special Management Area</td>
</tr>
<tr>
<td>SO$_2$</td>
<td>sulfur dioxide</td>
</tr>
<tr>
<td>STIP</td>
<td>Statewide Transportation Improvement Program</td>
</tr>
<tr>
<td>SWCA</td>
<td>SWCA Environmental Consultants</td>
</tr>
<tr>
<td>TMDL</td>
<td>Total Maximum Daily Load</td>
</tr>
<tr>
<td>TMK</td>
<td>Tax Map Key</td>
</tr>
<tr>
<td>USACE</td>
<td>U.S. Army Corps of Engineers</td>
</tr>
<tr>
<td>USEPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>WPA</td>
<td>Works Progress Administration</td>
</tr>
<tr>
<td>WQC</td>
<td>water quality certification</td>
</tr>
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</table>
Project Summary

Table PS-1 contains a description of the project and applicable land-use designations.

<table>
<thead>
<tr>
<th>TABLE PS-1 Project Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Name</strong></td>
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<tr>
<td><strong>Proposing/Determination Agency</strong></td>
</tr>
<tr>
<td><strong>Anticipated Determination</strong></td>
</tr>
<tr>
<td><strong>Tax Map Key(s)</strong></td>
</tr>
<tr>
<td><strong>Existing Uses of the Project Corridor</strong></td>
</tr>
<tr>
<td><strong>State Land Use</strong></td>
</tr>
<tr>
<td><strong>Special Management Area</strong></td>
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<tr>
<td><strong>Primary Urban Center Development Plan</strong></td>
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<tr>
<td><strong>Zoning</strong></td>
</tr>
<tr>
<td><strong>Proposed Project</strong></td>
</tr>
<tr>
<td><strong>Anticipated Impacts</strong></td>
</tr>
</tbody>
</table>
Preface

The proposed project involves replacing the Halona Street Bridge (crossing the Kapalama Canal), which is located adjacent to Interstate H-1 (H-1) in the Kalihi District on Oahu. As the proposed project would involve the use of State funds and State lands (comprising H-1 rights-of-way, under the jurisdiction of the State of Hawaii Department of Transportation), compliance with Hawaii Revised Statutes (HRS) Chapter 343 is required. This Draft Environmental Assessment (EA) has been prepared pursuant to HRS Chapter 343 (as amended), and Title 11, Chapter 200, Hawaii Administrative Rules.

The project would also use Federal funding provided by the U.S. Department of Transportation Federal Highway Administration (FHWA). Use of Federal funds subjects the project to environmental documentation requirements set forth under the National Environmental Policy Act (NEPA) of 1969; (42 U.S. Code Section 4321); the Council of Environmental Quality Regulations; 40 Code of Federal Regulations (CFR) Parts 1500-1508; and 23 CFR Parts 625, 640, 712, 771, and 790, Environmental Impact and Related Procedures. To comply with NEPA, the FHWA is preparing environmental documentation which would be consistent with the findings of this EA.
1.1 Proposing Agency and Action

The State of Hawaii Department of Transportation (HDOT), in partnership with the Federal Highway Administration, Central Federal Lands Highway Division (FHWA-CFLHD), proposes improvements to the Halona Street Bridge (crossing the Kapalama Canal) on the island of Oahu. This Draft Environmental Assessment (EA) has been prepared in compliance with Chapter 343 of the Hawaii Revised Statutes (HRS).

This project would replace the existing five-span structure with a slightly longer three-span bridge, along with a narrower bridge deck on the same alignment. This project would improve mobility for highway users, address existing structural deficiencies, and meet current design standards for roadway width, load capacity, pedestrian and bicycle traffic, bridge railing and transitions, and bridge approaches.

1.2 Existing Conditions

The Halona Street Bridge crosses the Kapalama Canal on Halona Street, between Kohou Street and Kokea Street at Milepost (MP) 20.21 in the Kalihi District of Honolulu, on the Island of Oahu (see Figure 1-1). The bridge is under the jurisdiction of HDOT. Photos of the Halona Street Bridge are included in Figure 1-2.

The Halona Street Bridge, built in 1938, is an approximately 130-foot-long, reinforced-concrete slab with five spans. The existing bridge has a deck width of approximately 55 feet and superstructure depth of 2.5 feet.

Halona Street is classified as a Principal Urban Arterial. It is located adjacent to H-1 between the on-ramp from Vineyard Boulevard and the off-ramp to Houghtailing Street. It is a two-lane roadway with one-way traffic in the westbound direction and a posted speed of 30 miles per hour (mph) within the project area. Traffic volumes on Halona Street currently average 3,900 vehicles per day (2015), and are projected to be 5,900 in the 2036 design year.

Halona Street is included as part of the National Highway System.

1.3 Project Purpose and Need

The purpose of the project is to improve Halona Street Bridge and its approaches to maintain the Kapalama Canal crossing on Halona Street as a safe and functional component of the regional transportation system for highway users.

The project is needed because the existing bridge does not meet the current (2014) American Association of State Highway Transportation Officials (AASHTO) and HDOT structural and design standards for load capacity, bridge railing and transitions, and bridge approaches.

The U.S. Department of Transportation requires that bridges are inspected every 2 years. The National Bridge Inventory Standards inspection produces a “sufficiency rating,” which is a single number that can vary from a high score of 100 to a low score of 0, with scores higher than 50 indicating that a bridge meets current engineering design standards. Ratings do not imply that the bridge is unsafe to operate; rather, ratings indicate whether improvements are needed. Based on the most recent 2013 bridge inspection report, the Halona Street Bridge has a sufficiency rating of 32.1.

The existing bridge has the following deficiencies:

- The inventory load rating (daily carrying capacity) is 30 tons, which is below the minimum standard of 36 tons.
- The bridge deck and superstructure are rated to be in poor condition.
• The approach roadway width is 26.6 feet, neither matching the existing bridge width nor complying with current design standards.
• The guardrail is deteriorating and, at 32 inches, does not meet the standard 42-inch minimum height for pedestrian and bicyclist safety.
• Halona Street Bridge does not meet current seismic standards or conform to AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications.

1.4 Purpose of the Environmental Assessment

This Draft EA discloses the environmental and socio-cultural impacts that may result from the project’s implementation, and commits to specific mitigation measures that would be implemented to avoid and/or minimize potential impacts. The Draft EA has been prepared to satisfy the requirements of HRS Chapter 343 and Hawaii Administrative Rules (HAR) Title 11, Chapter 200, Environmental Impact Statement (EIS), and other environmental compliance requirements. The proposed project triggered the rules and regulations for environmental review because the project would use State lands and State funds.

1.5 Public Comment on the Environmental Assessment

The State of Hawaii Office of Environmental Quality Control (OEQC) notifies the public when a Draft EA is available for review in its bimonthly bulletin, the OEQC Environmental Notice. Official announcement by the OEQC will initiate a 30-day review and comment period.

Request for Comments

Interested members of the public are invited to submit written comments on the Draft EA to:

Name: J. Michael Will, P.E., Project Manager / Construction Operations Engineer Federal Highway Administration Central Federal Lands Highway Division
Address: 12300 W. Dakota Avenue, Suite 380; Lakewood, CO 80228
Email Address: michael.will@dot.gov

1.6 Permits, Approvals, and Compliance Required or Potentially Required

The following requirements must be met to implement the proposed project:

1.6.1 Federal
• Department of the Army Permit (Section 10 of the Rivers and Harbors Act; Section 404 of the Clean Water Act), U.S. Army Corps of Engineers (USACE)
• Section 106 Consultation (National Historic Preservation Act [NHPA]), State of Hawaii Department of Land and Natural Resources (DLNR) State Historic Preservation Officer (SHPO)
• Section 7 Consultation (Endangered Species Act [ESA]), U.S. Fish and Wildlife Service (USFWS); National Marine Fisheries Service (NMFS)

1.6.2 State
• Clean Water Act Section 401 Water Quality Certification, State of Hawaii Department of Health (HDOH)
• National Pollutant Discharge Elimination System (NPDES) Permit, HDOH
• Stream Channel Alteration Permit, DLNR Commission on Water Resource Management
• Historic Preservation Review (HRS Chapter 6E), DLNR State Historic Preservation Division
• Americans with Disabilities Act compliance (HRS §103-50), HDOH, Disability and Communication Access Board
• Occupancy and Use of State Highway Right-of-Way Permit, HDOT
• Community Noise Permit/Variance, HDOH

1.6.3 County
• Street Use Permit, City and County of Honolulu Department of Transportation Services (DTS)
• Demolition, grading, grubbing, and stockpiling permits, City and County of Honolulu Department of Planning and Permitting (DPP)

1.7 References

FIGURE 1-1
Project Location
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

LEGEND

Study Area

Source: USGS Topographic Map – Oahu
FIGURE 1-2
Project Area Photos
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

Photo 1. View of Halona Street Bridge, looking Makai

Photo 2. View of Halona Street Bridge, looking west

Photo 3. View of Halona Street Bridge, looking southeast

Photo 4. Gaps in the concrete beneath H-1, Mauka side of the bridge
SECTION 2
Project Description

2.1 Project Location

The Halona Street Bridge crosses the Kapalama Canal on Halona Street, between Kohou Street and Kokea Street at MP 20.21 in Kalihi (see Figure 1-1). Halona Street is classified as a Principal Urban Arterial and is adjacent to H-1 between the on-ramp from Vineyard Boulevard and the off-ramp to Houghtailing Street. There are several residential neighborhoods on either side of the Kapalama Canal, and the residents on the Diamond Head side of the canal use this access to reach Houghtailing Street. Parking is allowed on the mauka (mountainward) side of the Halona Street before and after the bridge. The Halona Street Bridge is under the jurisdiction of HDOT. Figure 2-1 shows the limits of the proposed project.

2.1.1 Surrounding Land Uses

The proposed project is located approximately 1.2 miles west of downtown Honolulu in the southern part of Oahu. Land within and adjacent to the project limits is characterized by level terrain with landscaped vegetation adjacent to the Halona Street Bridge. Urban residential developments are located mauka of the bridge. The Kapalama Canal is owned and maintained by the City and County of Honolulu; the canal runs through the project limits under Halona Street Bridge and terminates 200 feet upstream of the bridge. The Kapalama Canal is a realigned channel receiving flow from Kapalama Stream, as well as runoff from urban Kalihi and Kamehameha Heights, and leads into Honolulu Harbor. The State of Hawaii Land Use Commission has classified land within and adjacent to the project in the Urban District, and it is zoned by the City and County of Honolulu as R-5 Residential. Several schools, small parks, businesses, and other community resources are also located along H-1 and Halona Street within 0.5 mile of the project limits. Land uses surrounding the project limits are shown in Figure 2-2.

2.1.2 Other Nearby State and County Projects

There are no State transportation improvement projects in the immediate vicinity of the Halona Street Bridge project. The DTS, in conjunction with HDOT, has identified two streets for rehabilitation that connect to Halona Street adjacent to the project limits (Kohou Street and Kaauwai Place). Both Kohou Street (mauka of the existing bridge) and Kaauwai Place (one block northwest of Kohou Street, mauka of the existing bridge) are identified as in “planning” phases. Kaauwai Place is outside the project limits and would be affected by traffic control. Kohou Street would serve as a detour route for local traffic (see Section 2.3, Proposed Project, for additional information). The contractor would coordinate with the street rehabilitation project if it is concurrent with the proposed project, to minimize logistical and traffic routing impacts. Because there is no physical permanent overlap between the projects, the proposed project would not conflict with any other State or County project.

2.2 Existing Conditions along the Project Corridor

2.2.1 Right-of-Way and Surrounding Elevations

The right-of-way on Halona Street Bridge and associated approaches is 60 feet as measured between the guardrail or edge of the existing sidewalk on the mauka side of the bridge and the H-1 guardrail on the makai (oceanward) side of the bridge. Halona Street Bridge is at an elevation of approximately 9 feet above mean sea level (amsl) and the terrain surrounding the bridge is relatively flat.

2.2.2 Bridge Structure and Approaches

Halona Street Bridge was constructed in 1938. The existing structure is an approximately 130-foot-long, reinforced-concrete slab with five spans. The deck width is approximately 55 feet and the bridge deck thickness is 2.5 feet. The existing bridge consists of two travel lanes (14 foot and 12.5 foot, respectively), a
7-foot sidewalk, a 2-foot bridge rail, a 1-foot curb, and an 18.5-foot landscape buffer that sits atop the bridge deck (see Figure 2-3). A chain-link fence is located in the middle of the landscape buffer, separating H-1 from Halona Street. The bridge abuts the *mauka* side of H-1.

Halona Street Bridge, H-1 Bridge, and Olomea Street Bridge cross over Kapalama Canal. The canal runs in a northeastern/southeastern direction through residential developments. It has vertical concrete rubble masonry walls and is concrete-lined in the upstream reach, with a natural bottom beneath Halona Street Bridge and downstream of the bridge. In addition to the fencing between H-1 and Halona Street in the landscape buffer, chain-link fencing is also located adjacent to the canal along Kokea Street and Kohou Street. Fencing is primarily used to deter the public from entering the canal and traveling under Halona Street Bridge.

Halona Street is designated as State Route 98 for travel in the westbound (Ewa) direction, while Olomea Street is designated as State Route 98 for travel in the eastbound (Diamond Head) direction. According to counts collected for the project, an average of 3,900 vehicles use Halona Street daily (2015). The posted speed on Halona Street within the project limits is 30 mph.

Pedestrian and bicycle counts were also collected for the project in February 2015. Weekdays between 6 am and 5 pm, 98 pedestrians and 24 bicyclists were identified in the project limits. On weekends, during the same period, 52 pedestrians and 25 bicyclists were identified. Pedestrians and bicyclists travel both eastbound and westbound on Halona Street.

### 2.2.3 Utilities

Providers with utilities or services within the project area include the following:

- **Hawaiian Electric Company (HECO) – Electric/Power**
  - Overhead power lines along the *mauka* side of the road on both sides of Halona Street Bridge that do not cross over the canal
  - An electric line along Halona Street adjacent to H-1
- **Honolulu Board of Water Supply (BWS) – Water Distribution and Service**
  - 12-inch distribution water line hung under the bridge inside the girders
  - 42-inch transmission waterline buried on the *mauka* side of the bridge that runs in the east-west direction, feeding into smaller distribution lines to provide water to the surrounding communities
- **Hawaii Gas – Gas**
  - 2-inch gas line hung under the bridge inside the girders
- **HDOT – Street Lighting**
  - Two light poles located on each of the *mauka* corners of the bridge
- **Oceanic Time Warner Cable - Wired Cable Television Service**
  - Service provider, with no infrastructure identified within project limits
- **Hawaiian Telcom - Land-line Telecommunications Service**
  - Service provider, with no infrastructure identified within project limits

### 2.3 Proposed Project

The proposed project would replace Halona Street Bridge to address structural and functional deficiencies described in Section 1.3, Purpose and Need. The preliminary bridge design is shown on Figure 2-4. The project limits extend beyond Halona Street Bridge to include the approach roadways and potential staging.
areas (see Figure 2-1): the limits extend approximately 600 feet along Halona Street and extend beyond HDOT right-of-way along Kokea Street and Kohou Street. Where Kapalama Canal crosses beneath Halona Street Bridge, the project limits would extend 400 feet upstream and downstream of the bridge to include considerations for construction and hydraulics. The project limits encompass a total area of 1.1 acres, consisting of 0.59 acre of permanent impact area and 0.51 acre of temporary impact area. Section 2.3.4 provides information on properties affected by the project.

HDOT and AASHTO standards and regulations govern the design criteria and construction methods and procedures for the proposed project. The design would meet or exceed both HDOT and AASHTO criteria (see Table 2-1). The posted speed limit of 30 mph on Halona Street and Halona Street Bridge would remain. The replacement bridge would not meet HDOT Manual (HDOT, 2010) criteria of 2 feet of freeboard because meeting this criterion would require raising the bridge and consequently cutting off access to Kohou Street and Kokea Street. The proposed replacement bridge and roadway would pass the 50-year storm with limited freeboard.

**TABLE 2-1**

*Project Design Criteria*

<table>
<thead>
<tr>
<th>Design Criteria</th>
<th>Existing Conditions</th>
<th>Standards</th>
<th>Proposed</th>
</tr>
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<tr>
<td></td>
<td></td>
<td>AASHTO</td>
<td>State</td>
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<tr>
<td>Design Speed</td>
<td>Posted speed = 30 mph</td>
<td>30 mph</td>
<td>15-30 mph</td>
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<tr>
<td></td>
<td></td>
<td>Design speed = 40 mph</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Posted speed = 30 mph</td>
</tr>
<tr>
<td>Travel Way Width (feet)</td>
<td>12.5 and 14</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Shoulder Width (feet)</td>
<td>Curb/Sidewalk</td>
<td>8 (2 urban)</td>
<td>10/4 right/left</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2/4 right left</td>
</tr>
<tr>
<td>Bridge Width (feet)</td>
<td>55</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>39 (includes bridge rail)</td>
<td></td>
</tr>
</tbody>
</table>

Note:
N/A = not applicable

The proposed project would be designed and constructed in accordance with Federal, HDOT, and AASHTO standards and regulations including but not limited to the following:

HDOT’s *Design Criteria for Bridge and Structures* (2014) would be followed for structure design.

The project would use HDOT’s *Design Criteria for Highway Drainage* (HDOT, 2010) to govern the hydraulic evaluation, analysis, and design. The project would consider incorporating low-impact development concepts, such as directing stormwater drainage into grass swales adjacent to the bridge and highway.

The approach travel lanes and shoulders would be designed to AASHTO and HDOT guidelines (*A Policy on Geometric Design for Highways and Streets* [AASHTO, 2011] and *Hawaii Statewide Uniform Design Manual for Streets and Highways* [HDOT, Highways Division, 1980], and all subsequent amendments).

2.3.1 Replacement Bridge

The existing Halona Street Bridge would be demolished and replaced with a new precast bridge. The replacement bridge would be a three-span bridge with a total length of approximately 131 feet, a deck width of 39 feet, and a superstructure depth of 2.5 feet. The new bridge would have the same road profile as the existing bridge but would be narrower because of the removal of the landscaped buffer that sits atop the existing bridge deck.

The four existing piers would be removed and replaced with two piers that would align with the two existing and adjacent H-1 Bridge piers. This pier placement would result in less turbulence, and as a result, greater hydraulic efficiency. The pier shapes would be similar to the existing H-1 Bridge piers, with a pier cap width
SECTION 2 PROJECT DESCRIPTION

HALONA STREET BRIDGE, OAHU

2.3.2 Construction Activities

Staging of personnel and equipment would occur within the project limits. Potential staging areas are located along Halona Street (on pavement) on either side of the bridge, as well as adjacent to the Kohou Street and Kokea Street intersections. The work area would be accessed from the sides of the canal. Existing piers would be removed and replaced with new piers. A new headwall would be installed near the existing pipe outlet makai of the Olomea Street Bridge. Demolition debris would require disposal at an approved landfill. Disposal of dredged material and water from dewatering activities would require approval by HDOH.

Construction would last approximately 13 months. Construction would occur both during normal work hours and on weekends. To minimize impacts to the surrounding residential areas, night work is not anticipated. It is anticipated that Halona Street Bridge would be closed to normal vehicular traffic for the duration of the project. The project would maintain a corridor along the existing bridge during construction that meets HDOT-approved safety standards to protect pedestrians and bicyclists from H-1 traffic. During construction, a portion of the existing bridge immediately adjacent to H-1 would remain open to temporarily accommodate utilities.

2.3.3 Traffic Control during Construction

Halona Street is one-way in the westbound direction. Residential neighborhoods along Kokea Street and Kohou Street would need access maintained during both bridge and intersection closures (affecting the Halona/Kokea Street and the Halona/Kohou Street intersections). During bridge closure periods when both Kokea Street and Kohou Street intersections can remain open (when bridge railing work is being conducted), local traffic can be routed onto Kokea Street and around to Kohou Street as shown in Figure 2-5. During bridge closure periods when the Kokea Street intersection is closed and the Kohou Street intersection is open (during bridge demolition and construction), local traffic can be routed onto Auld Lane and around to Kohou Street as shown on in Figure 2-6.

Seven properties (six residences and the Queen Liliuokalani Children’s Center) have private driveways that front Halona Street between Kohou Street and the H-1 off-ramp. Access to these properties would be maintained during construction by barricading Halona Street Bridge, keeping the Houghtailing Street off-ramp open, and directing traffic onto Kohou Street. Details regarding access and traffic control during construction would be provided in a traffic management plan. Travel time delays are expected to be minimal using a combination of H-1, North School Street, and the detour routes shown in Figure 2-5 and Figure 2-6.

Access to the H-1 on-ramp would be maintained during construction. Signage at the freeway on-ramp would inform drivers that Halona Street past the on-ramp is open to local traffic only. A message board would direct non-local traffic to use the freeway on-ramp and off-ramp to access Houghtailing Street. The routes for non-local traffic (blue line) traveling to Houghtailing Street and freeway access (orange line) are shown in Figure 2-5 and Figure 2-6.

Pedestrian and bicycle access would be maintained across Kapalama Canal during construction. It is currently recommended that a portion of the existing structure be maintained for pedestrian and bicycle access. Pedestrians and bicyclists would use either Kokea Street or Kohou Street to cross over Halona Street and then cross the canal in a temporary pedestrian route within the existing landscaped area between the construction work and H-1. This temporary route would accommodate a pedestrian path, with a barrier on both sides of the path to protect pedestrians and bicyclists, as shown in Figure 2-7.

2.3.4 Properties Affected by the Project

The proposed project would not require the permanent acquisition of private property outside of the existing right-of-way. However, as shown in Table 2-2, 0.44 acre of land would be needed from four...
temporary easements to accommodate bridge construction and paving improvements. This would temporarily affect property owners: the City and County of Honolulu as the owner of the Kapalama Canal and the owner of the outfall on the *makai* side of the Olomea Street Bridge. The Tax Map Keys (TMKs) associated with these parcels are shown in Figure 2-8 and Figure 2-9. Construction parcels would be coordinated through HDOT. No additional permanent easements for maintenance and operation are needed.

**TABLE 2-2**
Right-of-Way Requirements

<table>
<thead>
<tr>
<th>TMK</th>
<th>Land Use</th>
<th>Estimate of Area Needed (Acres)</th>
<th>Project Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) 1-6-000:000</td>
<td>Undeveloped (River)</td>
<td>0.12</td>
<td>Temporary Construction Parcel (Bridge Construction)</td>
</tr>
<tr>
<td></td>
<td>Undeveloped (River)</td>
<td>0.18</td>
<td>Temporary Construction Parcel (Bridge Construction)</td>
</tr>
<tr>
<td>No TMK Kohou Street and Kokea Street</td>
<td>Developed/Undeveloped (Roadway)</td>
<td>0.09</td>
<td>Temporary Construction Parcel (Bridge Construction, Pavement Improvements)</td>
</tr>
<tr>
<td></td>
<td>Developed/Undeveloped (Roadway)</td>
<td>0.05</td>
<td>Temporary Construction Parcel (Bridge Construction, Pavement Improvements)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>0.44</td>
<td></td>
</tr>
</tbody>
</table>

### 2.4 No Action Alternative

The No Action Alternative would retain the existing bridge with no changes. The bridge would not be repaired to meet current design standards for roadway width, load capacity, bridge railing and transitions, and bridge approaches, and the bridge would continue to be structurally deficient.

Under the No Action Alternative, environmental impacts resulting from construction activities would be averted and improvement costs would not be incurred by HDOT. The existing bridge would continue to deteriorate, requiring regular inspection and increasing maintenance to maximize its useful lifespan. Eventually, the bridge may no longer provide a safe support for vehicle, pedestrian, and bicycle traffic, and could face closure.

### 2.5 Bridge Alternatives Considered and Dismissed

#### 2.5.1 Rehabilitation

Rehabilitation of the existing bridge was evaluated, but dismissed from further consideration based on the age and deteriorated condition of the existing bridge (as described in Chapter 1, according to the most recent bridge inspection report, the bridge is structurally deficient).

#### 2.5.2 Bridge Replacement (Cast-in-Place Concrete Slab Bridge)

This alternative consists of replacing the existing bridge with a three-span cast-in-place (CIP) concrete slab bridge. This bridge design is very similar to the existing Halona Street Bridge. The needed replacement structure is slightly longer so that the abutments would be constructed behind the existing abutments and would match with the adjacent H-1 Bridge. The three spans would be constructed as continuous spans to eliminate the need for expansion joints over the piers.

The advantage of the CIP concrete slab bridge is that it would provide a relatively shallow superstructure depth to allow for a maximum hydraulic opening for the canal. The continuous reinforced concrete slab is readily adaptable to a wide range of shapes and skew angles. The CIP concrete slab bridge usually has proportions that are considered to be aesthetically pleasing.
The disadvantage is that the construction of the reinforced concrete slab requires the placement of formwork and falsework in the canal underneath the bridge. In addition, the construction of the CIP slab bridge is generally considered to be a labor-intensive and time-consuming operation and, therefore, more costly than the precast alternative. If traditional reinforced concrete abutments are constructed on deep foundations, approach slabs would be placed at each end of the bridge and expansion joints would be placed at the end of the approach slabs.

As with the proposed project, this alternative is practical, serviceable, and constructible, and would perform well from a structural standpoint. However, the proposed project offers several advantages compared to this alternative including a lower initial construction cost, faster construction period, and fewer environmental impacts (because it would not require the use of falsework or temporary supports in the canal during construction). In all other areas, this alternative was similar to the proposed project. For these reasons, the CIP concrete slab bridge was dismissed from further consideration.

2.5.3 Construction Period Alternatives

2.5.3.1 Phased Construction

Several options for phased construction were considered during project development. However, these were dismissed from further consideration because costs would be greater and it would take longer to construct, increasing the duration of construction related disturbances for local residents and the traveling public.

2.5.3.2 Temporary Pedestrian Bridge

This alternative would construct a temporary pedestrian bridge mauka of the existing Halona Street Bridge that would accommodate pedestrians, bicyclists, and temporary utilities. This alternative was eliminated from further consideration because costs would be greater and it would take longer to construct, increasing the duration of construction related disturbances for local residents and the traveling public.

2.6 Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program (STIP) provides a multiyear listing of State and County transportation projects and identifies those projects slated for Federal funding. It is a multimodal transportation improvement program that is developed using existing transportation plans and policies, as well as current highway, transit, and transportation programming processes. The STIP delineates the funding categories and the Federal and local share required for each project. Although projects are on the STIP, that does not necessarily mean those projects will be planned, designed, or constructed within the fiscal period because of unforeseen occurrences such as project readiness or project priorities.

The current STIP, which covers the period from Federal Fiscal Year (FFY) 2015 to FFY 2018 (and FFY 2019 to FFY 2020, for information purposes only), was published by HDOT on October 27, 2014. The H-1, Bridge Rehabilitation, Kapalama Canal (Halona Street Bridge) Project is listed on the STIP as a System Preservation project.

2.7 Preliminary Cost and Schedule

In 2015, the estimated construction cost for the proposed action is approximately $4.6 million. Construction of this project would occur after completion of the project’s design and obtaining necessary entitlements.

The current schedule is for construction to last 13 months and end in 2018.

2.8 References


VICINITY MAP

Halona Street Bridge Project

Notes:
1. High-Res Imagery Source: Google Earth 01/16/2013
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.

FIGURE 2-1
Project Limits
Halona Street Bridge Project
Hawaii Bridges Program – Central Federal Lands Highway Division and Hawaii Department of Transportation
FIGURE 2-2
Surrounding Land Use
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation


LEGEND
- Residential
- Commercial and Services
- Mixed Urban Development
- Transportation, Communications, and Utilities
- Industrial

Approximate scale in miles
North

TR0603151048RDD 503_HDOT_Halona_SurroundingLandUse_Fig2-2_V3.ai tdaus 11/24/15
FIGURE 2-3
Typical Section – Existing Halona Street Bridge
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

Typical Section – Existing Halona Street Bridge
Scale: 1" = 5’
FIGURE 2-4

Typical Section – Proposed Halona Street Bridge

Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation
Halona Street Bridge Closed

Kokea St.

Kohou St.

School St.

Houghtailing St.

Waiakamilo Rd.

Olomea St.

Halona St.

Kokea St.

Kohou St.

N King St.

LEGEND
- Direction of Travel
- Work Area/Road Closure
- Detour Route for Local Traffic
- Detour Route for Non-Local Traffic to Access Houghtailing St.
- Route for Freeway Access

Notes:
1. Work area limits allows for Halona St. & Kokea St. intersection to remain open.
2. Non-local traffic will be directed by message board to use Freeway to access Houghtailing St.
3. Minimal impact to normal westbound Freeway access traffic.
4. N. School St. has two travel lanes in each direction during rush hour due to no parking restrictions.

FIGURE 2-5
Detour Route: Kokea Street and Kohou Street Intersections Open
Halona Street Bridge Project
Hawaii Bridges Program – Central Federal Lands Highway Division and Hawaii Department of Transportation
FIGURE 2-6
Detour Route: Kokea Street
Intersection Closed
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

Notes:
1. Work area limits allows for Halona St. & Kokea St. intersection to remain open.
2. Non-local traffic will be directed by message board to use Freeway to access Houghtailing St.
3. Minimal impact to normal westbound Freeway access traffic
4. N. School St. has two travel lanes in each direction during rush hour due to no parking restrictions
FIGURE 2-7
Temporary Pedestrian and Bicyclist Route During Construction
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

Aerial photo source: Google ©2015, modified by CH2M HILL.
FIGURE 2-8  
Tax Map Key 1  
Halona Street Bridge Project  
Hawaii Bridges Program –  
Central Federal Lands Highway Division and  
Hawaii Department of Transportation
FIGURE 2-9
Tax Map Key 2
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

LEGEND

Project Area

Approximate scale in feet

Base Map: Tax Map Key [1] 1-6-006
Data Sources: CSH, 2015
3.1 Topography, Geology, and Soils

3.1.1 Existing Conditions

Halona Street Bridge is at an elevation of approximately 9 feet amsl and the terrain surrounding the bridge is relatively flat. The proposed project is located approximately 1.2 miles west of downtown Honolulu in the southern part of Oahu. Land within and adjacent to the project limits is characterized by level terrain. A topographic map of the project area is presented in Figure 1-1.

The Island of Oahu is composed largely of the weathered remnants of the Waianae and Koolau shield volcanoes. The older Waianae Volcano forms the bulk of the western third of the island, while the younger Koolau Volcano forms the majority of the eastern two-thirds of the island. It is believed that Waianae Volcano became extinct while Koolau Volcano was still active, and its eastern flank is partially below Koolau lavas in central Oahu.

The project area lies within the coastal plain of Oahu and is to the southwest of the Koolau Mountain Range. As a result, much of the generally flat land area is underlain by unconsolidated coastal sediments (coralline silts and sands) with pockets of hard, cemented sand dunes (sandstone) and coral/limestone rock formation. Progressing toward the hills of the Koolau Mountains, the subsurface conditions gradually change to reflect an increase in thickness of terrestrial sediments, such as the alluvial soils derived from the hills and valleys located to the southwest of the coastline. The alluvial soils overlie the buried coral and sand deposits in the subsurface.

The Natural Resources Conservation Service identifies five soil types in the project area (see Figure 3-1):

- **Ewa Silty Clay Loam, 0 to 2 percent slopes (EmA):** The Ewa series consists of well-drained soils that formed in alluvium weathered from basaltic rock. Ewa soils are on alluvial fans and terraces and have slopes of 0 to 2 percent. Elevations range from sea level to 150 feet amsl. The soils are considered well drained with slow to medium runoff and moderate permeability.

- **Hanalei Silty Clay Loam, 0 to 2 percent slopes (HnA):** The Hanalei series consists of somewhat poorly drained to poorly drained soils that formed in alluvium derived from basic igneous rock. Hanalei soils are on bottom lands and low terraces along streams with slopes of 0 to 2 percent. Elevation ranges from near sea level to 300 feet. The soils are considered somewhat poorly to poorly drained with slow runoff and moderate permeability.

- **Kaena Clay, 2 to 6 percent slopes (KaB):** The Kaena series consists of deep, poorly drained soils that formed in alluvium and colluvium. Kaena soils are on alluvial fans on steep colluvial slopes and have slopes of 2 to 6 percent. Elevations range from 50 and 150 feet. The soils are considered poorly drained with slow to rapid runoff and slow permeability.

- **Kawaihapai Stony Clay Loam, 2 to 6 percent slopes (KlaB):** The Kawaihapai series consists of well-drained soils that formed in alluvium derived from basic igneous rock in humid uplands. Kawaihapai soils are in drainageways and on alluvial fans on the coastal plains and have slopes of 2 to 6 percent. Elevation ranges from sea level to 300 feet. The soils are considered well-drained with slow to medium runoff and moderate permeability.

- **Fill Land, 0 to 3 percent slopes (FL):** Fill land consists of well-drained soils with slopes of 0 to 3 percent. It is characterized by mixed or similar soil types. Elevations range from 0 to 500 feet. The soils are considered well-drained with slow runoff and low to moderate permeability.
The Natural Resources Conservation Service (NRCS) classifies the Kapalama Canal as “water” (U.S. Department of Agriculture, 2015).

According to the NRCS data, the project does not contain soils classified as prime or important farmland. Two soil types—Ewa Silty Clay Loam (located south of Auld Lane and west of H-1) and Kawaihapai Stony Clay Loam (located northwest of Kohou Street)—are defined as “Prime Farmland, if irrigated.” However, the land in these areas is not irrigated and is within a census-designated urbanized area, which is exempt from protection under the Farmland Protection Policy Act of 1981. The State of Hawaii Department of Agriculture also classifies Agricultural Lands of Importance to the State of Hawaii (ALISH), including prime, unique, and important agricultural lands. The lands surrounding the project area are not considered ALISH (OP, 2006).

As part of the project’s field exploration program, three borings were drilled for the replacement bridge. Two exploratory test borings were drilled at the rear of existing bridge abutments and the third boring was drilled in the canal. Soils near the surface at the rear of the existing east abutment and extending to depths of 10 feet consist of reddish brown silty sand with gravel. Soils near the surface at the west abutment and extending to depths of 3 feet consist of medium dense gray silty gravel. Underlying the near surface granular soils and extending to depths of 16.5 to 18 feet was dark brown to grayish brown silty clay. Underlying the soft and compressible silty clay was older alluvium soils consisting of interlayers of silty clay, silty gravel, and clayey silt extending down to the maximum depths drilled (between 100.5 and 120.5 feet). The silty clay and clayey silt were in a medium stiff to stiff condition, while the silty gravel was in medium dense to dense condition. Groundwater was encountered in the borings at depths ranging from 8 to 9 feet.

3.1.2 Potential Impacts and Mitigation Measures

The proposed project is not constrained by geological and topographic site conditions, nor would it affect any unique geological formations. Because of the subsurface soils encountered, deep foundations such as driven concrete pile foundations are recommended for support of the proposed Halona Street Bridge replacement. Roadway sections would be designed to standard HDOT specifications that consist of asphalt and base course over sub-base course material.

The proposed project would result in short-term impacts to topography, geology, and soils during the construction of the replacement bridge and roadway approaches. Ground disturbance associated with these activities include clearing, grading, excavating, and recontouring of soils, which would remove vegetation and expose soil, which could leave affected areas exposed to erosion. To minimize the potential for construction-related erosion impacts, Best Management Practices (BMPs) would be developed as part of the project’s engineering and design, and implemented during construction. These are expected to include, but are not limited to, the following:

- Using temporary silt fencing and screens
- Regular watering of graded areas to reduce the amount of fugitive dust in the air
- Sodding or planting of slopes immediately after grading work has been completed
- Restricting the stockpiling of construction material and properly disposing construction debris

All erosion control measures would comply with Honolulu County Code for erosion and sedimentation control (Honolulu County Code, Chapter 14, Article 13). Other applicable measures would be specified as part of the NPDES permit obtained from HDOH.

3.2 Climate and Air Quality

3.2.1 Existing Conditions

Climate on Oahu is heavily influenced by terrain and tradewinds. The island consists of two parallel mountain ranges running in the northwestern to southeastern direction, which is perpendicular to the prevailing northeastern trade winds. As a result, the western (leeward) sides of Oahu (including the project area), are drier and warmer than the windward sides of the island. The average maximum daily temperature is approximately 80 degrees Fahrenheit (°F), with an average minimum of 66°F. Mean annual rainfall for this
area is approximately 37 inches. Rainfall is typically highest in November and December and lowest from June through August (Giambelluca et al., 2013). The closest rainfall gage to the site has experienced slightly above-average rainfall for 2014 through the end of September (NOAA, National Weather Service, Weather Forecast Office Honolulu, 2014).

Oahu, like the rest of the State, meets the Federal and State air quality standards and is within an attainment area.¹ HDOH operates a network of air quality monitoring stations around the state. Stations typically do not monitor the full complement of air quality parameters. There are four air quality monitoring stations on the island of Oahu, with the nearest air quality monitoring station to the project area in downtown Honolulu at 1250 Punchbowl Street, on the roof of the HDOH building. This station was established in 1971 to monitor air quality in Honolulu, which is primarily affected by commercial, industrial, and transportation activities. This station samples carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter (PM₁₀ and PM₂.₅). The readings at this location show that criteria pollutant levels were below State and Federal ambient air quality standards in 2013 (see Table 3-1).

<table>
<thead>
<tr>
<th>TABLE 3-1</th>
<th>Island of Oahu Air Monitoring Station (Honolulu) Readings (2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollutant</td>
<td>Annual Mean</td>
</tr>
<tr>
<td>PM₂.₅ (24-hour)</td>
<td>5.3 µg/m³</td>
</tr>
<tr>
<td>PM₁₀ (24-hour)</td>
<td>11.4 µg/m³</td>
</tr>
<tr>
<td>SO₂ (1-hour)</td>
<td>0.001 ppm</td>
</tr>
<tr>
<td>SO₂ (3-hour)</td>
<td>0.001 ppm</td>
</tr>
<tr>
<td>SO₂ (24-hour)</td>
<td>0.001 ppm</td>
</tr>
<tr>
<td>CO (1-hour)</td>
<td>0.4 ppm</td>
</tr>
</tbody>
</table>

Source: HDOH, 2014b

Notes:
² Federal secondary standard
µg/m³ = micrograms per cubic meter
ppb = parts per billion
ppm = parts per million

Air quality in the project area is currently affected primarily by emissions from mobile sources (traffic on H-1) and commercial and industrial activities. The primary mobile sources of emission are all types of vehicles, which generate pollutants (primarily nitrogen oxide and CO) when traveling or idling on roadways within and adjacent to the project limits.

### 3.2.2 Potential Impacts and Mitigation Measures

#### 3.2.2.1 Short-term, Construction-related Emissions

Short-term impacts on air quality may result from project construction. Impacts could be associated with two common types of pollutants: (1) fugitive dust emissions from vehicular movement and soil excavation, and (2) exhaust emissions from onsite construction equipment. Overall, air quality impacts are expected to be negligible because the construction period is of limited duration and impacts would be minimized with the implementation of BMPs for dust control and exhaust emissions.

¹ Exceedances of SO₂ and PM₂.₅ have been reported on Hawaii Island, but these are associated with the volcano which is considered a natural, uncontrollable event. Therefore, the State is requesting exclusion of these exceedances from attainment/nonattainment determination (HDOH, 2014c).
**Fugitive Dust.** BMPs for dust control would be implemented to minimize air quality impacts during the project construction phase. Construction activities would incorporate fugitive dust emission control measures in compliance with provisions of HAR Chapter 11-60.1, “Air Pollution Control,” Section 11-60.1-33 on Fugitive Dust. The following measures are expected to be used to control airborne emissions:

- Cover stockpiles with appropriate material; dispose of debris properly
- Use water, dust fences, disturbance area limitations, and revegetation to minimize dust emissions, as appropriate
- Keep clean adjacent paved roads
- Cover open-bodied trucks whenever hauling material that can be blown away
- Limit the amount of disturbed areas at any given time and/or stabilize inactive areas that have been exposed
- Revegetate disturbed area as soon as practical after construction
- Stabilize construction entrances to avoid offsite tracking of sediment

**Exhaust Emissions.** Emissions from engine exhausts of onsite mobile and stationary construction equipment would also affect air quality. Emission impacts would be minimized by requiring the Contractor to use vehicles that are properly maintained. Nitrogen oxide emissions from diesel engines can be relatively high compared to emissions from gasoline-powered equipment; however, the standard for nitrogen oxide is set on an annual basis and is unlikely to be violated by emissions from short-term construction equipment. Carbon monoxide emissions from diesel engines are low and are expected to be negligible compared to vehicular emissions on nearby roadways.

### 3.2.2.2 Long-term Impacts on Air Quality

This project would not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that can cause an increase in emissions. As such, this project would generate minimal air quality impacts for the Clean Air Act (CAA) criteria pollutants and would not be linked with any special mobile source air toxics (MSAT) concerns.

### 3.3 Wetlands, Hydrology, and Water Quality

#### 3.3.1 Wetlands

Biologists with SWCA Environmental Consultants (SWCA) conducted a delineation of Waters of the U.S. on September 11, 2014 (see Appendix A). The biologists used methods for determining the presence of wetlands as prescribed by the 1987 Manual (USACE, 1987) and the 2012 Hawaii and Pacific Island Regional Supplement (USACE, 2012). Based on these documents, jurisdictional wetlands are identified using the following three criteria:

- Hydric soils—soils that are permanently or seasonally saturated by water
- Hydrophytic vegetation—plants adapted to life in water or waterlogged conditions
- Wetland hydrology—areas that are periodically inundated or have soils saturated to the surface at some time during the growing season

No wetlands were identified within the survey area. As shown in Figure 3-2, the survey area covered an area of approximately 0.45 acre that encompassed Halona Street from Kaauwai Place to Palama Street, a segment of H-1 (Lunalilo Freeway), and portions of Kokea Street and Kohou Street. The majority of the site is composed of pavement and concrete. Vegetated areas are mowed grasses and ornamental trees, interspersed with various weeds. The only hydrophytic plants seen occur within the concrete channel, where sediment has accumulated.

#### 3.3.2 Non-wetland Waters

A single perennial non-wetland water (Kapalama Stream) was delineated in the survey area (see Figure 3-2). Standing water was observed in the stream during the survey. This portion of Kapalama Stream was determined
to be tidally influenced, based on the presence of marine/estuarine fish (striped mullet \([Mugil cephalus]\) and great barracuda \([Sphyraena barracuda]\)) and observed changes in water levels throughout the day.

Approximately 660 linear feet of non-wetland waters were delineated on the eastern side of the channel and 675 linear feet were delineated on the western side. Because the stream is channelized and contains vertical concrete walls, SWCA identified the jurisdictional boundary of the potential non-wetland Waters of the U.S. by mapping the top of the vertical concrete wall. The boundaries of the stream under the freeway were estimated by connecting the known boundaries of the stream at the existing bridge with the boundaries of the stream just north of Olomea Street.

Downstream of the survey area, Kapalama Stream flows southwest between Kokea and Kohou Street and eventually empties into Honolulu Harbor, roughly 0.8 mile from the survey area.

### 3.3.3 Clean Water Act, Section 303(d)

HAR Chapters 11-54 and 11-55 outline a number of requirements related to water quality in the State of Hawaii. These include, but are not limited to, an antidegradation policy; designated uses of waters, which must be maintained; water quality criteria, which must be met during construction and operation; and permitting requirements.

The classification of water use of Kapalama Stream near the project site is mapped as Inland Class 2 on the Water Quality Standards Map of the Island of Oahu (HDOH, 2014a). Use categories classify waters for the purpose of applying the water quality standards, as well as the selection or definition of quality parameters and uses to be protected. Class 2 waters are to be protected for uses compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. In addition, Class 2 waters are to be protected for agricultural and industrial water supply, shipping, and navigation use (HDOH, 2014d).

The Federal Clean Water Act (CWA) requires states to collect and review surface water quality data and related information, and to prepare and submit to the U.S. Environmental Protection Agency (USEPA) biennial lists of waterbodies that are impaired (that is, not expected to meet State water quality standards) or threatened. The states identify all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards. The current list, which is included in the 2014 State of Hawaii Water Quality Monitoring and Assessment Report (HDOH, 2014c), lists Kapalama Stream as impaired as a result of nitrogen, phosphorus, turbidity, and trash.

For all impaired waters, HDOH is required to develop the Total Maximum Daily Load (TMDL), which is the maximum amount of a pollutant (from point and nonpoint sources) that a waterbody can receive and still meet water quality standards, and to establish an allocation of that amount to the pollutant’s sources. Because there is a large demand for TMDL calculations, the HDOH has assigned a priority of low, medium, or high to each of the impaired waters listed based on the severity of pollution and how the water is used. Kapalama Stream has been assigned a low priority.

### 3.3.4 Potential Impacts and Mitigation Measures

The project would involve demolition, excavation, grading, and construction in the stream. Construction of the proposed project would result in approximately 0.16 acre of permanent impacts to Waters of the U.S. and approximately 0.22 acre of temporary impacts to Waters of the U.S.

The proposed project would result in a net increase of 0.02 acre of impervious surface. It would not change the general drainage pattern of stormwater flows, and because the project area is surrounded by undeveloped land, the slight increase in impervious surface area would not have a significant adverse effect on stormwater runoff entering the streams.

Waterborne erosion would be mitigated by implementing BMPs in place during construction. BMPs to protect water quality include the following:
• Handle onsite drainage to minimize sedimentation or other pollution discharge to streams
• Stabilize all disturbed areas with erosion control measures
• Revegetate disturbed areas as soon as possible after construction
• Stabilize construction entrances to avoid offsite tracking of sediment
• Ensure all project-related materials and equipment placed in the water are free of pollutants
• Fuel land-based vehicles and equipment at least 50 feet away from the water, preferably over an impervious surface

Accidental spills or releases of hazardous materials during construction could degrade the quality of stormwater runoff and reach Kapalama Stream. Temporary stormwater control measures would be implemented to protect water quality in the stream. The potential for accidental spills or releases is low and, if they did occur, would be attended to and cleaned up immediately.

All, or portions, of the bridge construction area would be dewatered before in-stream work begins using a cofferdam or other method, as appropriate for the location. The dewatering structure would be constructed where needed for dewatering below the High Tide Line (HTL) and would be sized as needed to dewater the bridge construction area, but still allow for existing flow capacity. The size and location of the dewatering structure would account for tidal fluctuations anticipated during the construction window. The dewatering structure would be removed immediately after it is no longer needed. The dewatering structure would be removed in a manner that avoids re-release of sediments into the stream. The area to be temporarily disturbed below the HTL would be determined before applying for CWA Section 404 and other required permits.

Federal (CWA Section 404) and State (Stream Channel Alteration) permits would be obtained for discharges or fill in regulated waters. Because Kapalama Canal is tidally influenced, authorization under Section 10 of the Rivers and Harbors Act of 1899 would also be obtained, as needed. Collecting and disposing groundwater would be conducted in accordance with applicable permit requirements.

A CWA Section 401 Quality Certification (State water quality certification) would also be acquired. An erosion control plan would be implemented during construction to reduce the potential for impacts to water quality. An NPDES permit would also be obtained if disturbance exceeds 1 acre, and FHWA is responsible for ensuring that permit measures are met during construction. The owner accepts responsibility for the permit after construction, until the Notice of Termination is filed and accepted. Permit and water quality certification conditions would be implemented during construction to avoid or minimize effects to the water quality of Kapalama Stream. BMPs and other methods (as described above and in Sections 3.6.2 and 3.8.8) would reduce the potential for sediment and/or pollutants to reach downstream waters. Although small plumes of sediment may be released during construction, primarily as a result of construction and/or removal of the dewatering/isolation structures, any turbidity released as a result of construction activities would be minimal and would dissipate quickly.

With the implementation of BMPs and adherence to permit requirements, impacts to non-wetland waters and water quality would be minimal.

3.4 Natural Hazards

3.4.1 Flooding

The Halona Street Bridge is not located within a Federal Emergency Management Agency (FEMA)-regulated floodplain according to FEMA Flood Insurance Rate Map (FIRM) Community Panel Numbers 15003C0354G and 15003C0353G, dated January 19, 2011 (FEMA, 2011). The project area is located within Zone X, areas determined to be outside the 0.2 percent annual chance floodplain. Therefore, the design of the replacement bridge is not required to comply with the National Flood Insurance Program’s regulations and requirements. Hydrologic design for the replacement bridge is based on a 1-in-50-year storm event based on
the classification of Halona Street as a Principal Arterial and on applicable FHWA Hydraulic Engineering Circulars.

The results of the hydraulic analyses conducted for the project indicate that the proposed replacement bridge would not experience pressure flow conditions during the 1-in-50-year design flood and that the flow for the 1-in-50- and 1-in-100-year storms would be confined within Kapalama Canal walls. The proposed project would pass the 50-year storm with limited freeboard. Because this does not meet HDOT Manual criteria of 2 feet of freeboard, a design exception would be required (see Section 2.3, Proposed Project).

Because of the project’s inland location, no hydraulic parameters generated from coastal events (such as storm surges, storm waves, tsunamis, or hurricanes) were used to analyze the capacity or stability design of the replacement bridge. The State of Hawaii Emergency Management Agency (Civil Defense) establishes tsunami inundation zones and maps for all coastal areas in Hawaii. The project is not located within a tsunami evacuation zone; the boundaries of the nearest evacuation zone end approximately 0.5 mile southwest of the project area at Dillingham Boulevard (Pacific Disaster Center, 2010).

3.4.2 Seismic Activity

The AASHTO LRFD Bridge Design Specifications (2014) provide minimum design criteria to address potential damages from seismic disturbances. The recommended seismic response parameters for use in design represent ground motion corresponding to an exceedance probability of approximately 7 percent in 75 years for an earthquake with an approximate 1,000-year return period. The AASHTO LRFD Bridge Design Specification scale is from Seismic Zone 1 through 4, where 1 is the lowest level for potential seismic induced ground movement. Oahu is designated Seismic Zone 2A, indicating a place that has a low potential for ground motion created by seismic activity.

3.4.3 Potential Impacts and Mitigation Measures

Because the project is not located within a regulatory floodplain, impacts to floodplains would not occur. The proposed project would be designed to conform to AASHTO LRFD Bridge Design Specifications, including specifications and recommendations for seismic design. Therefore, no significant impacts relative to seismic activity are anticipated with implementation of the proposed project.

3.5 Noise

A quantitative noise analysis was not performed because the project does not meet Federal or State criteria for when a noise analysis is needed; specifically, the proposed project would not increase highway capacity and does not meet the classification of a Type I or Type II project as defined in 23 Code of Federal Regulations (CFR) 772.5.

3.5.1 Existing Conditions

Land surrounding the project limits is zoned for apartments and urban residential development. Land uses are primarily urban, industrial, and residential. Existing noise sources in the area include vehicular noise associated with transportation on H-1, Halona Street, and Olomea Street. The closest noise receptors are residences located along Halona Street, Kohou Street, and Kokea Street.

Noise is regulated by FHWA (23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise) and HDOT (Noise Analysis and Abatement Policy, developed in 1997 to implement the requirements of 23 CFR 772 as well as the noise-related requirements of National Environmental Policy Act [NEPA]). The HDOH also regulates noise exposure in the following statutes and rules: HRS Section 342F, Noise Pollution; HAR Chapter 11-46, Community Noise Control; and HAR Chapter 12-60.50 part C, State specific standards for Occupational Noise Exposure.

Per HAR Chapter 11-46-4, the maximum daytime permissible sound levels within areas zoned for apartments and urban residential development (zones A-1 and R-5) are 60 A-weighted decibels (dBA). Construction activities may not exceed the maximum permissible sound levels for more than 10 percent of
the time within any 20-minute period, except by permit or variance issued. Per HAR Section 12-60.50, the permissible occupational noise exposure is set at 90 dBA for a continuous 8-hour exposure. Permissible noise exposures for shorter periods are higher, with a maximum exposure of 115 dBA permissible for a duration of 15 minutes or less.

### 3.5.2 Potential Impacts and Mitigation Measures

#### 3.5.2.1 Construction-related Noise

Construction noise impacts are unavoidable, but would be temporary. Noise levels produced during construction would be a function of the methods employed during each stage of construction. Equipment likely to be used include drill rig, crane, excavator, backhoe, front-end loader, grader, forklift, semi-trucks, dump trucks, concrete trucks, compactors, paving equipment, and compressors. Typical ranges of construction equipment noise vary between 70 and 95 dBA, which exceeds permissible levels.

In cases where construction noise is exceeded, or is expected to exceed the State’s “maximum permissible” property line noise levels, a Community Noise Permit would be obtained from HDOH under HAR Chapter 11-46, Community Noise Control. In order for HDOH to issue a noise permit, the application would describe construction activities for the project. Before issuing the permit, HDOH may require noise mitigation measures to be incorporated into the construction plans. HDOH may also require the Contractor to conduct noise monitoring.

Specific permit restrictions required for construction projects include the following:

- No permit shall allow construction activities creating excessive noise before 7 am and after 6 pm of the same day.
- No permit shall allow construction activities that emit noise in excess of 95 dBA except between 9 am and 5:30 pm of the same day.
- No permit shall allow construction activities that exceed the allowable noise levels on Sundays and on certain holidays. Pile driving and other activities exceeding 95 dBA would be prohibited on Saturdays.

The HDOH noise permit does not limit the noise level generated at the construction site, but rather the times at which high-volume construction can take place.

In addition to the noise permit, a noise variance may be requested from HDOH for specific occasions when work hours need to be extended into the evenings and/or on weekends to implement the overall construction schedule.

Additional BMPs to minimize construction related noise would include, but are not limited to, the following:

- The project engineer would coordinate with local residents and businesses to let them know the construction schedule, and when high noise producing construction activities can be expected.
- Enforcement of HDOH occupational noise exposure regulations would be the responsibility of the construction Contractor. If workers experience noise exceeding HDOH standards, administrative or engineering controls would be implemented. Use of personal protective equipment such as earplugs or muffs may also be required.
- To reduce nearby residential noise exposure, construction activities would be conducted during normal working hours to the extent possible. For any work that would occur after normal working hours (that is, on weekends), or if permissible noise levels are exceeded, appropriate permitting and monitoring as well as development and implementation of administrative and engineering controls would be employed.
- The Contractor is responsible for minimizing noise by properly maintaining noise mufflers and other noise-attenuating equipment, and maintaining noise levels within regulatory limits.
3.5.2.2 Long-term Noise Impacts
The proposed project would not increase the capacity of the roadway or induce an increase in traffic, and would therefore have no long-term effect on noise levels.

3.6 Hazardous Materials
3.6.1 Existing Conditions
A regulatory database computerized environmental report (CER) was acquired in the form of an EDR Radius Map Report with GeoCheck®. The CER is an evaluation of select Federal and State standard source environmental databases to identify sites within a search radius of up to 1 mile. CH2M HILL reviewed the sites listed in each environmental database to determine whether the identified sites are suspected to represent a material negative environmental impact to the subject property. A total of 153 sites were identified within the 1-mile search radius. The review focused on sites with documented releases that either had contamination left in place or had not been determined to be protective of human health and the environment with regulatory concurrence of no further action required. Three areas (two single sites and one cluster of sites) were identified within one-eighth mile of the proposed project site. The two single sites appear to be up gradient or cross gradient of the project area. One of the up- or cross gradient sites is the Queen Liliuokalani Hospital which is a conditionally exempt small quantity generator of hazardous waste. The second up- or cross gradient site was identified as a historical auto station. No release of hazardous substances or regulatory violations has been reported at either site. The third area is a cluster of four sites, two of which are greater than one-eighth mile from the project area. No release of hazardous substances or regulatory violations has been reported for two of the four clustered sites. The remaining two clustered sites are identified in several databases including leaking underground storage tank and institutional and engineering controls databases (sites having restrictions related to contamination that provide protections to health and the environment). One is listed with a regulatory concurrence of No Further Action (NFA) indicating the environmental activities to date are protective of human health and the environment and contamination is likely not migrating off the properties. The last site is also listed NFA but with institutional and engineering controls, and is greater than one-eighth mile from the project area. Both NFA sites are down-gradient of the project area and are not likely to present a material negative environmental impact for the proposed action. The CER is included in its entirety within Appendix B. Additionally, the CER identified eight orphan sites (sites without adequate location information to identify on a map). No further action letters have been issued for six of the sites; two of which have institutional or engineering controls. The other two sites have ongoing assessments or actions. Based on the status or location of these sites they are not likely to present a material negative environmental impact for the proposed action (HDOH, 2014e). There is potential for the bridge to contain asbestos-containing material (ACM) and lead-based paint (LBP). Potential ACM on bridge structures includes abutment forms, waterproof membranes between the deck and the paving, geo-textiles, asbestos cement pipes and conduits, textured surfaces, and asbestos concrete. Lead-based paint may be present in paint chips or waste generated during removal of paint from bulk material, including striping paint grindings from asphalt pavement.

3.6.2 Potential Impacts and Mitigation Measures
Project construction would require the removal, demolition, and rehabilitation of the existing bridge structures. Construction-related activities would also require use of hazardous materials, including lubricants of various weights and viscosities, hydraulic fluid for transit and construction equipment, cleaning products, and materials used for corrosion protection such as paint or other coatings on exposed steel. Based on the results of the CER, no hazardous materials are anticipated to be encountered within the proposed project site. In addition, the proposed project would not impact the identified sites of potential concern. However, based on the number of sites identified in the CER, the following measures would be implemented to address potential encounter of hazardous materials during construction:
A construction management plan that prescribes activities for workers to follow in the event that soil or groundwater contamination is encountered based on visual observation or smell will be prepared and implemented.

Sites identified as having engineering or institutional controls were identified in the CER within one-eighth mile of the project area. The following measure will be implemented to avoid impacts related to these controls:

- If determined applicable, construction would comply with restrictions and requirements related to engineering and institutional controls on nearby sites.

A hazardous materials spill plan would be developed that describes spill prevention measures regarding the location of refueling and storage facilities and the handling of hazardous materials. The hazardous materials spill plan would describe actions to be taken in case of a spill. The contents and requirements of the hazardous materials spill plan include the following:

- The project manager and heavy equipment operators would perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations would be postponed or halted should a leak be detected, and they would not proceed until the leak is repaired and the equipment is cleaned.

- Absorbent material manufactured for containment and cleanup of small hazardous materials spills would be kept at the project site.

- In the event of a large hazardous materials spill or if unanticipated hazardous materials were to be encountered within the project site, HDOH Hazard Evaluation and Emergency Response Office and HDOT Hazard Evaluation and Environmental Response Office would be contacted immediately.

Hazardous waste generated as a result of removal, demolition, and rehabilitation activities would be managed to the highest and best end use, and in a manner to ensure the protection of human health (workers, visitors to the site, and the general public) and the environment in accordance with applicable laws, rules, and regulations.

A hazardous waste determination for all anticipated waste would be prepared to determine whether the waste is classified as hazardous waste, universal waste, excluded waste, waste water, or solid waste. Prior to commencement of removal, demolition and rehabilitation activities related to ACM or LBP, all applicable permits will be obtained from and notifications be provided to the Federal, State and local permitting and regulatory agencies with jurisdiction over this work. These permits and notifications will be documented in the project files.

A survey would be performed to determine whether ACM, LBP, or both are present. If asbestos is present or suspected, an Asbestos Abatement Plan would be prepared to establish the appropriate protocols for abatement. If LBP is identified, work practices (in accordance with applicable State and Federal regulations) would be implemented before LBP removal to contain debris, control airborne dust, and properly dispose of materials with LBP.

### 3.7 Flora

The following subsections on flora and fauna summarize the findings of a biological resource assessment (SWCA, 2015) and a biological assessment conducted by SWCA (see Appendix C). Biologists with SWCA conducted a field reconnaissance survey of the project area on September 11, 2014. Representative portions of the area were driven or walked, to describe vegetation types and wetlands or streams, as well as known or suspected threatened, endangered, or candidate plant species. No State- or Federally-listed

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2 The plant names used in this assessment follow Wagner et al. (2012), Wagner and Herbst (2013), and Wagner et al. (1999).
threatened, endangered, or candidate plant species were recorded in the survey area. Two Native Hawaiian plants, *aeae* (*Bacopa monnieri*) and *Cyperus polystachyos*, were observed during the survey. These species are indigenous, or found in Hawaii and elsewhere.

### 3.7.1 Existing Conditions

Vegetation in the action area is composed of mowed grasses interspersed with weedy non-native grasses and herbaceous plants, as well as scattered ornamental trees and shrubs. Mowed lawns adjacent to houses and the Kapalama Canal (or Kapalama Stream) consist mainly of swollen fingergrass (*Chloris barbata*), Bermuda grass (*Cynodon dactylon*), wire grass (*Eleusine indica*), and Panama paspalum (*Paspalum fimbriatum*). Non-native herbaceous weeds common in the grassy areas include creeping indigo (*Indigofera spicata*), morning glory (*Ipomoea obscura*), pitted beardgrass (*Bothriochloa pertusa*), Guinea grass (*Urochloa maxima*), buffel grass (*Cenchrus ciliaris*), khaki weed (*Alternanthera pungens*), and spiny amaranth (*Amaranthus spinosus*).

A few large monkeypod trees (*Samanea saman*) and rainbow shower trees (*Cassia x nealiae*) are planted along Kohou Street and Halona Street (see Appendix C). Other ornamental plantings in the survey area include *kou hoale* (*Cordia sebestena*), manila palm (*Veitchia merrillii*), lantana (*Lantana camara*), wedelia (*Sphagneticola trilobata*), and mock orange (*Murraya paniculata*). Sesban tree (*Sesbania grandiflora*) and sweet potato (*Ipomoea batatas*) are planted in a garden in the northern portion of Kokea Street in the survey area. Similar ornamental plants are expected to occur in the larger action area.

Within the canal, hydrophytic plants are present near the northern portion of the action area. These include umbrella sedge (*Cyperus involucratus*), California grass (*Urochloa mutica*), *Cyperus polystachyos*, *Ludwigia octovalvis*, and *aeae*.

### 3.7.2 Potential Impacts and Mitigation Measures

The vegetation types and species identified during the survey are not unique. The two native species observed are indigenous (found in Hawaii and elsewhere) and are common throughout the Hawaiian Islands. No threatened or endangered plants were found. In addition, no designated plant critical habitat occurs nearby. Small areas of landscaping or ruderal vegetation may be temporarily disturbed during construction, along with a few mature trees within the right of way. These areas will be restored following construction to their prior topography and condition. Vegetation disturbed during construction would be replaced as part of the project, to the extent practicable. The final disposition of street trees will be determined during final design, and coordination with HDOT’s landscape architect will be conducted to mitigate the removal of any street tree required by construction. The spread of noxious weeds would be managed through the implementation of BMPs as part of the project. Section 3.8.6 presents requirements for vegetation management to protect wildlife habitat, such as seasonal restrictions for vegetation removal. Therefore, the proposed project is not expected to have a significant adverse impact on botanical resources.

### 3.8 Fauna

SWCA biologists also investigated the fauna within the project area, including the presence of known or suspected threatened, endangered, or candidate wildlife species during the September 11, 2014, field survey (see Appendix C).

#### 3.8.1 Avifauna

The bird species observed in and near the project area are species typically found in Hawaii’s urban areas, gardens, and waterways. In all, 17 bird species were documented: black-crowned night-heron (*Nycticorax nycticorax*), cattle egret (*Bubulcus ibis*), common myna (*Acridotheres tristis*), garganey (*Anas querquedula*), Hawaiian duck–mallard hybrids (*Anas sp.*), house sparrow (*Passer domesticus*), Japanese white-eye (*Zosterops japonicas*), Java sparrow (*Padda ozyxvora*), Pacific golden-plover (*Pluvialis fulva*), red-crested cardinal (*Paroaria 3-11exicana*), red-vented bulbul (*Pycnonotus cafer*), red junglefowl (*Gallus gallus*), rock
pigeon (*Columbia livia*), spotted dove (*Streptopelia chinensis*), wandering tattler (*Tringa incana*), white tern (*Gygis alba*), and zebra dove (*Geopelia striata*).

Two species, the black-crowned night-heron and the white tern, are indigenous to Hawaii and protected by the Migratory Bird Treaty Act (MBTA). Of the 12 non-native species, only the cattle egret and the Hawaiian duck-mallard hybrids are protected by MBTA. The garganey, Pacific golden-plover, and wandering tattler are all MBTA-protected migrant birds.

### 3.8.2 Mammalian Species

#### 3.8.2.1 Hawaiian Hoary Bat

The Hawaiian hoary bat or opeapea (*Casiurus cinereus semotus*), which is Federally and State listed as endangered, is the only native terrestrial mammal species that is still existent within the Hawaiian Islands. A survey specifically for Hawaiian hoary bats was not conducted, but suitable habitat for roosting and foraging was noted during the biological survey. The bats forage in open, wooded, and linear habitats with a wide range of vegetation types. These animals are insectivores and are regularly observed foraging over streams, reservoirs, and wetlands, and up to 300 feet offshore. The stream corridor in the project area is considered suitable bat foraging habitat.

Hawaiian hoary bats typically roost in dense canopy foliage or in the subcanopy when canopy is sparse, with open access for launching into flight. Hawaiian hoary bats could use tree species within the vicinity of the project for foraging and roosting.

#### 3.8.2.2 Other Terrestrial Mammals

Dogs (*Canis familiaris*) and cats (*Felis catus*) were not observed during the biological survey, but are likely to enter the project area. Other mammals that can be expected onsite include mongoose (*Herpestes auropunctatus*), mice (*Mus musculus*) and rats (*Rattus spp.*).

### 3.8.3 Terrestrial Invertebrates

Three species of terrestrial invertebrates were noted during the biological survey. Rambur’s forktailed dragonfly (*Crocothemis servilia*) and Chinese dragonfly (*Crocothemis servilia*) are both non-natives. One native terrestrial invertebrate, Sonoran carpenter bee (*Xylocopa sonorina*), was also observed.

### 3.8.4 Fish

Four fish species were observed in the northern portion of the survey area. Indigenous species observed include striped mullet (*Mugil cephalus*) and great barracuda (*Sphyraena barracuda*) and non-native species included poeciliids (*Gambusia affinis* or *Poecilia 3-12exicana*) and tilapia (*Oreochromis* sp. or *Sarotherodon* sp.).

### 3.8.5 Marine Species

Three marine species — the endangered Hawaiian monk seal, threatened green sea turtle, and endangered Hawksbill sea turtle — are unlikely to occur in the action area because suitable habitat does not exist; thus, these species are not discussed further.

### 3.8.6 Potential Impacts and Mitigation Measures

#### 3.8.6.1 State and Federally listed Species

**Hawaiian Hoary Bats**

This species may roost and forage in monkeypods, rainbow shower trees, *kou haole*, and Manila palms in the project area, or they may forage throughout the area. Direct impacts to bats would occur only if a juvenile bat too small to fly but too large to be carried by a parent were present in a tree that is trimmed or cut down. The possibility of adversely affecting Hawaiian hoary bats as a result of the proposed project is likely small; however, the following measures would be taken to avoid impacts:
• Any fences erected as part of the project will have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat or ‘ōpe‘a‘a (Lasiusurus cinereus semotus) on barbed wire. No fences with barbed wire were observed in the survey area; however, if fences are present, the top strand of barbed wire will be removed or replaced with barbless wire.

• In general, no trees taller than 15 feet (4.6 m) would be trimmed or removed between June 1 and September 15 as a result of this project, when juvenile bats that are not yet capable of flying may be roosting in the trees. However, if a limited number of trees would need to be cleared during that time period, a qualified biologist would use appropriate protocols to surveys for bats before trimming or cutting.

**Monk Seal and Sea Turtles**

• Although not expected to occur within the action area, construction activities would not begin if a monk seal (Neomonachus schauinslandi) or listed sea turtle is in the construction area or within 150 feet (46 m) of the construction area. Construction will only begin after the animal voluntarily leaves the area.

• Workers will not attempt to feed, touch, ride, or otherwise intentionally interact with any monk seals or sea turtles.

**3.8.6.2 Migratory Bird Treaty Act**

SWCA observed three migratory, two indigenous, and two introduced bird species Federally protected under the MBTA during the biological survey: the black-crown night-heron, cattle egret, garganey, Hawaiian duck-mallard hybrids, Pacific golden-plover, wandering tattler, and white tern. The white tern is also listed as a State of Hawaii threatened species. Construction may temporarily displace some of these bird species, but long-term impacts are not expected. These birds (likely limited to a few individuals) are expected to find suitable foraging habitat in nearby areas. The temporary displacement of these individuals at the project site is not expected to affect their survival or the overall species’ populations. The possibility of adversely affecting migratory birds, including the white tern as a result of the proposed project is likely small; however, the following measures would be taken to avoid impacts:

• Tree removal and trimming would be conducted in the fall and early winter, when the breeding rate for the white tern is the lowest.

• Prior to any tree removal, trees would be inspected for white tern eggs or chicks.

**3.8.6.3 Aquatic Resources**

While the type and extent of impacts would depend on the final project design, the following mitigation measures would be implemented to reduce potential impacts to aquatic resources in the area (also see Section 3.3.4):

• Erosion and sediment control measures would be in place before initiating earth-moving activities. Functionality would be maintained throughout the construction period.

• A contingency plan to control toxic materials would be developed.

• All project-related materials and equipment placed in the water would be free of pollutants.

• Fueling of land-based vehicles and equipment would take place at least 50 feet from the water, preferably over an impervious surface.

• Appropriate materials to contain and clean potential spills would be stored at the worksite and be readily available.

• Turbidity and siltation from project-related work would be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather/flow conditions.
• Any soil exposed near water would be protected from erosion and stabilized as soon as practicable.
• Stream channel should be maintained to provide a continuous connection to the ocean during stream flows resulting from heavy rains, to accommodate aquatic species.
• No project-related materials would be stockpiled in the water.
• No contaminants, including trash or debris would be placed in adjacent habitats.

### 3.9 Archaeological Resources

#### 3.9.1 Existing Conditions

The project sits within the central area of the Kapalama *ahupuaa* (traditional land division) along the drainage of Kapalama and Nehelewai streams. Historically, agriculture and habitation were intensive in this area. The project area was historically used for rice cultivation, but habitation within the project area does not seem to have been prevalent.

Traditional Hawaiian land use in adjacent lands consisted of habitation, irrigated taro fields, *kula* (dryland plots used for cultivation and/or pasture), and aquaculture via fishponds. Some uncertainty pertains to a burial ground dating to 1855 on the plains of Kaiwiula, which may have been near the current project area.

By the twentieth century, the coastal and central sections of Kapalama had become suburbs of Honolulu. Much development in Kapalama primarily occurred before archaeological investigation became standard during construction activities, in the late 1970s. As a result, few archaeological studies have been conducted in this area. The only previous projects known within the current project area are projects dealing with H-1. No previously recorded archaeological sites are located within or directly adjacent to the current project area. Historic infrastructure relating to the Halona Street Bridge and the Kapalama Canal are present within the project area.

Archaeological field work was conducted by Cultural Surveys Hawaii archaeologists in September 2014. Two cultural resources were identified during field investigations which are discussed in Section 3.10, Historic Architecture resources. No archaeological resources were identified. Additional detail is provided in the Draft Archaeological Inventory Survey Report in Appendix D.

#### 3.9.2 Potential Impacts and Mitigation Measures

As no archaeological resources were identified within the project area, no impacts to archaeological resources are anticipated as a result of project implementation. As further discussed in Section 3.10, with respect to historic architectural resources, the proposed project would have “no adverse effect” in accordance with Federal regulations (36 CFR 800.5) and “effect, with agreed upon mitigation” in accordance with HAR §13-13-275-7.

No further archaeological fieldwork is proposed for this project. Archaeological monitoring will be conducted for all initial ground disturbance and excavation activities during construction. If cultural resources or human remains were inadvertently discovered during construction, the contractor would comply with State law and administrative rules for handling them.

### 3.10 Historic Architectural Resources

#### 3.10.1 Existing Conditions

The following two historic architectural resources were identified within the project area (see Figure 3-3):

- State Inventory of Historic Properties (SIHP) #50-80-14-7807: Halona Street Bridge
- SIHP #50-80-14-7808: Kapalama Canal and associated lava rock walls

The Halona Street Bridge (SIHP #50-80-14-7807) was built in its present five-span form in 1938 by the City and County of Honolulu. This 1938 construction added two approximately 25-foot spans on each side of the
existing center three spans (each of approximately 16 feet). At the time, the bridge carried Vineyard Street across the canal and was called the Vineyard Street Bridge. The original construction date for the older, three-span bridge is not known, but it is likely to be circa 1930. The existing three-span bridge was lengthened with two additional spans to cross the new canal between its newly built lava rock retaining walls. In 1963, construction of the adjacent H-1 removed about half of the bridge; only the upstream parapet, sidewalk, and two traffic lanes of the 1938 bridge remain.

Construction of the Kapalama Canal and associated lava rock walls (SIHP #50-80-14-7808) was completed in February 1939 as a Works Progress Administration (WPA) project. Planning for the canal dates to the early 1920s, when the potential commercial value of the low-lying land of the Kapalama area was recognized and dredging spoils were used to raise the low-lying land. Along with this filling project, the City and County of Honolulu formed a drainage plan to prevent heavy rains from inundating the new land. This design combined the two streams of the area, Niuhelewai and Kapalama, into the Kapalama Canal, which was routed along the approximate contour of Niuhelewai Stream.

Significance Statement

The Halona Street Bridge is not included in the November 2013 Hawaii State Historic Bridge Inventory and Evaluation by MKE Associates, LLC, and Fung Associates, Inc. It is also not included in the 1983 Historic Bridge Inventory, Island of Oahu, by Bethany Thompson.

The Halona Street Bridge was evaluated by Mason Architects in 2015; a copy of the Historic Inventory Form is contained in Appendix D. Although the Halona Street Bridge is significant under Criterion A for its association with the transportation history of the area, it lacks integrity of its 1938 form. This is because of the circa 1963 removal of the southwestern parapet, reduction of roadway width, and construction of the adjacent H-1. As such, the evaluation of eligibility by Mason Architects is that the Halona Street Bridge is not eligible for listing on the National Register of Historic Places. FHWA is in agreement with the recommendations of Mason Architects and has determined that the Halona Street Bridge (SIHP #50-80-14-7807) lacks integrity and is therefore not eligible for listing on the NRHP.

The Kapalama Canal and its lava rock walls were evaluated by Mason Architects in 2015 as potentially eligible for the National Register of Historic Places under Criterion A for their association with WPA projects in Hawaii and under Criterion C as an example of vernacular building materials. FHWA is in agreement with the recommendations of Mason Architects and has therefore determined that SIHP #50-80-14-7808, the Kapalama Canal and associated lava rock walls is eligible for the NRHP under Criteria A and C.

3.10.2 Potential Impacts and Mitigation Measures

The proposed project would have “no adverse effect” on the Kapalama Canal (SIHP #50-80-14-7808) in accordance with Federal regulations (36 CFR 800.5) and “effect, with agreed upon mitigation commitments” in accordance with HAR §13-13-275-7. The canal’s lava rock lining walls would be retained and protected in place adjacent to the bridge. The removal of the existing bridge superstructure that is in contact with the lava rock lining walls may cause minor and incidental damage to the Kapalama Canal wall on the upstream east and upstream west portions of the bridge abutments. The area in contact with lava rock lining walls is approximately 13 square feet at each location to total 26 square feet. Every effort will be made to not impact the lava rock lining walls. Photos of the lava rock walls will be taken before the start of construction. In the event of cracked mortar or loosened lava rock stones they will be salvaged and replaced and the mortar restored to match the existing condition.

3.11 Cultural Resources

3.11.1 Existing Conditions

Consistent with the requirements of HRS Chapter 343, Cultural Surveys Hawaii conducted a cultural impact assessment (CIA) to evaluate the potential effect of the proposed project on cultural beliefs, practices, and resources. The assessment included archival research of relevant background history, kāao (legends),
traditional *moolelo* (stories), *wahi mana* (strored places), *olelo no'eau* (proverbs), *oli* (chants), *mele* (songs), traditional subsistence and gathering methods, and ritual and ceremonial practices. Ethnographic interviews were also conducted with persons knowledgeable about cultural resources, practices, and beliefs relevant to the study area. Specifically, Cultural Surveys Hawaii conducted three interviews for the project: Jan Becket, Melvin Ishihara and DeSoto Brown. The preliminary findings of the CIA are summarized below; a copy of the Draft CIA is provided in Appendix E.

Based on background research, the primary area of traditional Hawaiian settlement and intensive agriculture within Kapalama seems to have been in the upper valleys, as well as near streams and springs. The project sits within the central area of Kapalama along the drainage of Kapalama and Niuhelewai streams. Historically, agriculture and habitation were intensive in this area. Historically, the area encompassed by the survey area was used for rice cultivation, but immediate habitation within the survey area does not seem to have been prevalent.

Traditional Hawaiian land use indicated in the adjacent land commission awards (LCAs) documentation consisted of habitation, irrigated taro fields (*lo'i*), kula (dryland plots used for cultivation and/or pasture), and aquaculture via fishponds. The majority of kuleana (title) land claims located near the study area were located near the freshwater sources of Kalihi and Niuhelewai streams as they were the most arable sources of land. This is the area described as an uncultivated plain in John Papa Ili's (1959) account of the area in 1810, until you reached “the taro patches of Kalihi.” Major strife is indicated ca. 1782 in the defeat of the Oahu ruling chief Kahahana when the dead backed up the lagoonal backwaters (muliwai) of Niuhelewai Stream—but this may have been well seaward of the study area. Another uncertainty pertains to the indicated ca. 1855 burial ground on the plains of Kaiwiula which may have been near the current study area.

By the twentieth century, the coastal and central sections of Kapalama had become suburbs of Honolulu. Much development in Kapalama primarily occurred before the late 1970s when archaeological investigation became standard during construction activities. As a result, few archaeological studies have been conducted in this area. The only previous projects located within the current study area consist of projects dealing with H-1. No previously recorded archaeological sites are located within or directly adjacent to the current study area. Historic infrastructure relating to the Halona Street Bridge and the Kapalama Canal are anticipated within the study area.

### 3.11.2 Potential Impacts and Mitigation Measures

Based on the preliminary results of the CIA, cultural resources and practices are not expected to be affected by the proposed project. Cultural practices near the proposed project (should any occur) would be temporarily restricted during the construction period for safety reasons. All permitted activities would resume once the improvements have been completed. If cultural resources or human remains were inadvertently discovered during construction, the contractor would comply with State law and administrative rules for handling them.

### 3.12 Population and Demographic Factors

#### 3.12.1 Existing Conditions

As shown in Figure 3-4, the proposed project is located in the Kalihi area within Census Tract 56, Block Groups 1, 2, 3, and 4. The area comprises residential neighborhoods with associated services and development (schools and medical clinics) as well as highway- and travel-related commercial establishments (for example, car dealerships, car repair shops, and restaurants). Approximately 1.7 percent of the regional population (southwestern Honolulu) resides within Census Tract 56. As presented in Table 3-2, between 2000 and 2010, the census block groups surrounding the project area have experienced a moderate growth of 7.6 percent. The neighborhood between H-1 and King Street, west of the project area, experienced the most growth (26.9 percent) between 2000 and 2010. This area contains a large complex of multi-family residences, as well as small single-family residences.
### Table 3-2
Resident Population, Selected Census Block Groups: 2000 and 2010

<table>
<thead>
<tr>
<th>Block Group</th>
<th>Area</th>
<th>2000 Population</th>
<th>2010 Population</th>
<th>Net Change</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census Tract 56, Block Group 1</td>
<td>Kalihi</td>
<td>1,880</td>
<td>2,385</td>
<td>505</td>
<td>26.9%</td>
</tr>
<tr>
<td>Census Tract 56, Block Group 2</td>
<td>Kalihi</td>
<td>2,128</td>
<td>941</td>
<td>-1187^2</td>
<td>-55.8%^2</td>
</tr>
<tr>
<td>Census Tract 56, Block Group 3</td>
<td>Kalihi</td>
<td>2,265</td>
<td>2,354</td>
<td>89</td>
<td>3.9%</td>
</tr>
<tr>
<td>Census Tract 56, Block Group 4</td>
<td>Kalihi</td>
<td>NA^2</td>
<td>1,069</td>
<td>1,069^2</td>
<td>100%^2</td>
</tr>
<tr>
<td>Census Tract 56, Total</td>
<td>Kalihi</td>
<td>6,273</td>
<td>6,749</td>
<td>476</td>
<td>7.6%</td>
</tr>
<tr>
<td>Region</td>
<td>Honolulu CDP^1</td>
<td>371,657</td>
<td>374,359</td>
<td>2,702</td>
<td>0.7%</td>
</tr>
<tr>
<td>County</td>
<td>Honolulu</td>
<td>876,156</td>
<td>953,207</td>
<td>77,051</td>
<td>8.8%</td>
</tr>
</tbody>
</table>

Notes:
1. Census-designated place: The U.S. Census Bureau divides Honolulu County into several CDPs for statistical purposes. The project area is located within the Honolulu CDP—a area of 68 square miles that includes downtown Honolulu.
2. The 2000 census originally divided Census Tract 56 into three block groups; the 2010 census redistributed the population into 4 census block groups, with much of the population from Block Group 2 being divided between Block Group 2 and Block Group 4. This accounts for the seeming decrease in population in Block Group 2 and increase in population in Block Group 4 between 2000 and 2010.

CDP = census-designated place

**Environmental Justice.** Data from the U.S. Census Bureau (2009-2014 American Community Survey 5-Year Estimates) (2015) indicates that both minority and low-income populations surround the project limits. The 27 census blocks surrounding the project limits all contain greater than 90 percent minority populations, which compares to 80.9 percent minority populations for Honolulu County overall. The largest minority group adjacent to the project limits are Asian (79 percent). This is followed by Native Hawaiian and Other Pacific Islander, at approximately 7 percent.

Of the four block groups that surround the project limits, two contain low-income populations (defined as households for which reported income was below poverty level in the past 12 months). In the neighborhood south of Kokea Street and mauka of Halona Street, 42 percent of households reported an income below poverty level. In the neighborhood north of Kohou Street and mauka of Halona Street, 13 percent of households reported an income below poverty level. This is compared to 9.8 percent of households in Honolulu County overall.

#### 3.12.2 Potential Impacts and Mitigation Measures

The proposed project would replace the existing Halona Street Bridge with no change in the carrying capacity of the structure. Therefore, the project is not expected to affect the number of area residents or demographic characteristics. However, the urbanized nature of the project area supports the need to maintain the Kapalama Canal crossing on Halona Street as a safe and functional component of the regional transportation system for local residents and highway users. Pedestrians and bicyclists would benefit from safety improvements, such as the additional shoulders on both sides of the bridge and reconstructed guardrail.

Construction impacts (fugitive dust, noise, and temporary detours and traffic delays), would be unavoidable, but would be temporary and minimized with the implementation of mitigation measures and BMPs described in Section 3.2, Climate and Air Quality, Section 3.5, Noise, and Section 3.16, Roads and Traffic. Access to residences and businesses would be maintained throughout construction. Section 3.16, Roads and Traffic, details detour routes for highway, local, and bicycle and pedestrian traffic.
Environmental Justice. The proposed project is not expected to result in disproportionately high and adverse effects to minority or low-income populations. The project would not result in the displacement of any residences, businesses, or community resources.

Although construction-related impacts (for example, detour routes, noise, and fugitive dust) would be greatest in the minority and low-income neighborhoods adjacent to the project limits, impacts would be short-term in duration and would be minimized with the implementation of the BMPs described in Section 3.2, Climate and Air Quality, Section 3.5, Noise, and Section 3.16, Roads and Traffic. Construction impacts would also be off-set by the long-term benefits associated with the project improvements, such as improving conditions for pedestrians and bicyclists and maintaining Halona Street Bridge as a safe and functional element of the transportation system.

Based on the above discussion and analysis, the proposed project would not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of Executive Order 12898 and FHWA Order 6640.23. No further environmental justice analysis is required.

3.13 Economic and Fiscal Resources

3.13.1 Existing Conditions

Honolulu serves as the major business and trading center for the Hawaiian Islands. Honolulu Harbor handles cargo for several international steamship companies and is within a successful Foreign Trade Zone. Other elements of Honolulu’s economic base include tourism, military defense, research and development, and manufacturing. Pearl Harbor Naval Shipyard, Marine Corps Base Hawaii in Kaneohe, and the U.S. Army’s Schofield Barracks provide continuous revenue to the region. As the home of the University of Hawaii at Manoa, Honolulu is a center for research and development, especially in the areas of oceanography, astrophysics, geophysics, and biomedicine. The City and County of Honolulu also contains many commercial, industrial, and retail properties. Diversified agriculture (for example, aquaculture) has grown in recent years as the closure of sugar plantations has opened up land for productive use as well as conversion to residential and commercial development.

The Halona Street Bridge Project is located in the Kalihi-Palama community, one of the first areas to be developed on Oahu. In 2004, the City and County of Honolulu adopted an Action Plan for the revitalization of the area (see Section 3.15). The Kalihi-Palama area contains a large industrial area, Honolulu Harbor, and many small businesses. The area also has three hospitals, the Oahu Community Correctional Center, and the Honolulu Community College. Approximately 50 percent of Oahu’s public housing stock is located in Kalihi-Palama.

According to the U.S. Bureau of Labor Statistics’ Honolulu Economic Summary (2015), the largest industries in terms of jobs are government (97,800); trade, transportation, and utilities (84,700); leisure and hospitality (69,800); professional and business services (66,500); and education and health services (63,100) (U.S. Bureau of Labor Statistics, 2015). Median household income for the period 2009 and 2013 was $72,764 (U.S. Census Bureau, 2015).

The national economic recession of the late 2000s had a ripple effect on tourism. However, economic conditions have since improved and the unemployment rate for the Honolulu area in June 2015 is 4.1 percent, compared to a 4.1 percent unemployment rate statewide and 5.5 percent nationwide.

3.13.2 Potential Impacts and Mitigation Measures

3.13.2.1 Economic Impacts

The proposed project is anticipated to have several types of economic impacts. One type is construction-related employment and income. With a preliminary estimated cost of $4.58 million, the project is expected to support a number of construction workers for the duration of the project (approximately 7 months). Unless the economy expands significantly and existing firms are working at full capacity, this project is more likely to help sustain existing employment and income levels than to create new jobs. However, because a
portion of project funds are coming from (Federal) sources outside the region, wages paid to workers on this project (direct income), payments to suppliers (indirect income), and their subsequent expenditures (induced income) would have positive cumulative impact as monies circulate through the local economy.

3.13.2.2 Fiscal Impacts

Public funds are needed for long-term operations and maintenance of all bridge structures. In the case of the Halona Street Bridge, the existing structure has exceeded its normal lifespan. Replacing the bridge would allow HDOT to extend the timeframe for major bridge repair. Design improvements would reduce ongoing maintenance costs. These changes would provide long-term fiscal benefits to HDOT.

3.14 Visual and Aesthetic Resources

3.14.1 Existing Conditions

The bridge is located in a densely developed area consisting mostly of residential structures, but with some commercial development as well. Because the topography of the project site and its immediate vicinity is flat, the bridge’s viewshed is relatively limited. The flat terrain, combined with the density of nearby urban development, limits the distance from which the bridge is visible to at most only several hundred feet in any direction away from it. However, a relatively large number of people view the bridge, given that it is located in a dense urban neighborhood.

3.14.2 Potential Impacts and Mitigation Measures

The proposed project would involve replacement of the entire bridge to meet current design standards for roadway width, load capacity, pedestrian and bicycle traffic, bridge railing and transitions, and bridge approaches, all of which would alter the visual appearance of the project site. Although the proposed project would result in visual changes to the site, as shown in the visual simulation in Figure 3-5, features of the new bridge would be substantially similar in character to the existing structures. From the vantage point shown in the simulation, the new bridge railing and girder structures would be the most noticeable change compared to existing conditions. The new railing and girder structure design would resemble the character of the existing structures. Other project features, such as lane width alterations, road shoulder establishment, and sidewalk modifications would be even less noticeable compared to existing conditions than the more visually apparent railing and girders.

The project would not result in a substantial change to the existing landscape or result in a noticeable change to the project viewshed, because the changes would be minimal and because the project site is not highly visible from areas outside the project site’s immediate vicinity.

The project could result in temporary visual impacts during the construction period as a result of dust, heavy equipment at the project site, and additional vehicles traveling throughout construction areas. However, these impacts would be considered less than significant because they would be minimal and temporary.

3.15 Land Use and Right-of-Way

3.15.1 Existing Conditions

The Kapalama Canal, a realigned channel receiving flow from Kapalama Stream, is owned and maintained by the City and County of Honolulu and runs through the project limits under Halona Street Bridge.

The State of Hawaii Land Use Commission has classified land within and adjacent to the project in the Urban District, and it is zoned R-5 Residential by the City and County of Honolulu. Several schools, small parks, businesses, and other community resources are also located along H-1 and Halona Street within 0.5 mile of the project limits. Land uses surrounding the project limits are shown in Figure 2-2.

The existing right-of-way on Halona Street Bridge and associated approaches is 60 feet, as measured between the guardrail or edge of the existing sidewalk on the mauka side of the bridge and the H-1 guardrail on the makai side of the bridge.
3.15.2 Potential Impacts and Mitigation Measures
The project involves the replacement of an existing structure within the existing HDOT right-of-way; no change to land use or zoning designations would be required. Approximately 0.44 acre of land would be needed from four construction parcels (temporary easements) to accommodate bridge construction and paving improvements. This would temporarily affect three property owners: the owner (City and County of Honolulu) of the Kapalama Canal and the owner of the outfall on the makai side of the Olomea Street Bridge. The TMKs associated with these parcels are shown in Figure 2-8 and Figure 2-9. Construction parcels would be coordinated through HDOT. No additional permanent easements for maintenance and operation are needed.

3.16 Roads and Traffic
3.16.1 Vehicular Traffic
Halona Street is classified as a Principal Urban Arterial and is adjacent to the H-1 between the on-ramp from Vineyard Boulevard and the off-ramp to Houghtailing Street. It is a two-lane roadway with one-way traffic in the westbound direction and a posted speed of 30 mph at the project location. Traffic data collected for the project indicate that traffic volumes currently average 3,900 vehicles per day (weekday average daily volume); this is projected to increase to 5,900 vehicles per day in the 2036 design year (CH2M, 2015).

3.16.2 Bicycle and Pedestrian Traffic
The existing Halona Street Bridge provides a 7-foot-wide sidewalk for pedestrian and bicycle access along the northern (makua) side of the bridge. Pedestrian and bicycle count information collected in 2015 identified 98 pedestrians and 24 bicyclists in the project limits on weekdays between 6 am and 5 pm. On weekends, during the same time period, 52 pedestrians and 25 bicyclists were identified. Pedestrians and bicyclists travel both northbound and southbound across the Halona Street Bridge.

3.16.3 Potential Impacts and Mitigation Measures

**Short-term Construction-related Impacts.** Short-term impacts include minor changes to traffic patterns, traffic volume, and travel times during construction. Redirecting traffic from Halona Street to detour roads may cause minor disruptions in normal traffic patterns. The arrival and departure of construction crews and the periodic movement of construction vehicles and materials for staging may cause short-term increases in traffic volume and the traffic delays.

Construction is expected to extend over 7 months, with Halona Street Bridge closed to normal traffic for the duration of the project. Halona Street is one-way in the westbound direction; residential neighborhoods along Kokea Street and Kohou Street would need access maintained during both bridge and intersection closures (affecting the Halona/Kokea Street and the Halona/Kohou Street intersections). Detour routes have been developed to address access needs for local and highway traffic. Detour routes are presented in detail in Section 2.3.2.1, Traffic Control and Detours. Detour routes for local and highway traffic are depicted in Figure 2-5 and Figure 2-6.

While vehicular traffic is proposed to be detoured along local street routes because of the available travel access, pedestrian and bicyclist access would be maintained across Kapalama Canal during construction. Pedestrians and bicyclists would use either Kokea Street or Kohou Street to cross over Halona Street and then cross the canal in a temporary pedestrian route within the existing landscaped area between the construction work and H-1. This temporary route would accommodate a 6-foot-wide pedestrian path with a barrier on both sides of the path to protect pedestrians and bicyclists, as described in Section 2.3.2.1, Traffic Control and Detours, and depicted in Figure 2-7.

Seven properties (six residences and the Queen Liliuokalani Children’s Center) have private driveways that front Halona Street between Kohou Street and the H-1 off-ramp. Access to these properties would be maintained during construction by barricading Halona Street Bridge, keeping the Houghtailing Street off-ramp open, and directing traffic onto Kohou Street. Travel time delays would ultimately depend on the
destination but are expected to be minimal using a combination of H-1, North School Street, and the detour routes described in Chapter 2.

**Traffic Control.** A traffic management plan would be developed by the Contractor before construction and would be submitted to HDOT and FHWA for review and approval. Components of the traffic plan may include public notices and electronic signboards to inform motorists about the work schedule and to help with travel planning. All temporary signs, signals, and pavement markings would conform to standards contained in the Manual on Uniform Traffic Control Devices issued by FHWA.

**Long-term Transportation and Circulation Impacts.** The long-term impacts of the proposed project are anticipated to be beneficial, as Halona Street Bridge would be constructed to current AASHTO and HDOT guidelines.

### 3.17 Parks and Recreation Facilities

No established parks or recreational properties are located within the project limits. The two parks closest to the project site are Peter Buck Mini Park (located on H-1 and Houghtailing Street) and the Loi Kalo Mini Park (located along Kohou Street, east of Pohaku Street). Access to both parks would be maintained throughout construction.

No lands acquired or developed with grants from the Land and Water Conservation Fund Act of 1965 are located within the project limits.

### 3.18 Public Health and Safety

#### 3.18.1 Police Services

The Honolulu Police Department’s jurisdiction encompasses the entire island of Oahu and is divided into eight patrol districts. The project area is located within the Kalihi District, which covers the area from Aliamanu to the Pali Highway (west to east) and from the rim of the Koolau Range to the central southeastern shoreline of Oahu (north to south). The district station is located at 1865 Kamehameha IV Road, approximately 2 miles from the project site.

#### 3.18.2 Fire and Emergency Medical Services

The Honolulu Fire Department is divided into five battalions containing 45 fire stations across the entire island of Oahu. The two stations located the closest to the project area are at 115 Wyllie Street (approximately 1.3 miles away) and 104 S. Beretania Street (approximately 1.2 miles away) in Honolulu.

Emergency medical services are provided by the Honolulu Emergency Services Department. The City and County of Honolulu has 20 ambulance units and 2 Rapid Response Vehicles under two districts. The project area is located in District 1, with nearby ambulance services being provided from The Queen’s Medical Center (1301 Punchbowl Street, Honolulu) and Kuakini Medical Center (347 N. Kuakini Street, Honolulu).

#### 3.18.3 Potential Impacts and Mitigation Measures

Halona Street is considered an arterial roadway and does not serve as a primary route for emergency service providers. Access to all adjacent properties would be maintained during construction and detour routes would be put in place which would accommodate emergency service providers, thereby resulting in no adverse impact to public health and safety. The Contractor would be required to make provisions for emergency access. Emergency services, including police, fire, and ambulance services, would be notified before implementation of any required roadway closures or detours.

Halona Street Bridge would be constructed to current AASHTO and HDOT guidelines, increasing reliability for emergency service providers.
3.19 Public Utilities and Services

3.19.1 Existing Conditions

3.19.1.1 Water and Wastewater Systems

The BWS provides water service throughout the island. Water lines are generally located in rights-of-way and distribute potable water for domestic, industrial, and commercial consumption and for fire protection. A 12-inch distribution water line is hung under the bridge inside the girders. There is also a 42-inch transmission waterline buried on the mauka side of the bridge that runs in the east-west direction, feeding into smaller distribution lines to provide water to the surrounding communities.

The County’s wastewater management system is managed by the Department of Environmental Services. Wastewater generated on Oahu is processed by one of nine wastewater treatment plants, which are spread over the island and either owned or operated by the City and County of Honolulu. There are no sewer lines or treatment facilities in the project area.

3.19.1.2 Solid Waste Management

The County’s solid waste management system is managed by the Department of Environmental Services. There is one municipal landfill on Oahu, Waimanalo Gulch Landfill, located in Kapolei. The City and County of Honolulu owns the landfill, but contracts the management and operation of the site with Waste Management of Hawaii. The County is currently evaluating options for expansion of the landfill in an Environmental Impact Statement. One additional landfill is privately owned by PVT Land Company, Ltd., and is designated specifically for construction and demolition waste.

3.19.1.3 Gas, Electrical and Telecommunications Systems

Hawaii Gas operates a 2-inch gas line through the project limits. The gas line is hung under the bridge inside the girders.

HECO overhead power lines run along the east side of the road both north and south of Halona Street Bridge, but do not cross over the canal. An electric line is located along Halona Street, adjacent to H-1. HDOT has installed two light poles on each of the mauka corners of the Halona Street Bridge.

Hawaiian Telcom provides land-line telecommunications service to customers on the island. There is no infrastructure on or parallel to Halona Street Bridge. Oceanic Time Warner Cable provides wired cable television service to customers on the island. There is no infrastructure on or parallel to Halona Street Bridge.

3.19.2 Potential Impacts and Mitigation Measures

Solid-waste impacts are expected to be short-term and related to construction activities. Removing the existing bridge would generate debris consisting primarily of concrete slabs, asphalt pavement, and metal guardrails, posts, and fastenings. The Contractor would be required to dispose of or recycle all materials at approved sites and with proper handling during transport. The Contractor would be required to have a waste disposal plan that specifies proper removal and disposal of all debris from the project area. Project-related waste material would be a small proportion of the island-wide total, and is not expected to have a significant impact on the County’s solid waste facilities. The proposed project would not generate any demand for water or wastewater disposal. Water and gas lines that run under the bridge would need to be relocated during construction. The project sponsor and designers are coordinating with affected utility companies for temporary relocation and long-term disposition of utility lines. It is anticipated that a portion of the existing bridge immediately adjacent to H-1 would remain open during construction to temporarily accommodate utilities. This open portion of the bridge would allow for a 4-foot-wide corridor for temporary utility replacement. This project would not adversely impact utilities, as service for all utilities would be maintained during and after construction.
3.20 Secondary and Cumulative Impacts

3.20.1 Secondary Impacts

Secondary impacts, or indirect effects, are effects that are caused by an action and are later in time or farther removed from distance, but are still reasonably foreseeable. Such efforts may include growth-inducing impacts and other effects related to changes in land use patterns, population density, or growth rate, and related effects on air, water, and other natural systems. The proposed project is expected to have minimal secondary impacts on resident population, land use patterns, public facilities and infrastructure, and the natural environment.

Construction of the proposed project is expected to generate only minor short-term impacts. Creation of short-term construction jobs is not expected to generate a substantial number of workers. It is anticipated that local contractors on Oahu or within the State of Hawaii would likely be used for construction of the proposed project. These workers would thus have minimal, if any, effect on the County’s residential population or housing demand.

The proposed improvements are needed to make the roadway and bridge safe to drive. The improvements would not increase the use of the bridge or corridor and would not generate substantial secondary effects increasing infrastructure demands, necessitating offsite improvements, constraining public facilities, or influencing population growth.

3.20.2 Cumulative Impacts

Cumulative impacts are effects on the environment that result from the incremental impact of a project when added to past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

The project area is located in urban Honolulu. Most of the urbanization within the project area occurred before the late 1970s, after the construction of Kapalama Canal. The channelization of Kapalama Stream resulted in a shift in land use patterns, with urbanization replacing primarily agricultural development. More recently, development activity in the area has focused on transportation improvements and the redevelopment of existing parcels.

As described in Section 2.1.2, Other Nearby State and County Projects, existing and planned transportation projects in the vicinity of the project include roadway resurfacing and rehabilitation projects. Most of these projects are in the planning phases and are expected to be constructed in 2017 or later.

The project area is highly urbanized and has been for over 50 years. As a result of the limited scope of the project and the existing development constraints, the project would not result in any changes to land use patterns or redevelopment activities. The proposed project is not expected to measurably impact water quality, biological resources, or cultural resources; short-term construction impacts (for example, because of increased dust, erosion, and noise) would be minimized with the implementation of BMPs during construction. In conjunction with other planned projects (see Section 2.1.2), the proposed project could result in minor, localized cumulative short-term construction impacts. There are no negative long-term socioeconomic impacts anticipated, as access to residences or businesses would be maintained during construction and there would be no property displacements. Construction-related impacts to the surrounding communities would not be exacerbated by the transportation projects planned in the area, because there would be adequate time between construction for each project, inconveniences would be short in duration, and detours would be provided. Overall, the project would benefit the general population (including minority and low-income residents) by improving conditions for pedestrians and bicyclists and maintaining Halona Street Bridge as a safe and functional element of the transportation system.
3.21 References


FIGURE 3-1
Soils
Halona Street Bridge Project
Hawaii Bridges Program – Central Federal Lands Highway Division and Hawaii Department of Transportation

Data Source: NRCS, Web Soil, Survey Geographic Database (SSURGO), 2015

LEGEND
- EmA, Ewa Silty Clay Loam, Moderately Shallow, 0 to 2 percent slopes
- FL, Fill Land, Mixed
- HnA, Hanalei Silty Clay Loam, 0 to 2 percent slopes
- KaB, Kaena Clay, 2 to 6 percent slopes
- KlaB, Kawaihapai Stony Clay Loam, 2 to 6 percent slopes
- W, Water

Approximate scale in miles
North
FIGURE 3-2
Waters of the U.S. - Halona Bridge Project
Hawaii Bridges Program – Central Federal Lands Highway Division and Hawaii Department of Transportation

LEGEND
- Permanent Impact Area
- Temporary Impact Area
- Waters of the U.S.
- Waters of the U.S. within the Project Area

Notes:
1. High-Res Imagery Source: Google Earth 12/16/2013
2. Low-Res Imagery Source: Digital Globe 08/26/2011
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.
FIGURE 3-3
Cultural Resources
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation
FIGURE 3-4
Demographic Characteristics
(Minority/Low-Income Populations)
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation


LEGEND
- Census Tract 56
- Census Block Groups

North
Approximate scale in miles
The plans and policies relating to the proposed project range from broad program guidance to land use controls governing the project site. Construction of the proposed improvements is consistent with the various plans, policies, and regulatory controls, as discussed herein.

4.1 Federal

The proposed project would include the use of Federal funds through FHWA. As a result, the proposed project needs to be consistent with various Federal statutory and regulatory requirements.

4.1.1 National Environmental Policy Act of 1970

The proposed project would be partially funded by FHWA; this Federal funding subjects the project to the environmental review requirements of NEPA, prescribed under 40 CFR Parts 1500 – 1508 (Council on Environmental Quality [CEQ]). FHWA serves as the lead Federal agency, or Administrator, responsible for the project’s compliance with NEPA documentation and processing requirements, as provided in 23 CFR 771, Environmental Impact and Related Procedures.

The NEPA determination of impact significance is related to the type of document and process required to comply with NEPA for a proposed project. There are three types of environmental documents under NEPA: (1) Categorical Exclusion (CE), (2) EA, and (3) EIS. A CE is appropriate where there are no significant impacts on the environment, an EA when the significance of the effects are not clearly established, and an EIS when the action would have a significant impact on the environment.

Significance is defined in the CEQ regulations (40 CFR 1508.27). A “significant impact” is assessed in terms of an impact’s “context” and “intensity.” Context refers to the environment and the level of relative abundance of resources in the project area. Intensity refers to the specific impact, or how much of the resource(s) would be used or affected by the project.

FHWA Regulations for Environmental Impact and Related Procedures (23 CFR 771.117(a)) specify that CEs are actions that meet the definition contained in 40 CFR 1508.4 and act as follows:

- Do not induce significant impacts to planned growth or land use for the area
- Do not require the relocation of significant numbers of people
- Do not have a significant impact on any natural, cultural, recreational, historic, or other resources
- Do not involve significant air, noise, or water quality impacts
- Do not have significant impacts on travel pattern
- Do not otherwise, either individually or cumulatively, have any significant impacts

Specific actions that meet these criteria are listed in 23 CFR 771.117(c)). This list includes “bridge rehabilitation, construction or replacement or construction of grade separation to replace existing at-grade railroad crossings” (23 CFR 771.117(c)(28)).

Consistent with its regulations for NEPA compliance, and as further justified by the findings of this EA, FHWA anticipates issuing a CE for this project.

4.1.2 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 National Register of Historic Places. 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. Findings relating to historic properties are discussed in Sections 3.9 and 3.10 of this document.

The Section 106 review process encompasses “good faith effort” in ascertaining the existence and location of historic properties near and within the project site, establishing an Area of Potential Effects (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 State Historic Preservation Officer (SHPO), and consulting government agencies, community associations, and Native Hawaiian organizations and families.

Meetings were held with the SHPD on September 9, 2014, December 10, 2014, and March 12, 2015 to provide an overview of the CFLHD Hawaii Bridge Program, discuss the general parameters for historic preservation review, and discuss the preliminary design plans and possible effects and mitigation. A legal notice requesting public input to the Section 106 process was published in the Honolulu Star Advertiser on July 20, 2015. Letters were also sent to potential consulting parties. A letter formally initiating the Section 106 consultation process was sent to the SHPO (dated January 12, 2016). This letter also included a description of the APE, determination of eligibility, and determination of effects.

Copies of the documents related to the Section 106 consultation process are provided in Appendix D. Consultation on the project will continue through project development and be completed by FHWA before its project approval.

4.1.3 Section 4(f) of the Department of Transportation Act of 1966

Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 303 and 23 U.S.C. 138) permits the use of publicly-owned park land, recreational area, wildlife and waterfowl refuge, or land of an historic site of National, State, or local significance for a transportation project only if (1) there is no prudent and feasible alternative to using that land and (2) the project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use. The purpose of Section 4(f) requirements is to preserve significant parkland recreation areas, refuges, and historic and archaeological sites by limiting the circumstances where such land can be used for transportation projects.

Kapalama Canal and the associated lava rock walls (SHIP # 50-80-14-7808) are eligible for the National Register of Historic Places and therefore qualify as a Section 4(f) property. FHWA anticipates a de minimis impact finding for this property.

4.1.4 Uniform Relocation Assistance and Real Property Acquisition Act of 1970

The Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (42 U.S.C. 4601 et seq. and 49 CFR 24), as amended by the Uniform Relocation Act Amendments of 1987 is commonly referred to as the “Uniform Act.” The Uniform Act provides important protection and assistance for people affected by Federally-funded projects. The law was enacted by Congress to ensure that people whose real property is acquired, or who move as a result of projects receiving Federal funds, will be treated equitably and will receive assistance in moving from the property they occupy.

This project involves the replacement of an existing structure within the existing HDOT right-of-way. Approximately 0.44 acre of land would be needed from four temporary construction parcels to accommodate bridge construction and paving improvements. This would temporarily affect two property owners: the owner (City and County of Honolulu) of the Kapalama Canal and the owner of the outfall on the makai side of the Olomea Street Bridge. Construction parcels will be coordinated through HDOT. No additional permanent easements for maintenance and operation are needed.

4.1.5 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. It 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. Section 7 of the ESA requires consultations with Federal wildlife management agencies, such as the USFWS and NMFS.

To begin consultations with agencies that have authority over protected species, CFLHD sent a letter requesting a list of threatened and endangered species, candidate species, plants and animals of concern, and critical habitats in the vicinity of the proposed bridge project. USFWS responded by letter dated December 22, 2014, providing the location-specific biological information and recommended standard BMPs. Discussions continued through meetings held with the USACE on December 11, 2014 and with USFWS, USEPA, NMFS, and DLNR Division of Aquatic Resources on March 13, 2015.

A Biological Assessment was prepared for the Halona Street Bridge Project (see Appendix C) and was submitted as part of the informal Section 7 consultation process on February 2, 2016 (see Appendix C).

4.1.6 Migratory Bird Treaty Act

The 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, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the U.S. Department of the Interior.

The proposed project is not expected to affect migratory birds. Three migratory, two indigenous, and two introduced bird species protected under the MBTA were observed during the biological survey as described in Section 3.8. Construction may temporarily displace foraging for some of these bird species, but long-term impacts are not expected. These birds (likely limited to a few individuals) are expected to find suitable foraging habitat in nearby areas. The temporary displacement of these individuals at the project site is not expected to affect their survival or the overall species’ populations. The possibility of adversely affecting migratory birds, including the white tern as a result of the proposed project, is likely small. With the implementation of mitigation described in Section 3.8, impacts to MBTA-protected species would be avoided.

4.1.7 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-667e) calls for conservation of wildlife resources related to projects where the “waters of any stream or other body of water” are impounded, diverted, or modified by any agency under a Federal permit or license. The law requires consultation with USFWS and State fish and wildlife agencies for the purpose of “preventing loss of and damage to wildlife resources.”

Consultation related to the FWCA is occurring as part of ongoing coordination with resource agencies.

4.1.8 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)), as amended, establishes provisions relative to Essential Fish Habitat (EFH), to identify and protect important habitats for federally managed marine and anadromous fish species. EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, and/or growth to maturity. “Waters” include aquatic areas and their associated physical, chemical, and biological properties used by fish and may include areas historically used by fish where appropriate. “Substrate” includes sediment, hard bottom, and structures underlying the waters and associated biological communities. Federal agencies which fund, permit, or undertake activities that may adversely affect EFH (including actions outside EFH, such as upstream/upslope activities) are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond to NMFS recommendations. An adverse effect is defined as any impact that reduces quality and/or quantity of EFH, including direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, species and their habitat, and other ecosystem components.
The extent of impacts associated with the proposed project with the potential to affect EFH are limited to the transport of sediment and/or pollutants via live water. Kapalama Stream is a low gradient waterway that exhibits high levels of turbidity under existing conditions and likely transports high sediment loads from the higher/steeper elevations in the drainage (See Section 4, Affected Environment in Appendix C). BMPs and other methods (described in Sections 3.3.4 and 3.8.6) would reduce the extent to which sediment disturbed as a result of construction would be transferred to live water. As a result, water quality impacts would be minimized such that they would not be expected to adversely affect downstream waters and construction-related turbidity would dissipate quickly. Designated EFH in the project vicinity is well downstream of the extent that any sediment impacts would be anticipated to extend. In turn, the proposed project would have no effect on EFH “waters.” Furthermore, no groundbreaking disturbance would occur in areas designated as EFH and hence no EFH “substrate” would be affected. Overall, the project would not adversely affect EFH and per NMFS (2004) EFH consultation guidance, no consultation is required. However, these findings would be shared with NMFS through the project’s ongoing coordination with the agency.

### 4.1.9 Clean Water Act of 1972

The Federal Water Pollution Control Act (FWPCA) (33 U.S.C. §§1251 et seq.), is the Federal statute regulating the discharge of water pollution. Congress revised the FWPCA into the CWA in 1972. The goals of the CWA include: (1) “the discharge of pollution into the navigable waters be eliminated by 1985,” (2) “the discharge of toxic pollutants in toxic amounts be prohibited,” and (3) an “interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and... recreation in and on the water... by July 1, 1983” (CWA §101a and 33 U.S.C. §1251a).

Section 404 of the CWA regulates discharge of dredge and fill material in the Waters of the U.S., including wetlands, and requires a Department of the Army permit from the USACE. Section 401 of the CWA directs States to establish water quality certification (WQC) programs; in Hawaii, the Section 401 WQC is administered by the HDOH, Clean Water Branch. The project would result in a discharge to Waters of the U.S. regulated under Section 404. As such, the project will require a Section 404 Department of Army Permit and Section 401 WQC.

Section 402 of the CWA requires an NPDES permit for point source discharges, including storm water discharges associated with construction activities. The permit is required for construction activities that disturb 1 acre or more and discharge storm water from the project site to waters of the U.S. The project is expected to require an NPDES permit.

### 4.1.10 Clean Air Act of 1970

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 USEPA to establish National Ambient Air Quality Standards to protect public health and the environment. Pursuant to the CAA and amendments, State-operated permit programs serve to control emissions. In Hawaii, 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.

The purpose of this project is to improve Halona Street Bridge and its approaches to maintain the Kapalama Canal crossing on Halona Street as a safe and functional component of the regional transportation system for highway users by constructing a replacement bridge that meets current standards for roadway width, load capacity, pedestrian/bicycle traffic, bridge railing and transitions, bridge approaches, and seismic standards. This project has been determined to generate minimal air quality impacts for CAA criteria pollutants (discussed in Section 3.6 of this document) and has not been linked with any special MSAT concerns. As such, this project would not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts of the project from that of the no-build alternative.
Moreover, the USEPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline over the next several decades. Based on regulations now in effect, an analysis of national trends with the USEPA’s MOVES model forecasts a combined reduction of over 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 100 percent. This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project (FHWA, 2012).

4.1.11 Rivers and Harbors Act of 1899

The River and Harbor Act of 1899 (33 U.S.C. 401 et. seq.) requires that the Secretary of the Army issue permits for various activities to protect navigable and tidally influenced waterways.

Section 9 of the Act requires authorization from USACE before construction of a bridge, dam, dike, or causeway over or in navigable waterways of the U.S. It requires that any agency planning to construct or modify a bridge apply for a Coast Guard bridge permit. Per correspondence dated December 18, 2015, from Lt. Rysa Miller, the U.S. Coast Guard District 14, Waterways Management Office determined that no action or permit is required from the U.S. Coast Guard.

Section 10 of the Act requires authorization from USACE before construction of any structure over, excavation from, or disposal of materials into navigable waters. Structures or work outside the limits defined for navigable waters of the U.S. require a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The reach of the Kapalama Canal within the project area is tidally influenced and may be considered navigable, such that Section 10 authorization is expected to be required.

4.1.12 Floodplain Management, Executive Orders 11988 and 12148

Executive Order 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. Executive Order 12148, July 20, 1979, amended Executive Order 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 National Flood Insurance Program.

The proposed project crosses the Kapalama Canal. According to FIRM Community Panel Number 15003C0354G (effective January 19, 2011), the Halona Street Bridge is not located within a regulated floodplain. The project site is located in “Zone X,” which is defined as an area determined to be outside the 0.2 percent annual chance floodplain.

4.1.13 Protection of Wetlands, Executive Order 11990

Executive Order 11990, Protection of Wetlands, dated 1977 requires Federal agencies to avoid, preserve, or mitigate effects of new construction projects on lands that have been designated wetlands.

No wetlands were identified within the survey area, therefore the proposed project would not impact wetlands.

4.1.14 Invasive Species, Executive Order 13112

Executive Order 13112 (64 Federal Register 6183), issued in 1999, requires Federal agencies to implement policies to minimize the spread of invasive species. Federal agencies cannot authorize, fund, or carry out action(s) likely to cause or promote the introduction of spread of invasive species unless all reasonable measures to minimize risk have been analyzed or considered.

Vegetation disturbed during construction would be replaced as part of the project and the spread of noxious weeds would be managed through the implementation of BMPs as part of the project.
4.1.15 Coastal Zone Management Act (16 U.S.C. §1456 (C) (1))

In 1972, the U.S. Congress enacted the Federal Coastal Zone Management Act to ensure that each Federal agency undertaking an activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone will be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs. Each Federal agency carrying out an activity subject to the Act will provide a consistency determination to the relevant State agency designated under Section 1455(d)(6) of this title at the earliest practicable time.

The State administers the enforcement of this Act under the Hawaii Coastal Zone Management (CZM) Program (HRS Chapter 205A), and therefore, the discussion of the project’s consistency with CZM objectives is discussed in Section 4.2.4.

4.1.16 Environmental Justice, Executive Order 12898

Executive Order 12898, Environmental Justice, was signed on February 11, 1994. The intent of Executive Order 12898 (full title: Federal Actions to Address Environmental Justice to Minority and Low Income Populations) is to avoid disproportionately high adverse human health or environmental effects of projects on minority and low-income populations. Executive Order 12898 also requires Federal agencies ensure that minority and low-income communities have adequate access to public information related to health and the environment.

Guidance from the CEQ indicate minority populations would be identified where either (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage of the general population. Minorities are defined as members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. U.S Census Bureau poverty status data are used to identify low-income populations. Poverty status is assigned to individuals and families whose income is below the poverty threshold appropriate for that person’s family size and composition, as reported in the U.S. Census Bureau, 2010 Census of Population and Housing (U.S. Census Bureau, 2010).

Data from the U.S. Census (2009-2013 American Community Survey 5-Year Estimates) (U.S. Census Bureau, 2014) (indicates that both minority and low-income populations surround the project limits. In the 27 census blocks surrounding the project limits all contain minority populations greater than 90 percent. This is compared to approximately 81 percent minority for Honolulu County overall. Of the four block groups that surround the project limits, two contain low-income populations (defined as households for which reported income was below poverty level in the past 12 months). In the neighborhood south of Kokea Street and mauka of Halona Street, 42 percent of households reported an income below poverty level. In the neighborhood north of Kohou Street and mauka of Halona Street, 13 percent of households reported an income below poverty level. This is compared to 10 percent of households in Honolulu County overall.

Therefore, for the purpose of compliance with Executive Order 12898 on Environmental Justice, both minority and low-income populations are determined to be present (refer to Section 3.14 for additional information).

The project is not expected to result in disproportionately high and adverse effects to minority or low-income populations. The project would not result in the displacement of any residences, businesses, or community resources. Although construction-related impacts (for example, detour routes, noise, and fugitive dust) would be greatest in the minority and low-income neighborhoods adjacent to the project limits, impacts would be short term in duration and would be minimized with the implementation of mitigation measures and BMPs discussed in Section 3.14. Construction impacts would also be offset by the long-term benefits associated with the project improvements, such as improving conditions for pedestrians and bicyclists and maintaining Halona Street Bridge as a safe and functional element of the transportation system.
4.1.17 **Title VI of the Civil Rights Act of 1964**

Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d and 49 CFR 21) establishes that no person shall, on the grounds of race, color, or national origin be excluded from participation in, be denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance.

The project complies with Title VI through coordination with, and outreach to, Native Hawaiian communities required under Section 106, HRS 343, and Act 50 on cultural practices.

4.2 **State of Hawaii**

4.2.1 **Hawaii State Plan**

The Hawaii State Plan, HRS Chapter 226, is the umbrella document in the statewide planning system. It serves as a written guide for the long-range development of the State by describing a desired future for the residents of Hawaii and providing a set of goals, objectives, and policies that are intended to shape the general direction of public and private development.

The proposed project supports and is consistent with the following State Plan objectives:

*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 that is consistent with and will accommodate planned growth objectives throughout the State.

(b)(2) Coordinate state, county, Federal, and private transportation activities and programs toward the achievement of statewide objectives.

(b)(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties.

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

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

*Facility systems – in general*

(a) Planning for the State’s facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

(b)(1) Accommodate the needs of Hawaii’s people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

**Discussion:** As the facility owner, it is HDOT’s mission to provide a safe, efficient, and accessible transportation system for the public. HDOT recognizes the need to provide for the replacement of the existing bridge. The replacement bridge will be designed using current AASHTO guidelines that have been adopted by HDOT for planning and engineering for highway projects in Hawaii.

4.2.2 **State Functional Plans**

The State Plan directs appropriate State agencies to prepare functional plans for their respective program areas. There are twelve State Functional Plans that serve as the primary implementing vehicle for the goals, objectives, and policies of the State Plan.
State Transportation Functional Plan

The State Transportation Functional Plan identified the four most critical issues of transportation: congestion, economic development, funding, and education (HDOT, 1991). Objectives, policies and implementing actions were identified for each issue. The following objectives and policies apply to the project:

Objective I.A. Expansion of the transportation system.

Policy I.A.1. Increase transportation capacity and modernize transportation infrastructure in accordance with existing master plans and laws requiring accessibility for people with disabilities.

Policy I.A.2. Improve regional mobility in areas of the State experiencing rapid urban growth and road congestion.

Discussion: The mission of HDOT is to provide a safe, efficient, and accessible transportation system for the public. HDOT recognizes the need to provide for the replacement of the existing bridge. The replacement bridge will be designed using current AASHTO guidelines that have been adopted by HDOT for planning and engineering for highway projects in Hawaii.

4.2.3 State Land Use Law

The State Land Use Commission, pursuant to HRS Chapter 205 and 205A and HAR Chapter 15-15 is empowered to classify all lands in the State into one of four land use districts: Urban, Rural, Agricultural, and Conservation. As shown in Figure 4-1, the lands surrounding the project limits are classified in the Urban District. Roadways are a permitted use in the Urban District. No change in land use classification will be needed.

4.2.4 Coastal Zone Management Program and Federal Consistency Determination

In 1977, Hawaii enacted HRS Chapter 205A, Hawaii Coastal Zone Management Program, to carry out the State’s CZM policies and regulations under the Federal Coastal Zone Management Act (discussed above in Section 4.1.16). The CZM area encompasses the entire state, including all marine waters seaward, to the extent of the State’s police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters.

As a result, the project is within the CZM area and subject to consistency with the objectives and policies of the Hawaii CZM Program. The CZM Federal Consistency Certification is reviewed by the State Office of Planning.

The Hawaii CZM program focuses on ten policy objectives:

- Recreational Resources. To provide coastal recreational opportunities accessible to the public and protect coastal resources uniquely suited for recreational activities that cannot be provided elsewhere.
  
  Discussion: The project area does not contain coastal recreation resources nor will it affect access to coastal recreation opportunities.

- Historic Resources. To protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the CZM area that are significant in Hawaiian and American history and culture.
  
  Discussion: Studies focusing on archaeology, historic architecture, and cultural perspectives were conducted for this project, but no historic resources were found within the APE that would be adversely affected by the proposed construction.
• Scenic and Open Space Resources. To protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

Discussion: The project would be developed to ensure visual compatibility with the surrounding environment. The project is not located along the shoreline and is not anticipated to negatively impact coastal and scenic open space resources.

• Coastal Ecosystems. To protect valuable coastal ecosystems, including reefs, from disruption and to minimize adverse impacts on all coastal ecosystems.

Discussion: Because of its inland location and with the implementation of mitigation measures and BMPs during construction, the project will not affect coastal ecosystems.

• Economic Uses. To provide public or private facilities and improvements important to the State’s economy in suitable locations; and ensure that coastal-dependent development such as harbors and ports, energy facilities, and visitor facilities are located, designed, and constructed to minimize adverse impacts in the coastal zone area.

Discussion: The project is not a coastal dependent development.

• Coastal Hazards. To reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Discussion: The project is located within Zone X, an area determined to be outside the 0.2 percent annual chance floodplain. It is not located within a tsunami evacuation zone and is not subject to coastal hazards.

• Managing Development. To improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Discussion: A general public announcement was made regarding the CFLHD Hawaii Bridge Program, which covers a number of State highway bridges on three islands. There will be opportunity for the public to review and comment on the project through the HRS Chapter 343 EA process.

• Public Participation. To stimulate public awareness, education, and participation in coastal management; and maintain a public advisory body to identify coastal management problems and provide policy advice and assistance to the CZM program.

Discussion: The project does not contain a public participation component for programmatic coastal management issues. Project-specific input will be elicited through the HRS Chapter 343 EA process.

• Beach Protection. To protect beaches for public use and recreation; and locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements from erosion.

Discussion: The project is located inland and does not affect Oahu’s beaches.

• Marine Resources. To implement the State’s ocean resources management plan.

Discussion: BMPs will be implemented to prevent degradation of the aquatic environment, including the quality of State waters.

Other key areas of the CZM program include: a permit system to control development within a Special Management Area (SMA) managed by each County and the Office of Planning (see Section 4.3.4); a Shoreline Setback Area that serves as a buffer against coastal hazards and erosion, and protects view-planes; and marine and coastal resources. Finally, a Federal Consistency provision requires that Federal activities, permits, and financial assistance be consistent with the Hawaii CZM program.

The proposed project is not located within the City and County of County of Honolulu SMA. The proposed project does not involve the placement, construction, or removal of materials near the coastline. The
proposed project does not have the potential to affect coastal resources. The proposed project is consistent with the CZM objectives that are relevant to preserving the existing highway infrastructure. FHWA will submit a Federal Consistency determination to the Office of Planning for their concurrence.

4.2.5 Act 50, Cultural Practices

Hawaii Act 50 (2000) sought to “promote and protect cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups” and requires the proposing agency/applicant under Chapter 343 HRS to consider cultural practices in a CIA. A CIA is being completed for the project in compliance with this requirement, as discussed in Section 3.11. City and County of Honolulu

4.2.6 City and County of Honolulu General Plan

The City and County of Honolulu General Plan is a policy document for the long-range comprehensive development of the island of Oahu and also provides the direction for future growth of the City and County. The current General Plan was amended in October 2002 as Resolution 02-205, CD1 and outlines objectives and policies that address the social, economic, physical, environmental, and design objectives for the general welfare and prosperity of the people of Oahu (DPP, 2002). The project is consistent with the transportation objective of the General Plan which is:

“To create a multi-modal transportation system which moves people and goods safely, efficiently, and at a reasonable cost and minimizes fossil fuel consumption and greenhouse gas emissions; serves residents and visitors, including limited income, elderly and disabled populations; and is integrated with existing and planned development.”

4.2.7 Community Development Plans

The Primary Urban Center Development Plan, adopted in May 2004 (DPP, 2004a), is a general framework for more detailed planning at the neighborhood level and includes the area extending from Kahala to Pearl City across the valleys and coastline plains of Oahu's southern coastline.

The Kalihi-Palama Action Plan, adopted in 2004 (DPP, 2004b), identifies projects and actions designed to achieve the vision of a visually, economically, and socially successful Kalihi-Palama. The plan establishes an urbanized boundary in which most development is to occur (Halona Street Bridge is located within the boundary).

The proposed project is consistent with the land use vision and meets the objectives of both the Primary Urban Center Development Plan and the Kalihi-Palama Action Plan, which encourages the development of pedestrian facilities and infrastructure to support existing land uses surrounding H-1.

4.2.8 Zoning

County zoning provides the most detailed set of regulations affecting land development before actual construction. Zoning is typically limited to lands classified in the Urban District under the State land use system. As shown in Figure 4-2, the project site is zoned as R-5 Residential. The proposed project will not require any zoning change.

4.2.9 Special Management Area

The CZM objectives and policies (HRS § 205A-2) were developed to preserve, protect, and, where possible, restore the natural resources of Hawaii’s coastal zone. Any development within the SMA boundary requires a SMA Use permit that is administered by the City and County of Honolulu. The permitting process provides a heightened level of public scrutiny to ensure consistency with SMA objectives.

As shown in Figure 4-3, the proposed project is not located within the City and County of Honolulu’s SMA.
4.3 Transportation Plans

4.3.1 Statewide Federal-aid Highways 2035 Transportation Plan

The 2035 Transportation Plan was developed as the State’s first long-range multimodal transportation for Federal-aid highways (HDOT, 2014). The plan is intended to guide transportation decisions by identifying goals and solutions within a context of limited resources. It addresses future land transportation needs for motorists, freight, transit, bicyclists, and pedestrians based on land use and socioeconomic projections through 2035.

The long-range plan was developed with participation from a wide spectrum of community members and stakeholders. A series of meetings were held to develop and refine the goal statements. Specifically relevant to this project are the goals provided in Table 4-1, which focus on prudent and timely investments in the transportation (highway) system to maintain functionality and longevity.

<table>
<thead>
<tr>
<th>TABLE 4-1</th>
<th>Statewide Land Transportation Goals and Objectives</th>
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<tbody>
<tr>
<td>Goals</td>
<td>Objectives</td>
</tr>
<tr>
<td>3.1 Manage transportation assets and optimize investments</td>
<td>Plan and implement maintenance, resurfacing, rehabilitation, and reconstruction to optimize existing transportation system improvements and spending.</td>
</tr>
<tr>
<td>3.2 Maintain safe, efficient, complete transportation system for the long term</td>
<td>Plan and implement existing system improvements to effectively sustain the overall transportation system’s safe, efficient, and complete operations.</td>
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4.3.2 Oahu Regional Transportation Plan 2035

Each district in the State has a Regional Federal-aid Highways 2035 Transportation Plan or regional long-range land transportation plan. The purpose of this plan is to provide a basis for making multimodal land transportation decisions over a 20-year time frame. As a regional plan, it serves as an interface between overarching State transportation issues and island-specific needs and funding priorities.

The Oahu Regional Transportation Plan (ORTP) considers a nearly 25-year planning horizon that incorporates forecasted population, housing, employment, environmental, land-use, and technology changes (OMPO, 2011). Based upon projected transportation needs, financial resources, and community input, the ORTP identifies strategies and actions to promote the development of an integrated, inter-modal, surface transportation system that facilitates the safe, efficient, and economic movement of people and goods. It also identifies specific highway, transit, freight, bicycle, and pedestrian projects that are designed to improve safety, mitigate congestion, and increase mobility for Oahu’s residents and visitors. Projects that appear in the ORTP are eligible for Federal transportation funding assistance. The ORTP is updated every 5 years.

The ORTP “mid-range” project list (to be completed by 2020) identifies the stretch of H-1 from Ola Lane to Vineyard Boulevard for future widening. This project is adjacent to but does not include the proposed project. Also identified in the ORTP are Statewide and Citywide operations and maintenance projects, which includes bridge rehabilitation and replacement.

4.3.3 Oahu Bike Plan

The Oahu Bike Plan, adopted in August 2012, guides the DTS bikeway planning for the entire island of Oahu (DTS, 2012). The plan contains objectives and implementing actions, an inventory of existing facilities, and proposals to expand the network of bicycle facilities.
The bike plan includes a proposal for a future bike path that runs along both sides the Kapalama Canal: along Kohou Street both south and north of H-1 adjacent to the project and along Kokea Street south of H-1. These projects are identified as a Priority 2 project that would only be completed after the Priority 1 projects have been implemented. The proposed project is consistent with the bike plan because it provides bicycle and pedestrian access on a new 7-foot sidewalk and it does not preclude the Kapalama Canal path improvements along Kohou Street north of H-1.

### 4.3.4 Statewide Pedestrian Master Plan

The Statewide Pedestrian Master Plan, completed in May 2013, provides a comprehensive strategy for improving pedestrian safety, mobility, and accessibility along State highways. The plan identifies and prioritizes pedestrian infrastructure projects throughout the State (HDOT, 2013).

The pedestrian plan does not identify pedestrian infrastructure projects in the vicinity of the Halona Street Bridge. Nevertheless, the 7-foot sidewalk on the replacement bridge would improve safety for pedestrians who may need to use it.

### 4.4 References


FIGURE 4-1
State Land Use District Boundaries
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

LEGEND

- Conservation
- Urban
LEGEND

- A-1 Low-density Apartment District
- A-2 Medium-density Apartment District
- R-5 Residential District
- B-2 Community Business District
- BMX-3 Community Business Mixed Use District
- IMX-1 Industrial Mixed Use District
- P-2 General Preservation District

Data Source: Hawaii Office of State Planning, Zoning Data

FIGURE 4-2
Zoning
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation
FIGURE 4-3
Special Management Areas (SMA)
Halona Street Bridge Project
Hawaii Bridges Program –
Central Federal Lands Highway Division and
Hawaii Department of Transportation

LEGEND

Special Management Area

Data Source: Office of State Planning, Special Management Areas
SECTION 5
Findings and Reasons Supporting the Anticipated Determination

This EA found that the potential impacts associated with the proposed project will not be significant, or will be mitigated to less than significant levels. Potential environmental impacts are generally temporary, occurring during construction, and would not be expected to adversely impact the long-term environmental quality of the project area. This section summarizes the significance criteria used to determine whether the proposed project would have a significant effect on the environment

5.1 Significance Criteria

The potential effects of the proposed project were evaluated based on the Significance Criteria specified in HAR Section 11-200-12 (revised in 1996). Discussion of the project’s conformance to the criteria is presented as follows.

Involves an irrevocable commitment to, loss or destruction of any natural or cultural resources. The proposed project would not cause significant adverse impacts to biological resources, cultural resources, soils and geology, or water resources, and therefore does not involve irrevocable commitment to, loss or destruction of any natural or cultural resources. The timing of tree trimming and the minimal construction footprint would ensure that there are no significant or long-term effects to any Federally- or State-listed species.

Curtails the range of beneficial uses of the environment. The proposed project would replace an existing structure that is structurally deficient and would have no impact on the beneficial uses of the environment within the project area. In addition, the project area is highly urbanized and does not provide unique habitat in the area.

Conflicts with the State’s long-term environmental policies or goals and guidelines, as expressed in HRS Chapter 344, and any revisions thereof and amendments thereto, court decisions, or executive orders. The proposed project is consistent with the environmental policies, goals, and guidelines defined in HRS Chapter 344. In particular, the project is consistent with transportation guidelines by improving the region’s transportation infrastructure. As discussed in Section 3, the potential impacts related to the proposed project are associated with short-term construction-related activities that can be minimized through implementation of mitigation measures described in this EA.

Substantially affects the economic or social welfare of the community or state. The proposed project would not result in significant socio-economic impacts on the community or state, as it would not cause an increase in population or change the demographic characteristics of the local area. The proposed project would create short-term employment opportunities consisting primarily of construction-related jobs generated by the proposed project. The proposed project would also have a positive impact on the economic and social welfare of the community by improving the long-term functionality of the highway system.

Substantially affects public health. With the exception of short-term, construction-related impacts to ambient air and noise levels, no long-term significant impacts to the public’s health and welfare are anticipated. The incorporation of recommended mitigation measures and BMPs during the construction period would minimize these temporary impacts to surrounding communities.

Involves substantial secondary impacts, such as population changes or effects on public facilities. No adverse secondary impacts on the environment, such as population growth or the need to expand public facilities, would be anticipated with the implementation of the proposed project.
Involves a substantial degradation of environmental quality. The proposed project would not cause any impacts that would substantially degrade environmental quality. Construction activities associated with the proposed project are anticipated to result in relatively insignificant short-term impacts to noise, air quality, and traffic in the immediate project vicinity. The incorporation of mitigation measures during the construction period would prevent adverse impacts to the environmental quality.

Is individually limited, but cumulatively has considerable effect on the environment, or involves a commitment for larger actions. The proposed project is a self-contained action and is not part of additional and/or related actions. Land use in the project area consists primarily of residential and commercial uses. No other past, present, or future actions associated with these land uses have been identified that would contribute to significant cumulative impacts for any of the resources considered in this EA.

Substantially affects rare, threatened, or endangered species or its habitat. No rare, threatened, or endangered species, or associated habitat were observed in the project limits. However, the Hawaiian hoary bat, which is Federally and State listed as endangered, has the potential to occur in the project area. Potential impacts from the proposed project to this species are expected to be discountable and temporary and BMPs would be implemented during construction to ensure the protection of the species. BMPs and protocols will be implemented to avoid and minimize contact with individual members of protected migratory birds that may be encountered in the project area.

Detrimentally affects air or water quality or ambient noise levels. Only minimal construction-related, short-term impacts on air quality and noise levels are anticipated. Mitigation measures will be implemented to minimize construction-related noise and dust impacts. Adverse impacts to water resources would be prevented through BMPs and adherence to permit requirements. No long-term, direct or indirect, adverse impacts to these resources are anticipated from implementation of the proposed project.

Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a floodplain, tsunami zone, beach, erosion prone area, geologically hazardous land, estuary, freshwater, or coastal waters. This project is not located in an environmentally sensitive area; in particular, the replacement bridge is not located within a FEMA-designated floodplain. The project is being designed in accordance with standards appropriate to the geologic, hydrologic, and seismic setting.

Substantially affects scenic vistas and view planes identified in county or state plans or studies. The overall visual quality of the project area would not change as a result of bridge replacement. The proposed project would not obstruct any view planes or scenic vistas.

Requires substantial energy consumption. Construction of the proposed project would not require substantial energy consumption. Fuel will be consumed by construction vehicles and equipment, but this use will be comparable to other construction projects.

5.2 Conclusion

Through bridge design, impact avoidance and minimization actions, and proposed BMPs and mitigation measures, the analysis contained in this EA has determined that project-related impacts would be mitigated to less than significant levels, such that the proposed project would not result in significant adverse impacts.
SECTION 6

Anticipated Determination

Based on the information presented and examined in this document, the proposed project is not expected to produce significant adverse social, economic, cultural, or environmental impacts. Consequently, a finding of no significant impact is anticipated, pursuant to HRS Chapter 343 and the provisions of HAR Subchapter 6 of Chapter 200, Title 11.
Consultation and Coordination

7.1 Organizations Consulted During Preparation of the Draft Environmental Assessment

The following agencies and organizations were contacted during preparation of the Draft EA. They received preliminary project information and asked to provide comments relative to specific environmental compliance (such as NHPA Section 106 and ESA Section 7) or for general assistance in preparing the Draft EA. A template of the consultation letter is included at the end of this chapter.

Consultation with Native Hawaiian Organizations regarding Historic Preservation is required as part of compliance with NHPA Section 106 and HRS Chapter 6E. Consultation is also occurring with the DLNR SHPD.

7.1.1 Federal
- USACE
- USFWS
- USEPA
- NMFS

7.1.2 State of Hawaii
- Department of Accounting and General Services
- Department of Hawaiian Home Lands
- HDOH, Clean Water Branch
- HDOH, Environmental Planning Office
- DLNR
- Hawaii Emergency Management Agency (formerly State Civil Defense)
- Office of Hawaiian Affairs
- Office of Planning
- SHPO
- Senator Suzanne Chun Oakland, Senate District 13
- Senator Donna Mercado Kim, Senate District 14
- Representative Feki Pouha, House District 47
- Representative Takashi Ohno, House District 27
- Representative John Mizuno, House District 28
- Representative Karl Rhoads, House District 29

7.1.3 City and County of Honolulu
- DTS
- Department of Design and Construction
- Honolulu Fire Department
- DPP
- Honolulu Police Department
- Department of Facility Maintenance
- Department of Environmental Services
- Department of Emergency Services
- Department of Emergency Management
- Department of Parks and Recreation
- Oahu Councilmember Carol Fukunaga
7.1.4 Utilities
- Honolulu BWS
- HECO
- Hawaii Gas
- Hawaiian Telcom
- Oceanic Time Warner Cable
- Sandwich Isles Communications

7.1.5 Organizations
- Sierra Club, Oahu Group of Hawaii Chapter
- Honolulu Cosmopolitan Church

7.1.6 Property Owners/Residents
- Property Owner/Resident TMK: (1) 1-6-006:026
- Property Owner/Resident TMK: (1) 1-6-006:027
- Property Owner/Resident TMK: (1) 1-6-006:029
- Property Owner/Resident TMK: (1) 1-6-006:030
- Property Owner/Resident TMK: (1) 1-6-006:032
- Property Owner/Resident TMK: (1) 1-6-006:047
- Property Owner/Resident TMK: (1) 1-6-006:054
- Property Owner/Resident TMK: (1) 1-6-006:100 through 104
- Property Owner/Resident TMK: (1) 1-6-006:113
- Property Owner/Resident TMK: (1) 1-6-006:115
- Property Owner/Resident TMK: (1) 1-6-006:121
- Property Owner/Resident TMK: (1) 1-6-006:122

7.2 Early Consultation Comment Letters Received
A total of 12 agencies responded to requests for comments during the Draft EA preparation period. Of these, substantive comments from 8 agencies are summarized herein, and are incorporated into relevant sections of the Draft EA. Comment letters and responses are reproduced in full at the end of this chapter.

7.2.1 State Agencies
- **HDOH, Clean Water Branch** (letter dated May 18, 2015).
  1. A project that potentially impacts State waters must meet the following: (1) antidegradation policy, (2) designated uses, and (3) water quality criteria.
  2. NPDES permit coverage may be required.
  3. Permit from USACE may be required.
  4. Compliance with State water quality standards is required.
  5. All projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters.

- **HDOH, Environmental Planning Office** (letter dated May 12, 2015)
  1. Use of the online Hawaii Environmental Health Portal is encouraged.
  2. Water Quality Standards Maps have been updated and are posted online.
  3. University of Hawaii studies related to potential sea level rise changes in Hawaii are available online.
• **DLNR, Commission on Water Resource Management** (memo dated January 7, 2015, attached to letter from Russell Tsuji, Administrator, Land Division, Department of Land and Natural Resources, dated January 15, 2015)

  1. A Stream Channel Alteration Permit is needed before alteration(s) can be made to the stream bed and/or banks.

• **Office of Planning** (letter dated May 1, 2015)

  1. Verify project TMKs.
  2. The Draft EA should contain an analysis of project conformance with the Hawaii State Plan.
  3. The Draft EA should contain an assessment of project conformance with CZM objectives.
  4. Confirm whether a Special Management Area permit is required.
  5. Federal Consistency Review should be listed as a potential requirement.
  6. DEA should include a section on watershed protection and management (see Hawaii Watershed Guidance developed by OP).
  7. Consider OP’s Stormwater Impact Assessment when evaluating project-related stormwater impacts.
  8. Consider Low Impact Development design concepts and BMPs.

**County Agencies**

• **City and County of Honolulu Police Department** (letter dated April 27, 2015)

  1. The stability of the bridges and the disturbance of traffic flow require measures to be implemented for the safety of the motorists driving on the bridges.
  2. The integrity of the bridges must be preserved to prevent them from any structural breakdown and collapsing.
  3. When construction begins, traffic control devices (for example, flag persons, clear signage and cones, and special duty officers, etc.) should be used to facilitate movements throughout the project area.

• **Honolulu Department of Facility Maintenance** (letter dated July 22, 2015): Approximate project limits are near the vicinity of two storm drains the City maintains.

• **Honolulu Department of Transportation Services** (letter dated May 13, 2015):

  1. The Traffic Management Plan should include community outreach, detour information, and any traffic impacts that the project may have on the surrounding city roadways, including short-term impacts during construction and corresponding measures to mitigate these impacts.
  2. The Traffic Management Plan should address how vehicles, buses, bicyclists, pedestrians, etc. will be detoured during periods of full road closure. The Traffic Engineering Division recommends detouring vehicles on to the auxiliary lane on H-1 rather than detouring all traffic on to School Street.
  3. The area Neighborhood Board, as well as the area residents, businesses, and emergency personnel (fire, ambulance and police), should be kept apprised of the details of the proposed project and the impacts the project may have on the adjoining local street area network, particularly during construction.
  4. The construction materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 am to 3:30 pm) to minimize any possible disruption to traffic on the local streets.
• **Honolulu Fire Department** (letter dated April 287, 2015):
  1. Bridge should be brought up to current standards to allow our apparatuses to traverse without any restrictions.
  2. The Honolulu Fire Department should be informed of road closures, lane closures, or any condition that would affect our emergency response.

### 7.3 Public Involvement

A public meeting was held on July 28, 2015, at the Likelike Elementary School (1618 Palama Street), to provide an overview of the project and obtain feedback from the community. Three residents and one State Representative (Karl Rhoads) attended the meeting. In general, all attendees stressed the need for the project to address public access to the Kapalama Canal near the bridges. State Representative Rhoades mentioned that this is the number one concern from his constituents. Additional comments and questions raised at the meeting were as follows:

- Safety and the need to deter access to the Kapalama Canal: One resident noted that persons that loiter around the canal had robbed him several times.
- Parking, access, and notification: Residents would like to continue to be informed about the project.
- Questions regarding modifications to Kapalama Stream: Representative Rhoades asked whether the streambed would be modified and recommended restoring the canal to its natural state.

### 7.4 Agencies, Organizations, and Individuals to Be Contacted During the Draft EA Review Period

The following agencies, organizations, and individuals will be included on the distribution list for notification of the Draft EA public review and comment period.

#### 7.4.1 Federal
- USACE
- USFWS
- USEPA
- NMFS

#### 7.4.2 State of Hawaii
- Department of Accounting and General Services
- Department of Hawaiian Home Lands
- HDOH Clean Water Branch
- HDOH, Environmental Planning Office
- DLNR
- Hawaii Emergency Management Agency
- Office of Hawaiian Affairs
- Office of Planning
- SHPO
- Senator Suzanne Chun Oakland, Senate District 13
- Senator Donna Mercado Kim, Senate District 14
- Representative Takashi Ohno, House District 27
- Representative John Mizuno, House District 28
- Representative Karl Rhoads, House District 29
7.4.3 City and County of Honolulu

- DTS
- Department of Design and Construction
- Department of Planning and Permitting
- Department of Facility Maintenance
- Department of Environmental Services
- Department of Emergency Services
- Department of Emergency Management
- Department of Parks and Recreation
- Honolulu Fire Department
- Honolulu Police Department
- Oahu Councilmember Carol Fukunaga

7.4.4 Utilities

- Honolulu BWS
- HECO
- Hawaii Gas
- Hawaiian Telcom
- Oceanic Time Warner Cable
- Sandwich Isles Communications

7.4.5 Organizations

- North Shore Chamber of Commerce
- Sierra Club, Oahu Group of Hawaii Chapter
- Honolulu Cosmopolitan Church

7.4.6 Individuals

- Property Owners/Residents adjacent to Halona Street, Kokea Street, and Kohou Street
- Local Neighborhood Board

7.4.7 Media

- The Honolulu Star-Advertiser

7.4.8 Public Library

- Kalihi-Palama Public Library (hardcopy will be available for public review)
REQUEST FOR PRE-ASSESSMENT COMMENTS

Template Letter with Project Sheet (attachment)

Comments and Responses Received

• State of Hawaii Department of Health, Clean Water Branch
• State of Hawaii Department of Health, Environmental Planning Office
• State of Hawaii Department of Land and Natural Resources, Commission on Water Resource Management
• State of Hawaii Office of Planning
• Department of Transportation Services
• Honolulu Fire Department
• Honolulu Police Department
• Department of Facility Maintenance
Dear : 

Subject: Hawaii Bridge Program for Island of Oahu  
Federal Highway Administration, Central Federal Lands Highway Division  
Pre-Assessment Consultation  
Chapter 343, Hawaii Revised Statutes and National Environmental Policy Act 

The Federal Highway Administration, Central Federal Lands Highway Division (CFLHD), in partnership with the Hawaii Department of Transportation (HDOT), is conducting environmental studies to examine the impacts of three projects to improve four bridges on the island of Oahu. We are assisted in this effort by our consultant, CH2M HILL.

- Halona Street Bridge on Halona Street, adjacent to the H-1 Freeway  
  Honolulu District, TMK: [1] 1-6  

- Roosevelt Bridge on Kamehameha Highway crossing Kipapa Gulch  
  Ewa District, TMK: [1] 9-4  

- Nanahu Bridge on Kamehameha Highway  
  Koolauloa District, TMK: [1] 5-6  

- Kawela Bridge on Kamehameha Highway  
  Koolauloa District, TMK: [1] 5-7  

Attached to this letter are fact sheets for each of the bridge projects, including photos and maps. We are requesting comments and input regarding environmental concerns in all resource areas, and information that might help us to evaluate the projects.

The environmental review for this project is being conducted in accordance with the National Environmental Policy Act (NEPA) and Hawaii Revised Statutes (HRS), Chapter 343.
Please send any concerns or comments to Kathleen Chu, CH2M Hill program manager (CH2M Hill, Inc, 1132 Bishop Street, Suite 1100, Honolulu, HI 96813) or myself, within 30 days receipt of this letter. If you have questions, please contact Ms. Chu at Ph. 440-0283 or kathleen.chu@ch2m.com or myself at Ph. 720-963-3647 or Michael.will@dot.gov. Thank you.

Sincerely,

J. Michael Will, P.E.
Program Engineering Manager

Enclosure:

Fact Sheets for Roosevelt Bridge, Halona Street Bridge, Kawela Bridge and Nanahu Bridge

cc: Nicole Winterton/FHWA-CFLHD
    Kathleen Chu/CH2M HILL
    Paul Luersen/CH2M HILL
    Elizabeth Cutler/CH2M HILL
Halona Bridge
Kalihi, Honolulu, Oahu
TMK: [1] 6-0-060

Location

The project area for the improvements includes Halona Bridge and its immediate environs on the south side of Oahu. The bridge is located on Halona Street at milepost 20.21 on the adjacent Interstate Route H-1 (see Project Location Map). The bridge crosses over Kapalama Canal.

Existing Conditions

Built in 1938, Halona Bridge is a 2-lane bridge with 5 spans and a total length of about 130 feet. The bridge has a total width of approximately 55 feet. It is assumed that the foundations are spread footings supporting the abutments and piers. Halona Street is classified as a minor urban arterial. There is no posted speed along this segment of the roadway but it is assumed to be 30 mph.

Purpose and Need

The purpose of this project is to improve Halona Bridge and its approaches, by rehabilitation or replacement, to create a canal crossing of Halona Street that remains a safe and functional component of the regional transportation system for all users. Based on bridge inspections and studies, a number of conditions were identified that need to be remedied, including: replace the existing bridge to meet current design standards for roadway width, load capacity, pedestrian traffic, bridge railing and transitions, and bridge approaches.

Project Description

Bridge design alternatives are being developed in conjunction with ongoing environmental studies. However, design options will include the following components:

- Restore structural integrity of the stream crossing via bridge rehabilitation or replacement
- Meet live load and seismic requirements
- Provide for adequate hydrological flow under flood conditions
- Mitigate scouring on foundations
- Upgrade bridge railings in compliance with crash test requirements
- Replace/relocate existing utilities, as necessary
- Develop a traffic management plan

This project is included in the Statewide Transportation Improvement Program (STIP) and will be funded, in part, with federal monies.
Photo 2: View of Halona Bridge looking west
Mr. J. Michael Will, P.E.
Program Engineering Manager
Central Federal Lands Highway Division
U.S. Department of Transportation
12300 West Dakota Avenue, Suite 380
Lakewood, Colorado 80228

Dear Mr. Will:

SUBJECT: Comments on the Pre-Assessment Consultation for the Hawaii Bridge Program
State of Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated March 24, 2015, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:
   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).
For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee ($1,000 for an individual NPDES permit or $500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State’s Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

5. It is the State’s position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

   a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like
community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.

c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.

e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

Alec Wong, P.E., Chief
Clean Water Branch

NN:ay

c: Ms. Kathleen Chu, CH2M Hill [via e-mail kathleen.chu@ch2m.com only]
DOH-EPO #15-094 [via e-mail only]
Mr. Gary Ueuten, CWB, Kauai District Health Office [via e-mail only]
Mr. Neil Mukai, CWB, Hawaii District Health Office [via e-mail only]
TO: ALEC WONG, P.E.
CHIEF, CLEAN WATER BRANCH
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HI 96801

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM
KAUAI PROJECTS: BRIDGE 7E, HANAPAPE, KAPAA
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Mr. Wong:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 18, 2015.

The project team is aware that certain projects may require certification or permits under the Clean Water Act. We have been engaged in early consultation with your staff and greatly appreciate their assistance.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL
May 12, 2015

Mr. J. Michael Will, P.E.
Program Engineering Manager
Central Federal Lands Highway Division
U.S. Department of Transportation
12300 West Dakota Avenue, Suite 380
Lakewood, Colorado 80228
Via email: Michael.will@dot.gov

Dear Mr. Will:

SUBJECT: Pre-Assessment Consultation (PC) for Hawaii Bridge Program for State of Hawaii

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your PC to our office on March 24, 2015. Thank you for allowing us to review and comment on the proposed project. The PC was routed to the Clean Water Branch, and the District Health Offices on Kauai and Hawaii. They will provide specific comments to you if necessary. EPO recommends that you review the standard comments and available strategies to support sustainable and healthy design provided at: http://health.hawaii.gov/epo/home/landuse-planning-review-program. Projects are required to adhere to all applicable standard comments.

We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: https://eha-cloud.doh.hawaii.gov

You may also wish to review the revised Water Quality Standards Maps that have been updated for all islands. The Water Quality Standards Maps can be found at: http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards

The University of Hawaii has examined potential sea level rise changes in Hawaii. You may find it useful to review their studies at: http://www.soest.hawaii.edu/coasts/sealevel

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

c: Kathleen Chu, CH2M Hill program manager – kahtleen.chu@ch2m.com (via email only)
   CWB, DHO Kauai, DHO Hawaii (via email only)
TO: LAURA LEIALOHA PHILLIPS McINTYRE, AICP
PROGRAM MANAGER, ENVIRONMENTAL PLANNING OFFICE
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HI 96801

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
HAWAII BRIDGE PROGRAM
KAUAI PROJECTS: BRIDGE 7E, HANAPEPE, KAPAA
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Ms. McIntyre:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 12, 2015.

We acknowledge the information provided on the Hawaii Environmental Health Portal, Water Quality Standard Maps, and University of Hawaii studies related to sea level rise.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL
January 15, 2015

U. S. Department of Transportation
Federal Highway Administration
Central Federal Lands Highway Division
Attn: J. Michael Will, Program Engineering Manager
12300 West Dakota Avenue, Suite 330
Lakewood, CO 80228

via email: michael.will@dot.gov

Dear Mr. Will,

SUBJECT: Notification of Intent to Construct the Hawaii Bridge Program, Request for Information, HFPM-16

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments sent to you dated December 18, 2014, and January 9, 2015, enclosed are additional comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
MEMORANDUM

TO: DLNR Agency:
   X Div. of Aquatic Resources
   X Div. of Boating & Ocean Recreation
   X Engineering Division
   X Div. of Forestry & Wildlife
   X Div. of State Parks
   X Commission on Water Resource Management
   X Office of Conservation & Coastal Lands

   X Land Division - Oahu District
   X Land Division - Kauai District
   _ Land Division - Maui District
   X Land Division - Hawaii District
   X Historic Preservation

FROM: Russell Y. Tsubi, Land Administrator
SUBJECT: Notification of Intent to Construct the Hawaii Bridge Program, Request for Information
LOCATION: Various (see cover letter) including all Districts except Maui
APPLICANT: Federal Highway Administration, Central Federal Lands Highway Division, in cooperation with the Hawaii Department of Transportation

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by December 18, 2014. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
( X ) Comments are attached.

Signed: ____________________________
Print Name: WILLIAM M. TAII, Deputy Director
Date: January 7, 2015
TO: Russell Tsuji, Administrator  
Land Division  

FROM: William M. Tam, Deputy Director  
Commission on Water Resource Management  

SUBJECT: Notification of Intent to Construct Hawaii Bridge Program, Request for Information  

FILE NO.: HFPM-16  
TMK NO.: Various including all Districts except Maui  

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://www.hawaii.gov/dlnr/cwrm.

Our comments related to water resources are checked off below.

☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☐ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/.

☐ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☐ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program

DRF-IA 03/20/2013
8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscage.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf

9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer’s acceptance of any resulting requirements related to water quality.

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/info_permits.htm.

10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

11. A Well Construction Permit(s) is (are) required before any well construction work begins.

12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

14. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

15. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.

16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is (are) constructed or altered.

17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

OTHER:

If there are any questions, please contact Dean Uyeno at 587-0234.
TO: ROY HARDY  
DEPUTY DIRECTOR  
COMMISSION ON WATER RESOURCE MANAGEMENT  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
P.O. BOX 621  
HONOLULU, HI  96809

FROM: J. MICHAEL WILL, P.E.  
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION  
HAWAII BRIDGE PROGRAM  
KAUAI PROJECTS: BRIDGE 7E, HANAPEPE, KAPAA  
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU  
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Mr. Hardy:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated January 7, 2015.

We acknowledge that projects may require a Stream Channel Alteration Permit, and will initiate the application process as needed.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.  
Project Manager

Cc:  
Christine Yamasaki, HDOT  
Kevin Ito, HDOT  
Nicole Winterton, CFLHD  
Kathleen Chu, CH2M HILL
Ref. No. P-14732

May 1, 2015

Ms. Kathleen Chu
Program Manager
CH2M Hill, Inc.
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Dear Ms. Chu:

Subject: Hawaii Bridge Program for the State of Hawaii
Federal Highway Administration, Central Federal Lands Highway Division,
Pre-Assessment Consultation
Chapter 343, Hawaii Revised Statutes and National Environmental Policy
Act; TMK: Various

Thank you for the opportunity to provide comments on the pre-consultation request for a
Draft Environmental Assessment (Draft EA) being developed for the Hawaii Bridge Program.
The pre-consultation review material was transmitted to our office by letter dated March 24,
2015.

It is our understanding that the Federal Highway Administration, Central Federal Lands
Highway Division, in partnership with the Hawaii Department of Transportation, is conducting
this environmental study for nine bridges on the islands of Kauai, Oahu, and Hawaii. The
purpose of this bridge improvement project is the rehabilitation or replacement of identified
bridges to create a safer and more functional stream, river, and canal crossing network for
roadway users. The bridge improvements will focus on getting these bridges up to current
design standards, increase load capacity, allow for safer pedestrian traffic, and improve on
railings, transitions, and bridge approaches.

The Office of Planning (OP) has reviewed the transmitted material and has the following
comments to offer:

1. Some of the bridge sites listed in the Draft EA review material contain incorrect Tax
Map Key (TMK) numbers. TMK’s generally have a nine digit number and are listed
by island designation, plat, and parcel locations. The island of Oahu is classified by
the number (1), Maui County by (2), Hawaii County by (3), and Kauai County by (4).
The review material, for example, lists the Hanapepe River Bridge with the correct
TMK: (4) 1-9-007:001. The bridges on the island of Oahu have an insufficient
amount of TMK numerals. The East Hawaii County locations list the wrong island designation (it should be listed with island designation of (3), rather than the island designation of (4)). The Draft EA should correct these errors and provide TMK locations with a nine digit format.

2. OP provides technical assistance to state and county agencies in administering the statewide planning system in Hawaii Revised Statutes (HRS) Chapter 226, the Hawaii State Plan. The Hawaii State Plan provides goals, objectives, priorities, and priority guidelines for growth, development, and the allocation of resources throughout the State. The Hawaii State Plan includes diverse policies and objectives of state interest including but not limited to the economy, agriculture, the visitor industry, federal expenditure, the physical environment, facility systems, socio-cultural advancement, climate change adaptation, and sustainability.

The Draft EA should include an analysis that addresses whether the proposed project conforms or is in conflict with the objectives, policies, and priority guidelines listed in the Hawaii State Plan.

3. The coastal zone management area is defined as “all lands of the State and the area extending seaward from the shoreline to the limit of the State’s police power and management authority, including the U.S. territorial sea” see HRS § 205A-1 (definition of "coastal zone management area").

HRS Chapter 205A requires all State and county agencies to enforce the coastal zone management (CZM) objectives and policies. The Draft EA should include an assessment as to how the proposed project conforms to the CZM objectives and its supporting policies set forth in HRS § 205A-2. The assessment addressing compliance with HRS Chapter 205A is an important component for satisfying the requirements of HRS Chapter 343. These objectives and policies include: recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, public participation, beach protection, and marine resources.

4. Because of the proximity to the shoreline, some of the bridge sites may lie within areas designated as Special Management Areas (SMA). Please confirm with the City and County of Honolulu’s Department of Planning and Permitting, the County of Kauai Planning Department, and the County of Hawaii Planning Department on the location of these bridges in relation with the SMA boundaries and whether SMA permits are required.
5. The national Coastal Zone Management Act requires direct federal activities and development projects to be consistent with approved state coastal programs to the maximum extent practicable. OP is the lead state agency to conduct this Federal Consistency evaluation.

Because at least one of the proposing agencies for this Draft EA is a federal agency, and federal funding will be used to finance this endeavor, this project may require compliance with Federal Consistency requirements. The Draft EA should list all applicable permits needed for this project. Any federal permits required for this project may have implications on the federal consistency evaluation conducted by OP.

6. Our review indicates that these bridge improvement projects lie within proximity to perennial streams, canals, wetlands, and are within numerous watersheds. The project areas are adjacent to a range of human activities from agriculture, urban development, and activity along coastlines or upstream from the coastline. The Draft EA should consider inclusion of a section addressing watershed protection and management.

OP has created the Hawaii Watershed Guidance to provide direction on methods to safeguard Hawaii’s watersheds and implement watershed plans. This guidance provides a number of management measures that address polluted runoff. OP’s watershed guidance provides a number of management measures that address polluted runoff from urban activities, and a summary and links to management measures that may be implemented to minimize coastal nonpoint pollution impact. Specifically please examine, Section B – Roads, Highways, and Bridges pages 132-135. The document can be viewed or downloaded from the Office of Planning website at http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI Watershed Guidance Final.pdf.

7. We have reviewed the location maps of the bridge improvement projects and compared them to known coastal resources in the area. Many of these parcels are located in flood hazard zones, tsunami evacuation areas, and as noted above, land zoned for agriculture or urban uses, or are located near perennial streams, canals, wetlands, seasonal river gulches, or pass close to coastal areas and beaches. Therefore, inclusion of a stormwater impact evaluation would be beneficial to the Draft EA. Development and land use activities can create erosion, increased stormwater runoff, and coastal pollution that cause direct, secondary, and cumulative impacts to Hawaii’s resources.
Ms. Kathleen Chu  
May 1, 2015  
Page 4

Please consider OP’s Stormwater Impact Assessment in your stormwater impact evaluation for this project. This document can be used to identify and evaluate information on hydrology, stressors, sensitivity of aquatic and riparian resources, and management measures to control runoff occurrences. Mitigation measures and best management practices (BMP) listed in this document can be applied to water runoff strategies to prevent damage to coastal ecosystems. This document will assist in integrating stormwater impact assessment within the planning and environmental review process of a project. The document can be found at http://files.hawaii.gov/dbedt/op/czm/initiative/stormwater_impact/final_stormwater_impact_assessments_guidance.pdf.

8. Construction of widened roadways, new bridge approaches, increased support structures for bridge spans, and pedestrian crossing will introduce hardened impervious surfaces, secondary development, and may require additional drainage infrastructure to be built. Please consider Low-Impact Development (LID) design practices in the planning process for this project. LID techniques promote a range of structural BMP’s for stormwater control management, roadway development, and urban layout that minimizes negative environmental impact.

LID design concepts and BMP’s that should be considered include: the preservation of natural features and conservation design; the reduction of impervious cover; and utilizing natural features and source control for stormwater management. These methods are listed in OP’s Low Impact Development, A Practitioners Guide. For more information on LID – BMP’s, please examine Section 1.7, pgs. 1-4 to 1-11. This guidance can be viewed or downloaded from the OP website at: http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid_guide_2006.pdf

If you have any questions regarding this comment letter, please contact Josh Hekekia of our office at 587-2845.

Sincerely,

[Signature]
Leo R. Asuncion
Acting Director

c: J. Michael Will, P.E., Program Engineering Manager
TO: LEO R. ASUNCION  
DIRECTOR  
OFFICE OF PLANNING  
235 SOUTH BERETANIA STREET, 6TH FLOOR  
HONOLULU, HI 96813

FROM: J. MICHAEL WILL, P.E.  
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION  
HAWAII BRIDGE PROGRAM  
KAUAI PROJECTS: BRIDGE 7E, HANAPEPE, KAPAA  
OAHU PROJECTS: HALONA, ROOSEVELT, KAWELA, NANAHU  
HAWAII ISLAND PROJECTS: HILEA, NINOLE

Dear Mr. Asuncion:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 1, 2015. We offer the following responses in the order presented in your letter:

1. Tax Map Key numbers will be verified.

2. The Draft Environmental Assessment (DEA) will discuss consistency with the Hawaii State Plan.

3. The DEA will discuss consistency with Coastal Zone Management objectives.

4. Where relevant, the Special Management Area permit will be listed as a potential requirement.

5. Federal Consistency Review will be listed as a potential requirement.

6. The DEA will assess potential impacts on water resources.

7. We acknowledge the availability of the Office of Planning’s Stormwater Impact Assessment as an environmental planning resource.

8. Stormwater management measures are being considered in project design and will be addressed in the DEA.
We appreciate your participation in the environmental review process. A copy of the DEA will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

[Signature]

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL
May 13, 2015

Mr. J. Michael Will, P.E.
Program Engineering Manager
Central Federal Lands Highway Division
Federal Highway Administration
U.S. Department of Transportation
12300 West Dakota Avenue, Suite 380
Lakewood, Colorado 80228

Dear Mr. Will:

SUBJECT: Pre-Assessment Consultation for Environmental Studies, Hawaii Bridge Program for Island of Oahu, Hawaii

In response to your letter dated March 24, 2015, we have the following comments:

1. The Nanaha and Kawela Bridges are under State jurisdiction and will not affect City roadways.

2. For the Roosevelt and Halona Bridges, the Traffic Management Plan (TMP) should include community outreach, detour information, and any traffic impacts that the project may have on the surrounding City roadways, including the short-term impacts during construction and corresponding measures to mitigate these impacts.

3. For the Roosevelt Bridge, the TMP should address how vehicles, buses, bicyclists, etc. will be detoured between Waipio and Mililani during periods of full road closure.

4. For the Halona Bridge, the TMP should address how vehicles, buses, bicyclists, pedestrians, etc. will be detoured during periods of full road closure. Our Traffic Engineering Division recommends detouring vehicles on to the auxiliary lane on H-1 rather than detouring all traffic on to School Street.
5. The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), should be kept apprised of the details of the proposed project and the impacts, particularly during construction, the project may have on the adjoining local street area network.

6. The construction materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic on the local streets.

Thank you for the opportunity to review this matter. Should you have any questions, please contact Renee Yamasaki of my staff at 768-8383.

Very truly yours,

Michael D. Formby
Director

cc: Ms. Kathleen Chu, CH2M Hill, Inc.
TO:  MICHAEL D. FORMBY  
DIRECTOR  
DEPARTMENT OF TRANSPORTATION SERVICES  
650 SOUTH KING STREET, 3RD FLOOR  
HONOLULU, HI  96813

FROM:  J. MICHAEL WILL, P.E.  
PROJECT MANAGER

SUBJECT:  PRE-ASSESSMENT CONSULTATION  
HAWAII BRIDGE PROGRAM, OAHU PROJECTS  
HALONA STREET BRIDGE  
ROOSEVELT (KIPAPA) BRIDGE  
KAWELA BRIDGE  
NANAHU BRIDGE

Dear Mr. Formby:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated May 13, 2015. We offer the following responses in the order presented in your letter:

1. We note that the Nanahu and Kawela projects will not affect City roads.

2. Traffic Management Plans (TMPs) are being prepared for the Roosevelt and Halona projects and will be addressed in environmental documents.

3-4. Public information meetings were held in July for the Halona and Roosevelt projects. The enclosed exhibits show proposed detour routes that were shared with members of the community who attended the meetings. The project team is continuing to evaluate detour options through the environmental review process in an effort to maintain a safe construction zone and to minimize impacts on affected neighborhoods and the traveling public.

5. Community outreach will continue and project information will be disseminated through the construction period.

6. Transport of construction and materials to project sites will be considered in developing project-specific TMPs.
We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL
April 28, 2015

Ms. Kathleen Chu  
CH2M Hill, Inc.  
1132 Bishop Street, Suite 1100  
Honolulu, Hawaii 96813

Dear Ms. Chu:

Subject: Preassessment Consultation  
Hawaii Bridge Program for Island of Oahu  
Federal Highway Administration, Central Federal Lands Highway Division

In response to a letter dated March 24, 2015, from Mr. Michael Will of the U.S. Department of Transportation's Central Federal Lands Highway Division regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the information provided and has no comments regarding the environmental concerns for these projects. However, we request that:

1. The bridges be brought up to current standards to allow our apparatuses to traverse without any restrictions; we can provide you with a list of our apparatus specifications if needed.

2. The HFD be informed of road closures, lane closures, or any condition that would affect our emergency response.

Should you have questions, please contact Battalion Chief Terry Seelig of our Fire Prevention Bureau at tseelig@honolulu.gov or 723-7151.

Sincerely,

SOCRATES D. BRATAKOS  
Assistant Chief

SDB/JW:bh
December 7, 2015

TO: SOCRATES D. BRATAKOS
   ASSISTANT CHIEF
   HONOLULU FIRE DEPARTMENT
   636 SOUTH STREET
   HONOLULU, HI 96813

FROM: J. MICHAEL WILL, P.E.
      PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION
         HAWAII BRIDGE PROGRAM, OAHU PROJECTS
         HALONA STREET BRIDGE
         ROOSEVELT (KIPAPA) BRIDGE
         KAWELA BRIDGE
         NANAHU BRIDGE

Dear Mr. Bratakos:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated April 28, 2015.

Bridge improvements will be designed to meet current AASHTO standards and, therefore, will support unrestricted use by fire apparatuses. The construction management team will keep the Honolulu Fire Department and other emergency responders apprised of access modifications during the construction period.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Cc:
Christine Yamasaki, HDOT
Kevin Ito, HDOT
Nicole Winterton, CFLHD
Kathleen Chu, CH2M HILL
April 27, 2015

Ms. Kathleen Chu, Program Manager
CH2M Hill, Inc.
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Dear Ms. Chu:

This is in response to a letter from the Central Federal Lands Highway Division of the Federal Highway Administration, U.S. Department of Transportation (dated March 24, 2015), requesting environmental concerns for the Hawaii Bridge Program on the island of Oahu.

The Honolulu Police Department has reviewed the fact sheets for the bridge projects. Based on the information provided, we have no concerns regarding any impact to the environment. However, the stability of the bridges and the disturbance of traffic flow require measures to be implemented for the safety of the motorists driving on the bridges.

The integrity of the bridges must be preserved to prevent them from any structural breakdown and collapsing. When construction begins, traffic control devices (e.g., flag persons, clear signage and cones, and special duty officers, etc.) should be utilized to facilitate vehicle movements throughout the project area.

If there are any questions, please contact the following commanders for their respective areas: Major Kerry Inouye of District 2 (Wahiawa – Roosevelt Bridge) at 723-8703; Major Ryan Borges of District 4 (Kailua/Kaneohe/Kahuku – Kawela and Nanahu Bridges) at 235-7621; and Major Crizalmer Caraang of District 5 (Kalihi – Halona Street Bridge) at 723-8202.

Thank you for the opportunity to review this project.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By
MARK TSUYEMURA,
Management Analyst VI
Office of the Chief
TO:  MARK TSUYEMURA FOR LOUIS M. KEALOHA  
HONOLULU POLICE DEPARTMENT  
801 SOUTH BERETANIA STREET  
HONOLULU, HI  96813

FROM:  J. MICHAEL WILL, P.E.  
PROJECT MANAGER

SUBJECT:  PRE-ASSESSMENT CONSULTATION  
HAWAII BRIDGE PROGRAM, OAHU PROJECTS  
HALONA STREET BRIDGE  
ROOSEVELT (KIPAPA) BRIDGE  
KAWELA BRIDGE  
NANAHU BRIDGE

Dear Mr. Tsuyemura:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated April 27, 2015. We offer the following responses:

- Traffic Management Plans will be prepared for all bridge projects.
- Bridges are being designed to meet current standards, including standards for structural integrity and seismic resistance.
- Traffic control devices will be provided through the construction zone in accordance with the Manual of Uniform Traffic Control Devices.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.  
Project Manager

Cc:  
Christine Yamasaki, HDOT  
Kevin Ito, HDOT  
Nicole Winterton, CFLHD  
Kathleen Chu, CH2M HILL
July 22, 2015

Ms. Kathleen Chu, Program Manager
CH2M Hill, Inc.
1132 Bishop Street, Suite 1100
Honolulu, Hawaii  96813

Dear Ms. Chu:

SUBJECT: Hawaii Bridge Program for Island of Oahu
Federal Highway Administration, Central Federal Lands
Highway Division
Pre-Assessment Consultation
Chapter 343, Hawaii Revised Statutes and National Environmental
Policy Act

Thank you for the opportunity to review and comment on the letter dated
March 24, 2015, from the U.S. Department of Transportation, on the above subject.

We do not have any environmental concerns. However, the only comment we
have is that the approximate project limits for the Halona Street Bridge is near the
vicinity of two (2) storm drains the City maintains.

Please be aware of their location and take precautions during construction.

If you have any questions, please call Mr. Thomas Takeuchi of the Division of
Road Maintenance at 768-3608.

Sincerely,

Ross S. Sasamura, P.E.
Director and Chief Engineer
TO: ROSS S. SASAMURA, P.E.  
DIRECTOR AND CHIEF ENGINEER  
DEPARTMENT OF FACILITY MAINTENANCE  
1000 Ulu‘ohia STREET, SUITE 215  
KAPOLEI, HI  96707

FROM: J. MICHAEL WILL, P.E.  
PROJECT MANAGER

SUBJECT: PRE-ASSESSMENT CONSULTATION  
HAWAII BRIDGE PROGRAM, OAHU PROJECTS  
HALONA STREET BRIDGE  
ROOSEVELT (KIPAPA) BRIDGE  
KAWELE BRIDGE  
NANAHU BRIDGE

Dear Mr. Sasamura:

Thank you for pre-assessment comments on the subject projects transmitted by letter dated July 22, 2015.

We acknowledge that you have no environmental concerns at this time.

Additionally, we note that the proximity of two City-maintained storm drains in the vicinity of Halona Street Bridge will be considered during design.

We appreciate your participation in the environmental review process. A copy of the Draft Environmental Assessment will be sent to your office when available for public review and comment. If you have any questions, please contact me at (720) 963-3647, or by email at Michael.will@dot.gov.

Sincerely yours,

J. Michael Will, P.E.  
Project Manager

Cc:  
Christine Yamasaki, HDOT  
Kevin Ito, HDOT  
Nicole Winterton, CFLHD  
Kathleen Chu, CH2M HILL
Appendix A

U.S. Army Corps of Engineers’ Preliminary Jurisdictional Determination and Delineation of Wetlands and Other Waters of the U.S. for the Halona Street Bridge Replacement Project (March 2015)

Mr. Mike Will  
U.S. Department of Transportation  
Federal Highway Administration  
Central Federal Lands Highways Division  
12300 West Dakota Avenue, Suite 380A  
Lakewood, CO 80228-2583

Dear Mr. Will:

The U.S. Army Corps of Engineers, Honolulu District (Corps) has received your letter, dated October 28, 2015, requesting a preliminary jurisdictional determination for the above-subject project. Department of the Army (DA) file number POH-2015-00225 has been assigned this project. Please reference this number in all future correspondence with our office concerning this project.

We have completed review of your submittal pursuant to our authorities at Section 404 of the Clean Water Act (33 U.S.C. 1344)(Section 404) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)(Section 10). Section 404 requires authorization prior to the discharge and/or placement of dredged or fill material into waters of the U.S., including adjacent wetlands. Section 10 requires authorization prior to installing structures or conducting work in, over, under, and affecting navigable waters.

Based on our review of the information submitted and available resources, we have preliminarily determined that the Kapalama Drainage Canal at the Halona Bridge crossing may be a navigable water of the U.S. subject to the Corps’ regulatory jurisdiction (Enclosure 1). Accordingly, a Section 404 DA permit will be required for any activity resulting in the discharge and/or placement of dredged or fill material into the canal below the surveyed high tide line (HTL) in tidal waters, and the surveyed ordinary high water mark (OHWM) in non-tidal waters. A Section 10 DA permit will be required for any for any structures or activities occurring in, over, under, and affecting navigable waters of the U.S. that are NOT related to improvements to the bridge (e.g., maintenance repair of canal walls).

Please be advised, work activities related to the structural components of the Halona Street Bridge that would occur in, over, under, and affecting navigable
tidal) waters should be coordinated with the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401)(Section 9).

This preliminary jurisdictional determination identifies the presence of aquatic resources that may be waters of the U.S. subject to the Corps’ regulatory jurisdiction, but it does not finalize the Corps’ jurisdictional limits for the Kapalama Drainage Canal. The surveyed HTL and/or OHWM must be included on your project plans and may be subject to field verification by the Corps. The surveyed HTL and/or OHWM shall be used to determine whether a DA permit is required and the type of DA permit will be processed for your project.

We recommend that you identify and survey the Kapalama Drainage Canal’s HTL and/or OHWM, as applicable, for portions of the stream that may be impacted by the proposed bridge project, including any area within the canal that may be cleared for maintenance purposes as part of the project scope. The HTL and/or OHWM shall be defined based on physical indicators present in the field (Enclosure 2). If there are circumstances that prevent the physical survey of the HTL and/or mean high water (MHW) mark in the field for tidally-influenced waters, then the HTL and MHW elevations must be established by survey with reference to available tidal datum (i.e., NOAA tidal station 1612340, Honolulu Harbor, 1983-2001 epoch) (Enclosure 3, or web link at: http://tidesandcurrents.noaa.gov/datum.html?id=1612340). The mean higher high water (MHHW) datum may be substituted for the HTL datum, but the HTL/MHHW and MHW elevations must be adjusted and in reference to mean sea level (MSL) (or MSL = 0) for this project location.

The enclosed preliminary jurisdictional determination (JD) is a written indication that wetlands and waterways within your project area may be waters of the U.S. (Enclosure 4). For purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a preliminary JD will treat all waters and wetlands that would be affected by the permitted activity as if they are jurisdictional waters of the U.S. If you concur with the findings of this preliminary JD, please sign it and return it to the following address within two weeks. If you believe the preliminary JD is inaccurate, you may request an approved JD, which is an official determination regarding the presence or absence of waters of the U.S.

Honolulu District
U.S. Army Corps of Engineers
Regulatory Office, Building 230
Fort Shafter, Hawaii 96858-5440

Thank you for your cooperation with the Honolulu District Regulatory Program. Should you have any questions related to this preliminary determination, please contact Ms. Joy Anamizu at (808) 835-4308 or via e-mail at joy.n.anamizu@usace.army.mil.
You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Sincerely,

Michelle R. Lynch
Chief, Regulatory Office

Enclosures:

Cc via email w/encls:
T. Parker, CFLHD
T. Bovino Agostini, SWCA
Above: Source – Google Earth, Aerial Imagery (29 Jan 2013) (project site in red);
Below: Source – ORM2, Aerial Imagery w/ USFWS NWI layer (project site in red)
(b) General Tributary Characteristics (check all that apply):

**Tributary is:**
- Natural
- Artificial (man-made). Explain: 
- Manipulated (man-altered). Explain: 

**Tributary properties with respect to top of bank (estimate):**
- Average width: feet
- Average depth: feet
- Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
- Silts
- Sands
- Gravel
- Concrete
- Cobbles
- Bedrock
- Vegetation. Type/% cover:
- Other. Explain: 

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: 
Presence of run/riffle/pool complexes. Explain: 
Tributary geometry: **Pick List** 
Tributary gradient (approximate average slope): %

(c) Flow:

**Tributary provides for:** **Pick List**

Estimate average number of flow events in review area/year: **Pick List**

Describe flow regime: 
Other information on duration and volume: 
Surface flow is: **Pick List.** Characteristics: 
Subsurface flow: **Pick List.** Explain findings: 
- Dye (or other) test performed: 

Tributary has (check all that apply):
- Bed and banks
- OHWM** (check all indicators that apply):
  - clear, natural line impressed on the bank
  - changes in the character of soil
  - shelving
  - vegetation matted down, bent, or absent
  - leaf litter disturbed or washed away
  - sediment deposition
  - water staining
  - other (list): 
- Discontinuous OHWM.** Explain: 

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
- High Tide Line indicated by: 
- Mean High Water Mark indicated by: 
- survey to available datum; 
- physical markings/characteristics 

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Identify specific pollutants, if known: 

---

*A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody’s flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

**Ibid.**
There is a scheduled power outage which will affect CO-OPS' Tides and Currents web site (http://tidesandcurrents.noaa.gov/) beginning on Friday, December 4th, at 2:00 P.M, EST. During this time, the Tides and Currents website will have limited capability. Click here for more information (/coop_notice.html).

Datums for 1612340, Honolulu HI

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Data Units
- Feet
- Meters

Epoch
- Present (1983-2001)
- Superseded (1960-1978)

Submit
Datum Value Description
LAT Date & Time 05/24/1990 18:54 LAT Date and Time

Tidal Datum Analysis Periods
01/01/1983 - 12/31/2001


## Products available at 1612340 Honolulu, HI

### TIDES/WATER LEVELS
- Water Levels (/waterlevels.html?id=1612340)
- NOAA Tide Predictions (/noaatidepredictions/NOAA_TidesFacade.jsp?StationId=1612340)
- Harmonic Constituents (/harcon.html?id=1612340)
- Sea Level Trends (/sltrends/sltrends_station.shtml?stnid=1612340)
- Datums (/datums.html?id=1612340)
- Bench Mark Sheets (/benchmarks.html?id=1612340)
- Extreme Water Levels (/est/est_station.shtml?stnid=1612340)
- Reports (/reports.html?id=1612340)

### METEOROLOGICAL/OTHER
- Meteorological Observations (/met.html?id=1612340)
- Water Temp/Conductivity
- PORTS® This station is not a member of PORTS®

### OPERATIONAL FORECAST SYSTEMS
This station is not a member of OFS

### INFORMATION
- Station Home Page (/stationhome.html?id=1612340)
- Data Inventory (/inventory.html?id=1612340)
- Measurement Specifications (/measure.html)

## Revised: 10/15/2013
Web site owner: Center for Operational Oceanographic Products and Services
This preliminary jurisdictional determination (JD) finds that there “may be” waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION: 2 Dec 2015

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
   Mr. Mike Will
   U.S. Department of Transportation
   Federal Highway Administration
   Central Federal Lands Highways Division
   12300 West Dakota Avenue, Suite 380A
   Lakewood, CO 80228-2583

C. DISTRICT OFFICE: Honolulu District, CEPOH-RO
   FILE NAME: Central Federal Lands Highways Division (CFLHD) Halona Street Bridge Project, Honolulu (Kalihi) Oahu Island, Hawaii
   FILE NUMBER: POH-2015-00225

D. PROJECT LOCATION(S), BACKGROUND INFORMATION, AND WATERS:
   State or Territory: Hawaii
   City: Honolulu
   County: Honolulu
   Center Coordinates of Site:
      Latitude: 21.326906°
      Longitude: -157.867339°
   Name of nearest waterbody: Kapalama Drainage Canal
   Identify the amount of waters in the review area:
      ☒ Non-wetland waters: ~ 560 linear feet; ~ 95 width (ft); _0.97__ acres
         Cowardin Classification: Estuarine/Riverine
      ☐ Wetlands: ___ acres
         Cowardin Classification:
      ☐ Other:
Name of any water bodies on the site that have been identified as Section 10 waters:
   Tidal: Kapalama Drainage Canal
   Non-Tidal: Kapalama Drainage Canal

E. REVIEW PERFORMED FOR SITE EVALUATION:
   ☒ Office (Desk) Determination. Date: 1 Dec 2015
   ☐ Field Determination. Date(s):

F. EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:
   1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

   2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring “pre-construction notification” (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant’s acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD
will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

G. SUPPORTING DATA:
Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):
- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: CFLHD project letter, dated 28 Oct 2015, and SWCA WOUS report, dated Mar 2015.
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - Office concurs with data sheets/delineation report.
  - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:     .
- Corps navigable waters’ study:     .
- U.S. Geological Survey Hydrologic Atlas:
  - USGS NHD data.
  - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite quad name: Honolulu Quad, 7.5 min series
- USDA Natural Resources Conservation Service Soil Survey. Citation:
- National wetlands inventory map(s). Cite name: USFWS NWI e-mapper
- State/Local wetland inventory map(s):     .
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- Photographs:  Aerial (Name & Date): Aerial imagery, 29 Jan 2013
  or  Other (Name & Date): 11 Sep 2014 photos in SWCA WOUS report, dated Mar 2015
- Previous determination(s). File no. and date of response letter:     .
- Other information (please specify): Waolani Stream HUC 200600000304 / 12606.462772 sq ac

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

/s/ Joy Anamizu, 2 Dec 2015
Signature and date of
Regulatory Project Manager
(REQUIRED)

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining the signature is impracticable)
Determination and Delineation of Wetlands and Other Waters of the U.S. for the Hālona Bridge Project

Kalihi, Oʻahu Island, Hawaiʻi

Prepared for
CH2M HILL

Prepared by
SWCA Environmental Consultants

March 2015
PROJECT NAME: Hālona Bridge

SITE LOCATION: Kalihi, O‘ahu Island, Hawai‘i
21°19’36.81"N, 157°52’2.41"W

OWNER: Hawai‘i Department of Transportation

SURVEY DATES: September 11, 2014

PROJECT STAFF: Tiffany Bovino Agostini, Botanist/Project Manager
Bryson Luke, Field Technician

SUMMARY

SWCA Environmental Consultants (SWCA) was tasked by CH2M HILL to conduct a determination and delineation of wetlands and other potential Waters of the U.S. governed by the Clean Water Act and the Rivers and Harbors Act at nine bridge projects throughout the state of Hawai‘i. This report summarizes the findings of the potential Waters of the U.S. delineation conducted at the Hālona Bridge site located in Kalihi, O‘ahu, on September 11, 2014.

The purpose of the project is to address the existing Hālona Bridge (#003000H10202075) to amend structurally deficient conditions and meet current design standards for roadway width, load capacity, pedestrian/bicycle traffic, bridge railing and transitions, and bridge approaches. The survey was conducted in support of the environmental compliance efforts for the project.

The survey area encompasses approximately 5.37 acres (2.17 hectares). Elevations at the site range from approximately 2 to 24 feet (0.6 to 7.3 meters) above mean sea level. The National Wetlands Inventory program identifies five types of wetlands or waterways in the survey area (E2EM1N, E1UBL, R2USCx, R2USC, and R4SBCx). An additional riverine feature—R2UBHx—is identified immediately adjacent to the survey area. Geospatial data from the State of Hawai‘i and the U.S. Geological Survey identify perennial Kapālama Stream within the survey area.

No wetland sampling points were evaluated in the survey area because of the lack of hydrophytic plants (or vegetation in general). However, SWCA delineated approximately 0.97 acre (0.39 hectare) of non-wetland Waters of the U.S., a drainage channel channelized with vertical concrete walls. The channel bed is concrete-lined near the northern portion of the survey area, and according to project engineers, the bed comprises natural material closer to the bridge. The stream appears to carry a relatively permanent flow of water to the Pacific Ocean. This conclusion is subject to confirmation by the U.S. Army Corps of Engineers.
CONTENTS

1.0 INTRODUCTION .................................................................................................................................. 1
2.0 DESCRIPTION OF THE SURVEY AREA .............................................................................................. 1
  2.1 Location and Vicinity .......................................................................................................................... 1
  2.2 Topography and Soils ......................................................................................................................... 3
  2.3 Hydrology ........................................................................................................................................... 3
  2.4 Flora and Fauna ................................................................................................................................... 3
3.0 METHODOLOGY ................................................................................................................................... 6
4.0 FINDINGS ............................................................................................................................................. 6
  4.1 Non-Wetland Waters ........................................................................................................................... 6
  4.2 Wetlands ............................................................................................................................................. 9
5.0 CONCLUSIONS ................................................................................................................................... 9
6.0 LITERATURE CITED .......................................................................................................................... 10

FIGURES

Figure 1. Location of the survey area ........................................................................................................... 2
Figure 2. Soil types within the survey area .................................................................................................. 4
Figure 3. National Wetland Inventory classifications near the survey area ........................................... 5
Figure 4. Delineated non-wetland Waters of the U.S. ............................................................................. 7
Figure 5. Kapālama Stream looking upstream from the bridge ............................................................. 8
Figure 6. Kapālama Stream looking downstream toward the bridge ...................................................... 8
ABBREVIATIONS

CFR    Code of Federal Regulations
CWA    Clean Water Act
ha     hectare(s)
m      meter(s)
MHW    Mean High Water
MHHW   Mean Higher High Water
mm     millimeter(s)
NRCS   Natural Resources Conservation Service
NWI    National Wetlands Inventory
RHA    Rivers and Harbors Act
SWCA   SWCA Environmental Consultants
USACE  U.S. Army Corps of Engineers
WoUS   Waters of the U.S.
1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE) derives its regulatory authority over wetlands and other Waters of the U.S. (WoUS) from two federal laws: 1) Section 10 of the Rivers and Harbors Act (RHA) of 1899 and 2) Section 404 of the Clean Water Act (CWA) of 1972. The RHA of 1899 prevents unauthorized obstruction or alteration of navigable WoUS. Navigable waters are defined as “subject to the ebb and flow of the tide and/or presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce” (33 Code of Federal Regulations [CFR] 325.5(c)(2)). A Section 10 permit is required for non-fill discharging activities proposed within, over, or under WoUS. The limits of jurisdiction for tidally influenced navigable waters extend to the Mean High Water (MHW) line or High Tide Line. A more conservative approach than the MHW, the Mean Higher High Water (MHHW) line, is often used.

Under Section 404 of the CWA, dredged and fill material may not be discharged into jurisdictional WoUS (including wetlands) without a permit. According to 40 CFR 230.3, WoUS subject to agency jurisdiction under Section 404 include navigable waters and their tributaries, interstate waters and their tributaries, wetlands adjacent to these waters, and impoundments of these waters. In addition, waters are protected by the CWA if determined to have a “significant nexus” with a traditional navigable water or interstate water (Environmental Protection Agency and USACE 2011). The U.S. Supreme Court’s decision in the consolidated cases Rapanos v. United States and Carabell v. United States (126 S. Ct. 2208) provides further information regarding whether a wetland or tributary is a WoUS. A Section 404 permit is required for all fill or discharge activities below (seaward or makai) of the MHW/MHHW line or High Tide Line in tidal waters or ordinary high water mark (OHWM) for non-tidal, non-wetland waters.

The USACE (33 CFR 230.3) and U.S. Environmental Protection Agency (40 CFR 230.3) define wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (40 CFR 232.3). The 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987 Manual; USACE 1987), as amended, outlines the technical guidelines and methods for identifying and delineating wetlands potentially subject to Section 404. This manual is supplemented by the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawai‘i and Pacific Islands Region (Hawai‘i and Pacific Island Regional Supplement; USACE 2012).

CH2M HILL is reviewing the proposed Hālona Bridge project (hereafter project) pursuant to Section 10 of the RHA and Section 404 of the CWA. The purpose of the project is to address the existing Hālona Bridge (#003000H10202075) to amend structurally deficient conditions and meet current design standards for roadway width, load capacity, pedestrian/bicycle traffic, bridge railing and transitions, and bridge approaches. The survey was conducted in support of the environmental compliance efforts for the project.

2.0 DESCRIPTION OF THE SURVEY AREA

2.1 Location and Vicinity

The Hālona Bridge site is in the Kalihi area on the Island of O‘ahu. The survey area encompasses Hālona Street from Kaauwai Place to Palama Street, a segment of the Interstate Route H-1 (Lunalilo Freeway), and portions of Kokea Street and Kohou Street (Figure 1). It covers approximately 5.37 acres (2.17 hectares [ha]). The surrounding area is predominantly residential.
Figure 1. Location of the survey area.
2.2 Topography and Soils

Most of the survey area is relatively flat. Elevations at the site range from roughly 2 to 24 feet (0.6 to 7.3 meters [m]) above sea level. The Natural Resources Conservation Service (NRCS) identifies the following four soil types within the survey area: Kawaihapai stony clay loam, 2%–6% slopes (KlaB); Hanalei silty clay, 0%–2% slopes (HnA); Ewa silty clay loam, moderately shallow, 0%–2% slopes (EmA); and Water > 40 acres (W) (Foote et al. 1972; NRCS 2013) (Figure 2). The Hanalei silty clay, 0%–2% slopes soil type is listed as a hydric soil (NRCS 2012). Most of the survey area is covered in asphalt concrete-paved roadways.

2.3 Hydrology

Mean annual rainfall for this area is approximately 37 inches (940 millimeters [mm]). Rainfall is typically highest in November–December and lowest in June–August (Giambelluca et al. 2013). The closest rainfall gage to the site has experienced slightly above-average rainfall for 2014 through the end of September (National Oceanic and Atmospheric Administration/National Weather Service, Weather Forecast Office Honolulu 2014).

The National Wetlands Inventory (NWI) program identifies five wetlands or waterways in the survey area (Figure 3). These comprise E2EM1N (Estuarine, Intertidal, Emergent, Persistent, Regularly Flooded), E1UBL (Estuarine, Subtidal, Unconsolidated bottom), R2USCx (Riverine, Lower Perennial, Unconsolidated Shore, Seasonally Flooded, Excavated), R2USC (Riverine, Lower Perennial, Unconsolidated Shore, Seasonally Flooded), and R4SBCx (Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated). An additional Riverine feature—R2UBHx (Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated)—is identified by the NWI program immediately adjacent to the survey area (Figure 3).

The State of Hawai‘i and the U.S. Geological Survey identify Kapālama Stream (or Kapālama Drainage Canal) transversing the survey area (see Figure 1). The total length of this perennial stream is approximately 5.6 miles (9 kilometers) according to the Atlas of Hawaiian Watersheds & Their Aquatic Resources (Parham et al. 2008).

Kapālama Stream is listed as a 303(d) Impaired Waterbody. The following are listed as the causes of impairment: total nitrogen, total phosphorus, nitrate/nitrite, trash, and turbidity (Hawai‘i State Department of Health 2014).

2.4 Flora and Fauna

Flora and fauna surveys of the survey area were conducted by SWCA on the same date as the WoUS survey. Vegetation types identified during that survey include weedy vegetation and ornamental landscaping. The site is dominated by non-native plants, and no listed plant species were seen (SWCA 2014).

One state-listed animal species, the threatened white tern (Gygis alba), was observed transiting above the survey area. White terns are listed under Hawai‘i Revised Statutes (HRS) 195D as threatened on O‘ahu Island only. The endangered Hawaiian hoary bat or ‘ōpe‘ape‘a (Lasiurus cinereus semotus) may pass through the site or may use adjacent trees as roosting sites, but impacts to this species are not expected to occur so long as trees are not removed as a result of the project (SWCA 2014).
Figure 2. Soil types within the survey area.
Note: EmA = Ewa silty clay loam, moderately shallow, 0%–2% slopes; HnA = Hanalei silty clay, 0%–2% slopes; KlaB = Kawaihapai stony clay loam, 2%–6% slopes; W = Water > 40 acres.
Figure 3. National Wetland Inventory classifications near the survey area.
3.0 METHODOLOGY

Before visiting the survey area, aerial photographs and topographic maps were examined to identify potential wetlands or WoUS in or near the survey area. Information was also gleaned from the NWI program, NRCS hydric soil data, as well as previous water resource reports and environmental assessments/environmental impact statements.

SWCA biologists conducted WoUS determination and delineation fieldwork on September 11, 2014. As stated above, the jurisdiction of tidal, non-wetland WoUS extends to the High Tide Line or MHW line. The High Tide Line is defined as the intersection of the land with the water's surface at the maximum height reached by a rising tide (33 CFR Part 328). MHW is defined as the average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch. The MHW line is 0.62 feet (0.19 m) above mean sea level, and the MHHW is 1.08 feet (0.33 m) above mean sea level. However, because the stream contains vertical concrete walls and the wall height exceeds the MHW and MHHW, SWCA determined the jurisdictional boundary of the potential WoUS by mapping the top of the vertical concrete wall. The boundaries of the stream under the freeway were estimated by connecting the known boundaries of the stream at the existing bridge with the boundaries of the stream just north of Olomea Street.

The geographic coordinates were collected in the field with Trimble GeoExplorer 2008 Series global positioning system (GPS) unit and data were post-processed in ArcGIS using GPS Correct to sub-meter accuracy. The linear length and acreage of the feature were calculated by projecting these point and line data files in a geographic information system.

4.0 FINDINGS

4.1 Non-Wetland Waters

A single perennial stream (known as Kapālama Stream or Canal) was identified in the survey area (Figure 4). Approximately 0.97 acre (0.39 ha) of non-wetland WoUS were delineated within the survey area.

The stream is channelized and entirely surrounded by urban development; thus, the original drainage course has been extensively modified. In the northern portion of the survey area, approximately 300 feet (91 m) upstream of the existing bridge, the channelized stream forks. The channel bed is concrete-lined in the immediate vicinity of the fork; however, according to project engineers, the channel bed comprises natural material closer to the bridge.

Standing water was observed in the stream during the survey (Figures 5 and 6). Most of Kapālama Stream within the survey area was determined to be tidally influenced due to the presence of marine/estuarine fish (striped mullet [Mugil cephalus] and great barracuda [Sphyraena barracuda]) near the bridge and observed changes in water levels throughout the day. It is unknown how often water within the channelized forks is tidally influenced.

According to NWI data, the unnamed right fork terminates before the intersection with North School Street (outside of the survey area). The left fork (named Kapālama Stream) continues mauka toward the Koʻolau Mountain Range. Downstream of the survey area, Kapālama Stream flows southwest between Kokea and Kohou Street and eventually empties into Honolulu Harbor roughly 0.8 mile (1.3 kilometers) from the survey area.
Figure 4. Delineated non-wetland Waters of the U.S.
Figure 5. Kapālama Stream looking upstream from the bridge.

Figure 6. Kapālama Stream looking downstream toward the bridge.
4.2 Wetlands

No wetlands were identified within the survey area. Most of the survey area is composed of pavement and concrete. Vegetated areas are mowed grasses and ornamental trees, interspersed with various weeds. The only hydrophytic plants seen occur within the concrete-lined portion of the channel where sediment has accumulated along the edges of the concrete walls.

5.0 CONCLUSIONS

SWCA surveyed and delineated a single perennial non-wetland WoUS (known as Kapālama Stream or Canal) within the survey area. The stream was noted to be tidal in the immediate vicinity of the bridge during the survey, connecting to the Honolulu Harbor.

Because the bridge project involves non-fill discharging activities over a WoUS, a Section 10 permit will likely be required. If the proposed project intends to place dredged or fill material within the delineated feature (such as a bridge pillar), it could be subject to either a Section 10 or Section 404 Nationwide Permit (NWP). These conclusions are subject to confirmation by the USACE Honolulu District.

The general rule regarding the State Section 401 water quality certification is, if the USACE identifies that a permit (NWP/LOP/SIP) under Section 404 is required, the applicant will likely need a Section 401 water quality certification from the State Department of Health Clean Water Branch (CWB). Often a 401 water quality certification is not required for Section 10 permits. If the CWB responds and requires a 401 water quality certification, it can take several months to a year to process. In addition, a Stream Channel Alteration Permit (SCAP) may be required from the Commission on Water Resource Management (CWRM), depending on the activities proposed. SWCA recommends submitting a Request for Determination (RFD) from CWRM. If a SCAP is required, the permit timeframe is 90 days.
6.0 LITERATURE CITED


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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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**TARGET PROPERTY INFORMATION**

**ADDRESS**

LUNALILO FREEWAY/KOHOU STREET
HONOLULU, HI 96817

**COORDINATES**

- Latitude (North): 21.3266000 - 21° 19’ 35.76''
- Longitude (West): 157.8675000 - 157° 52’ 3.00''
- Universal Tranverse Mercator: Zone 4
- UTM X (Meters): 617448.9
- UTM Y (Meters): 2358577.2
- Elevation: 3 ft. above sea level

**USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY**

- Target Property: TP
  - Source: USGS 7.5 min quad index
- Target Property: W
  - Source: USGS 7.5 min quad index
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**LUNA LILIO FREEWAY/KOHOU STREET**  
**HONOLULU, HI 96817**

Click on Map ID to see full detail.

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**Target Property Address:**
LUNALILO FREEWAY/KOHOU STREET  
HONOLULU, HI 96817

Click on Map ID to see full detail.

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<td>Higher</td>
<td>2474, 0.469, SSE</td>
</tr>
<tr>
<td>65</td>
<td>CLASSIC BOWL</td>
<td>1190 DILLINGHAM BLVD</td>
<td>HI SHWS</td>
<td>Higher</td>
<td>2547, 0.482, SW</td>
</tr>
<tr>
<td>66</td>
<td>HAWAIIAN CANDIES &amp; N</td>
<td>707 WAIKAMILO RD</td>
<td>HI LUST, HI UST</td>
<td>Higher</td>
<td>2566, 0.486, WSW</td>
</tr>
<tr>
<td>67</td>
<td>FARRINGTON HIGH SCHO</td>
<td>1564 N KING ST</td>
<td>FTTS, FTTS FTTS, HI SHWS, HI SPILLS</td>
<td>Higher</td>
<td>2644, 0.501, WNW</td>
</tr>
<tr>
<td>68</td>
<td>DOLE IWILEI</td>
<td>801 DILLINGHAM BLVD</td>
<td>HI SHWS, HI SPILLS, HI INST CONTROL</td>
<td>Higher</td>
<td>2646, 0.501, South</td>
</tr>
<tr>
<td>69</td>
<td>KAMEHAMEHA SCHOOLS -</td>
<td>1336 DILLINGHAM BLVD</td>
<td>HI SHWS, HI SPILLS</td>
<td>Higher</td>
<td>2785, 0.527, WSW</td>
</tr>
<tr>
<td>70</td>
<td>HALL MARK DRY CLEANE</td>
<td>1470 LILIHA ST</td>
<td>HI SHWS</td>
<td>Higher</td>
<td>3042, 0.576, SE</td>
</tr>
<tr>
<td>71</td>
<td>LANCE GOYA CHEVRON</td>
<td>504 N SCHOOL ST</td>
<td>HI SHWS, HI LUST, HI UST, HI ENG CONTROLS, HI INST...</td>
<td>Higher</td>
<td>3105, 0.588, SE</td>
</tr>
<tr>
<td>72</td>
<td>COSTCO WAREHOUSE</td>
<td>525 ALAKAWA ST</td>
<td>HI SHWS, HI ENG CONTROLS, HI INST CONTROL, HI VCP</td>
<td>Higher</td>
<td>3215, 0.609, SSW</td>
</tr>
<tr>
<td>73</td>
<td>COSTCO GAS STATION</td>
<td>520 ALAKAWA ST</td>
<td>HI SHWS, HI ENG CONTROLS, HI INST CONTROL, HI VCP</td>
<td>Higher</td>
<td>3234, 0.613, SSW</td>
</tr>
<tr>
<td>74</td>
<td>VON HAMM TEXTILES</td>
<td>546 KAAAHI ST</td>
<td>HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST...</td>
<td>Higher</td>
<td>3243, 0.614, South</td>
</tr>
<tr>
<td>75</td>
<td>1385 COLBURN STREET</td>
<td>1385 COLBURN ST</td>
<td>HI SHWS, HI SPILLS</td>
<td>Higher</td>
<td>3250, 0.616, WSW</td>
</tr>
<tr>
<td>76</td>
<td>NUUANU AUTO COMPANY</td>
<td>545 KAAAHI ST</td>
<td>HI SHWS</td>
<td>Higher</td>
<td>3252, 0.616, South</td>
</tr>
</tbody>
</table>

4293163.2s Page 3
Target Property Address:
LUNALILO FREEWAY/KOHOU STREET
HONOLULU, HI 96817

Click on Map ID to see full detail.

MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) |
-------|-----------|---------|-------------------|-------------------|-----------------|
77 | HAWAIIAN GAS PRODUCT | 516-520 KUWIILI ST | EDR MGP | Higher | 3280, 0.621, South |
78 | GENERAL TIRE | 505 WAIKAMOLO RD | HI SHWS, HI SPILLS | Higher | 3329, 0.630, WSW |
79 | IWILEI BUSINESS CENT | 501 SUMMER ST | HI SHWS, HI SPILLS, HI INST CONTROL | Higher | 3409, 0.646, SSW |
80 | TRAVEL PLAZA TRANSP | 818 PINE ST | HI SHWS, HI LUST, HI UST, HI Financial Assurance | Higher | 3438, 0.651, South |
81 | HOME DEPOT | 421 ALAKAWA ST | HI SHWS, HI ENG CONTROLS, HI INST CONTROL | Higher | 3681, 0.697, SSW |
82 | BEST BUY | ALAKAWA ST & NIMITZ | HI SHWS, HI SPILLS | Higher | 3829, 0.725, SW |
83 | BHP GASCO BENZENE SI | 616 IWILEI RD | HI SHWS, HI SPILLS, HI INST CONTROL, HI AIRS | Higher | 3928, 0.744, SSW |
84 | MCCABE, HAMILTON, & | 1130 N NIMITZ HWY | HI SHWS, HI SPILLS | Higher | 4028, 0.763, SW |
85 | 1305 HART STREET | 1305 HART ST | HI SHWS, HI SPILLS, HI INST CONTROL | Higher | 4049, 0.767, WSW |
86 | DOMESTIC COMMERCIAL | 1133 N NIMITZ HWY | HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST... | Higher | 4099, 0.776, SW |
87 | 373 NORTH NIMITZ HIG | 373 N NIMITZ HWY | HI SHWS, HI SPILLS | Higher | 4104, 0.777, South |
88 | SENIOR RESIDENCES AT | 888 IWILEI RD | HI SHWS, HI INST CONTROL | Higher | 4132, 0.783, South |
89 | BHP GASCO | 432 PACIFIC STREET | EDR MGP | Higher | 4148, 0.786, SSW |
90 | LILAHI CIVIC CENTER | 337 N KING ST | HI SHWS | Higher | 4153, 0.787, SSE |
91 | CHEVRON KAPALAMA TER | 1105 N NIMITZ HWY | HI SHWS, HI SPILLS, HI INST CONTROL | Higher | 4156, 0.787, SW |
92 | UNOCAL 76 HONOLULU L | 411 PACIFIC ST | RCRA NonGen / NLR, FINDS, HI SHWS, HI UST, HI... | Higher | 4217, 0.799, SSW |
93 | IWILEI FRUIT AND VEG | 920 IWILEI ROAD | HI SHWS, HI LUST, HI UST | Higher | 4235, 0.802, SSE |
94 | HART STREET WWPS | 1031 N NIMITZ HWY | HI SHWS, HI UIC | Higher | 4273, 0.809, SW |
95 | KUAKINI MEDICAL CENT | 347 N KUAKINI ST | RCRA-SQG, FINDS, HI SHWS, HI LUST, HI UST, HI... | Higher | 4274, 0.809, ESE |
96 | 420-470 NORTH NIMITZ | 420-470 N NIMITZ HWY | HI SHWS, HI ENG CONTROLS | Higher | 4337, 0.821, South |
97 | FACTORY STREET LEAD | 2003 N KING ST | HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST... | Higher | 4339, 0.822, WWN |
98 | 356 PACIFIC STREET B | 356 PACIFIC ST | HI SHWS, HI SPILLS | Higher | 4346, 0.823, SSW |
99 | YOUNG BROTHERS REFRI | 1331 N NIMITZ HWY | HI SHWS, HI SPILLS | Higher | 4351, 0.824, WSW |
100 | GTE HAWAIIAN TEL - C | ALAKAWA ST & NIMITZ | HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST... | Higher | 4369, 0.827, SW |
101 | BREWER ENVIRONMENTAL | 311 PACIFIC ST | HI SHWS, HI SPILLS, HI VCP | Higher | 4373, 0.828, SSW |
102 | IWILEI PROJECT SITE | IWILEI RD & N KING S | HI SHWS | Higher | 4380, 0.830, SSE |
103 | POLYNESIAN HOSPITALI | 330 PACIFIC ST | RCRA-CESQG, FINDS, HI SHWS, HI LUST, HI UST, HI... | Higher | 4393, 0.832, SSW |
104 | MID PAC PETROLEUM LL | 540 N NIMITZ HWY | HI SHWS, HI LUST, HI UST, HI Financial Assurance | Higher | 4522, 0.856, SW |
105 | HAWAII STEVEDORES | 965 N NIMITZ HWY | HI SHWS, HI SPILLS, HI ENG CONTROLS | Higher | 4528, 0.858, SW |
106 | 215 NORTH KING STRE | 215 N KING ST | HI SHWS | Higher | 4574, 0.866, SSE |
107 | CHEVRON HONOLULU TRA | 933 N NIMITZ HWY | HI SHWS, HI ENG CONTROLS, HI Financial Assurance | Higher | 4582, 0.868, SSW |
108 | TOWN INN | 248-258 N BERETANIA | HI SHWS, HI INST CONTROL, HI VCP | Higher | 4598, 0.871, SSE |
109 | KAMEHAMEHA SCOLS | 1887 MAKUAKANE ST | RCRA-CESQG, FINDS, HI SHWS, HI SPILLS, HI ENG... | Higher | 4650, 0.881, North |
110 | 580 NORTH NIMITZ HIG | 580 N NIMITZ HWY | HI SHWS, HI ENG CONTROLS | Higher | 4654, 0.881, South |
111 | CITY MILL | 660 N NIMITZ HWY | HI SHWS, HI LUST, HI UST, HI INST CONTROL | Higher | 4689, 0.888, South |
112 | DILLINGHAM BOULEVARD | DILLINGHAM BLVD & MO | HI SHWS, HI ENG CONTROLS, HI INST CONTROL | Higher | 4698, 0.890, West |
113 | WEYERHAEUSER | 900 N NIMITZ HWY | HI SHWS, HI SPILLS | Higher | 4711, 0.892, SSW |
114 | ZIPPY’S 634 N NIMITZ | 634 N NIMITZ HWY | HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST... | Higher | 4746, 0.899, South |
115 | KAPALAMA INCINERATOR | 757 KOKEA ST | RCRA-SQG, HI SHWS, HI SPILLS, HI INST CONTROL | Higher | 4765, 0.902, WWN |
### MAPPED SITES SUMMARY

**Target Property Address:**  
**LUNALILO FREEWAY/KOHOU STREET**  
**HONOLULU, HI 96817**

Click on Map ID to see full detail.

<table>
<thead>
<tr>
<th>MAP ID</th>
<th>SITE NAME</th>
<th>ADDRESS</th>
<th>DATABASE ACRONYMS</th>
<th>RELATIVE ELEVATION</th>
<th>DIST (ft. &amp; mi.)</th>
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</thead>
<tbody>
<tr>
<td>116</td>
<td>AWA WASTEWATER PUMP</td>
<td>190 N NIMITZ HWY</td>
<td>HI SHWS, HI SPILLS</td>
<td>Lower</td>
<td>4775, 0.904, South</td>
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<tr>
<td>V117</td>
<td>861-869 NORTH NIMITZ</td>
<td>861-869 N NIMITZ HWY</td>
<td>HI SHWS, HI ENG CONTROLS, HI INST CONTROL</td>
<td>Higher</td>
<td>4819, 0.913, SSW</td>
</tr>
<tr>
<td>V118</td>
<td>HAWAIIAN ELECTRIC CO</td>
<td>855 N NIMITZ HWY</td>
<td>HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST CONTROL</td>
<td>Higher</td>
<td>4847, 0.918, SSW</td>
</tr>
<tr>
<td>119</td>
<td>700 N NIMITZ IDPP RE</td>
<td>700 N NIMITZ HWY</td>
<td>HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST CONTROL</td>
<td>Higher</td>
<td>4879, 0.924, SSW</td>
</tr>
<tr>
<td>W120</td>
<td>HAWAIIAN GRAIN CORPO</td>
<td>701 N NIMITZ HWY</td>
<td>HI SHWS, HI LUST, HI UST</td>
<td>Higher</td>
<td>5057, 0.958, SSW</td>
</tr>
<tr>
<td>X121</td>
<td>PAULEY PETROLEUM</td>
<td>795 N NIMITZ HWY</td>
<td>HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST CONTROL</td>
<td>Higher</td>
<td>5082, 0.962, SSW</td>
</tr>
<tr>
<td>W122</td>
<td>HAWAIIAN FLOUR MILL</td>
<td>703 N NIMITZ HWY</td>
<td>HI SHWS</td>
<td>Higher</td>
<td>5085, 0.963, SSW</td>
</tr>
<tr>
<td>W123</td>
<td>MOANA PAA KAI</td>
<td>705 N NIMITZ HWY</td>
<td>RCRA-CESQG, HI SHWS, HI SPILLS</td>
<td>Higher</td>
<td>5087, 0.963, SSW</td>
</tr>
<tr>
<td>X124</td>
<td>EQUILON ENTERPRISES</td>
<td>789 N NIMITZ HWY</td>
<td>HI SHWS</td>
<td>Higher</td>
<td>5098, 0.966, SSW</td>
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<tr>
<td>125</td>
<td>CHANG-CHOW PROPERTY,</td>
<td>2161 N SCHOOL ST</td>
<td>HI SHWS</td>
<td>Higher</td>
<td>5099, 0.966, NNE</td>
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<tr>
<td>Y126</td>
<td>BHP PIER 29</td>
<td>739 N NIMITZ HWY</td>
<td>HI SHWS</td>
<td>Higher</td>
<td>5112, 0.968, SSW</td>
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<tr>
<td>127</td>
<td>KEKAULIKE DIAMOND HE</td>
<td>163 N HOTEL ST</td>
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<td>Higher</td>
<td>5116, 0.968, SSE</td>
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<tr>
<td>128</td>
<td>775 NORTH NIMITZ HIG</td>
<td>775 N NIMITZ HWY</td>
<td>HI SHWS, HI ENG CONTROLS, HI INST CONTROL</td>
<td>Higher</td>
<td>5120, 0.970, SSW</td>
</tr>
<tr>
<td>Y129</td>
<td>755 N NIMITZ HWY</td>
<td>755 N NIMITZ HWY</td>
<td>HI SHWS, HI SPILLS, HI ENG CONTROLS, HI INST CONTROL</td>
<td>Higher</td>
<td>5122, 0.970, SSW</td>
</tr>
<tr>
<td>130</td>
<td>PACIFIC POULTRY</td>
<td>1804 KANAKANUI ST</td>
<td>HI SHWS, HI SPILLS</td>
<td>Higher</td>
<td>5228, 0.990, West</td>
</tr>
<tr>
<td>131</td>
<td>KUHIO PARK TERRACE T</td>
<td>LINAPUNI ST</td>
<td>HI SHWS, HI ENG CONTROLS, HI INST CONTROL</td>
<td>Higher</td>
<td>5239, 0.992, NW</td>
</tr>
<tr>
<td>132</td>
<td>SAUSE BROTHERS</td>
<td>ALAKEA ST</td>
<td>HI SHWS, HI SPILLS</td>
<td>Higher</td>
<td>5249, 0.994, South</td>
</tr>
</tbody>
</table>
TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

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 CERCLIS list*

CERCLIS: A review of the CERCLIS list, as provided by EDR, and dated 10/25/2013 has revealed that there are 2 CERCLIS sites within approximately 0.5 miles of the target property.

<table>
<thead>
<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKAMIYA PROPERTY</td>
<td>850 MOOWAA ST.</td>
<td>W 1/4 - 1/2 (0.260 mi.)</td>
<td>136</td>
<td>16</td>
</tr>
<tr>
<td>KAPALAMA INCINERATOR</td>
<td>757 KOKEA STREET</td>
<td>SW 1/4 - 1/2 (0.392 mi.)</td>
<td>54</td>
<td>23</td>
</tr>
</tbody>
</table>

*Federal RCRA generators list*

RCRA-CESQG: A review of the RCRA-CESQG list, as provided by EDR, and dated 12/09/2014 has revealed that there are 7 RCRA-CESQG sites within approximately 0.25 miles of the target property.

<table>
<thead>
<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNOCAL 76 SS L 0471</td>
<td>1136 N KING ST</td>
<td>SW 0 - 1/8 (0.118 mi.)</td>
<td>A3</td>
<td>8</td>
</tr>
<tr>
<td>QUEEN LILIKALANI HO</td>
<td>1300 HALONA ST</td>
<td>NNW 0 - 1/8 (0.122 mi.)</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>OAHU AIR CONDITIONIN</td>
<td>938 KOHOU ST</td>
<td>SW 1/8 - 1/4 (0.190 mi.)</td>
<td>E16</td>
<td>11</td>
</tr>
<tr>
<td>ACCENT WALL DESIGN I</td>
<td>1240 MOOKAULA ST</td>
<td>WSW 1/8 - 1/4 (0.196 mi.)</td>
<td>C18</td>
<td>11</td>
</tr>
<tr>
<td>YAMASAKI SERVICE INC</td>
<td>1010 KING ST</td>
<td>SSW 1/8 - 1/4 (0.197 mi.)</td>
<td>F23</td>
<td>13</td>
</tr>
<tr>
<td>GERMAN CAR SERVICE</td>
<td>1310 MOOKAULA ST</td>
<td>W 1/8 - 1/4 (0.229 mi.)</td>
<td>G28</td>
<td>14</td>
</tr>
<tr>
<td>HAWAII HOCHI LTD</td>
<td>917 KOKEA ST</td>
<td>SW 1/8 - 1/4 (0.233 mi.)</td>
<td>H31</td>
<td>15</td>
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</tbody>
</table>
State- and tribal - equivalent CERCLIS

HI SHWS: A review of the HI SHWS list, as provided by EDR, and dated 12/02/2014 has revealed that there are 72 HI SHWS sites within approximately 1 mile of the target property.

<table>
<thead>
<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTE-HAWAIIAN TEL EMP</td>
<td>1138 N KING ST</td>
<td>WSW 1/8 - 1/4 (0.133 mi.)</td>
<td>A6</td>
<td>8</td>
</tr>
<tr>
<td>JBL HAWAII, LTD</td>
<td>905 KOKEA ST</td>
<td>SW 1/8 - 1/4 (0.245 mi.)</td>
<td>H33</td>
<td>15</td>
</tr>
<tr>
<td>TAKAMIYA PROPERTY</td>
<td>850 MOOWAA ST</td>
<td>W 1/4 - 1/2 (0.260 mi.)</td>
<td>I34</td>
<td>15</td>
</tr>
<tr>
<td>ROSS TRUSTS</td>
<td>819 MOOWAA ST</td>
<td>WSW 1/4 - 1/2 (0.296 mi.)</td>
<td>K43</td>
<td>19</td>
</tr>
<tr>
<td>HONOLULU COMMUNITY C</td>
<td>874 DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.461 mi.)</td>
<td>M59</td>
<td>24</td>
</tr>
<tr>
<td>OWNED BY CCI, LEASED</td>
<td>925 DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.465 mi.)</td>
<td>M60</td>
<td>25</td>
</tr>
<tr>
<td>THEO DAVIES CATERPIL</td>
<td>935 DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.465 mi.)</td>
<td>M62</td>
<td>25</td>
</tr>
<tr>
<td>CLASSIC BOWL</td>
<td>1190 DILLINGHAM BLVD</td>
<td>SW 1/4 - 1/2 (0.482 mi.)</td>
<td>65</td>
<td>26</td>
</tr>
<tr>
<td>FARRINGTON HIGH SCHO</td>
<td>1564 N KING ST</td>
<td>WNW 1/2 - 1 (0.501 mi.)</td>
<td>67</td>
<td>27</td>
</tr>
<tr>
<td>DOLE IWILEI</td>
<td>801 DILLINGHAM BLVD</td>
<td>S 1/2 - 1 (0.501 mi.)</td>
<td>68</td>
<td>27</td>
</tr>
<tr>
<td>KAMEHAMEHA SCHOOLS -</td>
<td>1336 DILLINGHAM BLVD</td>
<td>WSW 1/2 - 1 (0.527 mi.)</td>
<td>69</td>
<td>27</td>
</tr>
<tr>
<td>HALL MARK DRY CLEANE</td>
<td>1470 LILIA ST</td>
<td>SE 1/2 - 1 (0.576 mi.)</td>
<td>70</td>
<td>27</td>
</tr>
<tr>
<td>LANCE GOYA CHEVRON</td>
<td>504 N SCHOOL ST</td>
<td>SE 1/2 - 1 (0.588 mi.)</td>
<td>71</td>
<td>27</td>
</tr>
<tr>
<td>COSTCO WAREHOUSE</td>
<td>525 ALAKA WA ST</td>
<td>SSW 1/2 - 1 (0.609 mi.)</td>
<td>N72</td>
<td>28</td>
</tr>
<tr>
<td>COSTCO GAS STATION</td>
<td>520 ALAKA WA ST</td>
<td>SSW 1/2 - 1 (0.613 mi.)</td>
<td>N73</td>
<td>28</td>
</tr>
<tr>
<td>VON HAMM TEXTILES</td>
<td>546 KA AA HI ST</td>
<td>S 1/2 - 1 (0.614 mi.)</td>
<td>O74</td>
<td>28</td>
</tr>
<tr>
<td>1385 COLBURN STREET</td>
<td>1385 COLBURN ST</td>
<td>WSW 1/2 - 1 (0.616 mi.)</td>
<td>P75</td>
<td>28</td>
</tr>
<tr>
<td>NUUANU AUTO COMPANY</td>
<td>545 KA AA HI ST</td>
<td>S 1/2 - 1 (0.616 mi.)</td>
<td>O76</td>
<td>29</td>
</tr>
<tr>
<td>GENERAL TIRE</td>
<td>505 WAI AKA MILO RD</td>
<td>WSW 1/2 - 1 (0.630 mi.)</td>
<td>P78</td>
<td>29</td>
</tr>
<tr>
<td>IWILEI BUSINESS CENT</td>
<td>501 SUMMER ST</td>
<td>SSW 1/2 - 1 (0.646 mi.)</td>
<td>79</td>
<td>29</td>
</tr>
<tr>
<td>TRAVEL PLAZA TRANSPO</td>
<td>818 PINE ST</td>
<td>S 1/2 - 1 (0.651 mi.)</td>
<td>80</td>
<td>29</td>
</tr>
<tr>
<td>HOME DEPOT</td>
<td>421 ALAKA WA ST</td>
<td>SSW 1/2 - 1 (0.697 mi.)</td>
<td>81</td>
<td>30</td>
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<tr>
<td>BEST BUY</td>
<td>ALAKA WA ST &amp; NIMITZ</td>
<td>SW 1/2 - 1 (0.725 mi.)</td>
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<td>920 IWILEI ROAD</td>
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<td>ALAKA WA ST &amp; NIMITZ</td>
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### Executive Summary

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**State and tribal leaking storage tank lists**

HI LUST: A review of the HI LUST list, as provided by EDR, and dated 03/02/2015 has revealed that there are 33 HI LUST sites within approximately 0.5 miles of the target property.

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<td>Former T J Auto Repa</td>
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<td>Shimaya Shoten, LTD.</td>
<td>710 KOHOU ST</td>
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<td>Maluhia Elderly House</td>
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<td>ENE 1/4 - 1/2 (0.376 mi.)</td>
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<td>Honolulu Community C</td>
<td>DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.390 mi.)</td>
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<td>AIM School St.</td>
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<tr>
<td>Kapalama Chevron</td>
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<td>Facility Id: 9-101237</td>
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<td>Mid Pac Petroleum 25</td>
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<td>Alpacc Corporation</td>
<td>815 WAIKAMILO RD</td>
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<td>Richard Tom</td>
<td>963 ROBELLO LN</td>
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State and tribal registered storage tank lists

HI UST: A review of the HI UST list, as provided by EDR, and dated 03/02/2015 has revealed that there are 10 HI UST sites within approximately 0.25 miles of the target property.

<table>
<thead>
<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td><strong>7-11 KAPALAMA</strong></td>
<td>1136 N KING ST.</td>
<td>SW 0 - 1/8 (0.118 mi.)</td>
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<td><strong>KING’S SERVICE</strong></td>
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<td>Date Closed: 07/01/1993</td>
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<td><strong>OAHU PLUMBING &amp; SHEE</strong></td>
<td>1217 N KING ST</td>
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<td><strong>PACIFIC AUTO SERVICE</strong></td>
<td>1229 N KING ST</td>
<td>W 1/8 - 1/4 (0.164 mi.)</td>
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<td>Facility Id: 9-100930</td>
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<tr>
<td><strong>KANO TRUCKING SERVICE</strong></td>
<td>1412 IAO LANE</td>
<td>SE 1/8 - 1/4 (0.169 mi.)</td>
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<td><strong>U.S. POSTAL SERVICE</strong></td>
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EXECUTIVE SUMMARY

<table>
<thead>
<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
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<tr>
<td>JOHIRO BROTHERS, INC</td>
<td>1240 MOOKAULA ST</td>
<td>WSW 1/8 - 1/4 (0.196 mi.)</td>
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<td>MAHALO NORTH KING AU</td>
<td>1010 N KING ST</td>
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<td>Date Closed: 11/07/2005</td>
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<tr>
<td>OAHU PLUMBING &amp; SHEE</td>
<td>926 KOHOU ST</td>
<td>SW 1/8 - 1/4 (0.207 mi.)</td>
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<tr>
<td>JBL HAWAII LTD</td>
<td>905 KOKEA ST</td>
<td>SW 1/8 - 1/4 (0.245 mi.)</td>
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<td>15</td>
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<td>Facility Id: 9-102462</td>
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<td>Date Closed: 10/19/1991</td>
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State and tribal institutional control / engineering control registries

HI ENG CONTROLS: A review of the HI ENG CONTROLS list, as provided by EDR, and dated 12/02/2014 has revealed that there are 4 HI ENG CONTROLS sites within approximately 0.5 miles of the target property.

<table>
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<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
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<th>Map ID</th>
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<tr>
<td>GTE-HAWAIIAN TEL EMP</td>
<td>1138 N KING ST</td>
<td>WSW 1/8 - 1/4 (0.133 mi.)</td>
<td>A6</td>
<td>8</td>
</tr>
<tr>
<td>JBL HAWAII, LTD</td>
<td>905 KOKEA ST</td>
<td>SW 1/8 - 1/4 (0.245 mi.)</td>
<td>H33</td>
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<tr>
<td>OWNED BY CCI, LEASED</td>
<td>925 DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.465 mi.)</td>
<td>M60</td>
<td>25</td>
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<tr>
<td>THEO DAVIES CATERPIL</td>
<td>935 DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.465 mi.)</td>
<td>M62</td>
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HI INST CONTROL: 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.

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<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
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<tbody>
<tr>
<td>GTE-HAWAIIAN TEL EMP</td>
<td>1138 N KING ST</td>
<td>WSW 1/8 - 1/4 (0.133 mi.)</td>
<td>A6</td>
<td>8</td>
</tr>
<tr>
<td>JBL HAWAII, LTD</td>
<td>905 KOKEA ST</td>
<td>SW 1/8 - 1/4 (0.245 mi.)</td>
<td>H33</td>
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<tr>
<td>OWNED BY CCI, LEASED</td>
<td>925 DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.465 mi.)</td>
<td>M60</td>
<td>25</td>
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<tr>
<td>THEO DAVIES CATERPIL</td>
<td>935 DILLINGHAM BLVD</td>
<td>SSW 1/4 - 1/2 (0.465 mi.)</td>
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**EXECUTIVE SUMMARY**

*State and tribal voluntary cleanup sites*

HI VCP: A review of the HI VCP list, as provided by EDR, and dated 12/02/2014 has revealed that there are 2 HI VCP sites within approximately 0.5 miles of the target property.

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<tr>
<td>ROSS TRUSTS</td>
<td>819 MOOWAA ST</td>
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<td>OWNED BY CCI, LEASED</td>
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<td>SSW 1/4 - 1/2 (0.465 mi.)</td>
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**ADDITIONAL ENVIRONMENTAL RECORDS**

*Other Ascertainable Records*

RCRA NonGen / NLR: A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/09/2014 has revealed that there are 3 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

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<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
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<tr>
<td>BOBS AUTO REPAIR</td>
<td>1138-A N KING ST</td>
<td>WSW 1/8 - 1/4 (0.133 mi.)</td>
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<td>KANO TRUCKING SERVIC</td>
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<td>SE 1/8 - 1/4 (0.169 mi.)</td>
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<td>OAHU AIR CONDITIONIN</td>
<td>904 KOHOU ST</td>
<td>SW 1/8 - 1/4 (0.223 mi.)</td>
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DOD: A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there are 2 DOD sites within approximately 1 mile of the target property.

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<td>SAND ISLAND MILITARY</td>
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<td>FORT SHAFTER</td>
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**EDR HIGH RISK HISTORICAL RECORDS**

*EDR Exclusive Records*

EDR MGP: 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.

<table>
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<tr>
<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
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<tbody>
<tr>
<td>HAWAIIAN GAS PRODUCT</td>
<td>516-520 KUWILI ST</td>
<td>S 1/2 - 1 (0.621 mi.)</td>
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<tr>
<td>BHP GASCO</td>
<td>432 PACIFIC STREET</td>
<td>SSW 1/2 - 1 (0.786 mi.)</td>
<td>R89</td>
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EDR US Hist Auto Stat: A review of the EDR US Hist Auto Stat list, as provided by EDR, has revealed that there are 10 EDR US Hist Auto Stat sites within approximately 0.25 miles of the target property.

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<th>Equal/Higher Elevation</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
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<tr>
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<td>1435 AULD LN</td>
<td>E 0 - 1/8 (0.109 mi.)</td>
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<tr>
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<td>1010 N KING ST</td>
<td>SSW 1/8 - 1/4 (0.197 mi.)</td>
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EDR US Hist Cleaners: A review of the EDR US Hist Cleaners list, as provided by EDR, has revealed that there are 2 EDR US Hist Cleaners sites within approximately 0.25 miles of the target property.

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## EDR HIGH RISK HISTORICAL RECORDS

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- Totals: 0 5 41 39 68 0 153

### NOTES:

- TP = Target Property
- NR = Not Requested at this Search Distance
- Sites may be listed in more than one database
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**HI LUST**
- Facility Status: Site Cleanup Completed (NFA)
- Release ID: 930033
- Facility Id: 9-100028

**HI UST**
- Tank Status: Permanently Out of Use
- Tank Status: Currently In Use
- Date Closed: 12/15/1992
- Date Closed: 12/11/1992
- Facility Id: 9-100028

**HI Financial Assurance**
- Alt Facility ID: 9-100028
- Tank Status: Permanently Out of Use
- Tank Status: Currently In Use
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**HI LUST**
- Tank Status: Permanently Out of Use
- Date Closed: 07/01/1993
- Date Closed: 09/29/1986
- Facility Id: 9-101111

**HI UST**
- Tank Status: Permanently Out of Use
- Date Closed: 04/01/1988
- Facility Id: 9-100930
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**HI UST**
- Tank Status: Permanently Out of Use
- Date Closed: 07/30/1990
- Facility Id: 9-101773

**HI UST**
- Tank Status: Permanently Out of Use
- Date Closed: 05/14/2001
- Date Closed: 07/30/1990
- Facility Id: 9-1017773

**HI Financial Assurance**
U.S. POSTAL SERVICE - KAPALAMA (Continued)

Alt Facility ID: 9-101773
Tank Status: Permanently Out of Use

E16 SW  
OAHU AIR CONDITIONING SERVICE INC  
938 KOHOU ST  
HONOLULU, HI 96817  
0.190 mi.  
1005 ft.  
Click here for full text details
Relative: Higher

RCRA-CESQG  
EPA Id: HID982525347

FINDS
Registry ID:: 110005727197

CA HAZNET  
GEPAID: HID982525347

D17 WNW  
1270 N KING ST  
HONOLULU, HI 96817  
0.192 mi.  
1015 ft.  
Click here for full text details
Relative: Higher

EDR US Hist Cleaners  
EDR ID Number: 1014985672  
Tank Status: Permanently Out of Use

C18 WSW  
ACCENT WALL DESIGN INC  
1240 MOOKAULA ST  
HONOLULU, HI 96819  
0.196 mi.  
1037 ft.  
Click here for full text details
Relative: Higher

RCRA-CESQG  
EPA Id: HIR000054296

FINDS
Registry ID:: 110005730478

CA HAZNET  
GEPAID: HIR000054296
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### Facility Status

- **HI LUST**
  - Facility Status: Site Cleanup Completed (NFA)
  - Release ID: 930050
  - Facility ID: 9-100258

- **HI UST**
  - Tank Status: Permanently Out of Use
  - Date Closed: 01/26/1993
  - Facility ID: 9-100258

### Additional Information

- **EDR ID Number**
  - C19: 1015191012
  - C20: 1015126277
  - F22: 1001235167

- **Elevation**
  - C19: 1037 ft.
  - C20: 1037 ft.
  - F22: 1040 ft.
MAHALO NORTH KING AUTO (Continued)

Facility Id: 9-100339

**HI Financial Assurance**

Alt Facility ID: 9-100339
Tank Status: Permanently Out of Use
Tank Status: Permanently out of Use

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HI LUST

Facility Status: Site Cleanup Completed (NFA)
Release ID: 990119
Facility Id: 9-101367

HI UST

Tank Status: Permanently Out of Use
Date Closed: 01/07/1999
Facility Id: 9-101367

**HI Financial Assurance**

Click here for full text details
### OAHU PLUMBING & SHEET METAL, LTD (Continued)

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HAWAII HOUSING AUTHORITY (Continued)

Facility Id: 9-101036

HI UST
Tank Status: Permanently Out of Use
Date Closed: 06/13/1994
Facility Id: 9-101036

SAWAI BROTHERS PAINTING CO. LTD.
1135 N SCHOOL ST
HONOLULU, HI 96817

Facility Status: Site Cleanup Completed (NFA)
Release ID: 980024
Facility Id: 9-101808

HI UST
Tank Status: Permanently Out of Use
Date Closed: 12/16/1997
Facility Id: 9-101808

TESORO 2GO #61022
1311 PALAMA ST
HONOLULU, HI 96817

Facility Status: Site Cleanup Completed (NFA)
Release ID: 980039
Facility Id: 9-100348

HI UST
Tank Status: Permanently Out of Use
Tank Status: Currently In Use
Date Closed: 12/03/1997
Date Closed: 02/21/1990
Facility Id: 9-100348

HI Financial Assurance
Alt Facility Id: 9-100348
Tank Status: Permanently Out of Use
Tank Status: Currently In Use

HI LUST
Tank Status: Permanently Out of Use
Date Closed: 02/21/1990
Facility Id: 9-100348

HI UST
Tank Status: Permanently Out of Use
Date Closed: 02/21/1990
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<td>819 MOOWAA ST</td>
<td>0.296 mi.</td>
<td>1561 ft.</td>
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<tr>
<td>K45</td>
<td>OKADA TRUCKING CO., LTD.</td>
<td>U001235137</td>
<td>818 MOOWAA ST</td>
<td>0.296 mi.</td>
<td>1564 ft.</td>
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**HI LUST**
- Facility Status: Site Cleanup Completed (NFA)
- Release ID: 980053
- Facility Id: 9-103359

**HI UST**
- Tank Status: Permanently Out of Use
- Date Closed: 11/01/1989
- Facility Id: 9-100285

**HI LUST**
- Facility Status: Site Cleanup Completed (NFA)
- Release ID: 900028
- Facility Id: 9-100285

**HI UST**
- Tank Status: Permanently Out of Use
- Tank Status: Currently in Use
- Date Closed: 01/01/1988
- Facility Id: 9-103359

**HI Financial Assurance**
- Alt Facility Id: 9-100285
- Tank Status: Permanently Out of Use
- Tank Status: Currently in Use
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<th>Direction</th>
<th>Site Description</th>
<th>Elevation</th>
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<th>Site Elevation</th>
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<tr>
<td>46</td>
<td>East</td>
<td>PALAMA ELDERLY HOUSING 851 N SCHOOL ST HONOLULU, HI 96814</td>
<td>1658 ft.</td>
<td>Higher</td>
<td>U003154703</td>
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<tr>
<td>47</td>
<td>WNW</td>
<td>CLASSIC RUSTPROOFING 1437 N KING ST HONOLULU, HI 96817</td>
<td>1777 ft.</td>
<td>Higher</td>
<td>U003732579</td>
<td>HI LUST</td>
<td>N/A</td>
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<tr>
<td>48</td>
<td>NNE</td>
<td>FORMER T J AUTO REPAIR 1314 N. SCHOOL STREET HONOLULU, HI 96817</td>
<td>1785 ft.</td>
<td>Higher</td>
<td>U004120866</td>
<td>HI LUST</td>
<td>N/A</td>
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</table>
49  SHIMAYA SHOTEN, LTD.  710 KOHOU ST  HONOLULU, HI  96817
   HI LUST
   Relative: Higher
   Facility Status: Site Cleanup Completed (NFA)
   Release ID: 900044
   Facility Id: 9-101425

   HI UST
   Tank Status: Permanently Out of Use
   Date Closed: 01/30/1990
   Facility Id: 9-101425

50  MALUHIA ELDERLY HOUSING  1111 HALA DR  HONOLULU, HI  96813
   HI LUST
   Relative: Higher
   Facility Status: Site Cleanup Completed (NFA)
   Release ID: 950084
   Facility Id: 9-103082

   HI UST
   Tank Status: Permanently Out of Use
   Date Closed: 05/05/1995
   Date Closed: 04/28/1995
   Facility Id: 9-103082

51  HONOLULU COMMUNITY COLLEGE  DILLINGHAM BLVD  HONOLULU, HI  96817
   HI LUST
   Relative: Higher
   Facility Status: Site Cleanup Completed (NFA)
   Release ID: 970108
   Facility Id: 9-103285

   HI UST
   Tank Status: Permanently Out of Use
   Date Closed: 12/01/1982
   Facility Id: 9-103285
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<tr>
<td>L52</td>
<td>North</td>
<td>0.391 mi.</td>
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<td>U003154504</td>
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<td></td>
<td>1/4-1/2</td>
<td></td>
<td></td>
<td>N/A</td>
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<tr>
<td></td>
<td>2062 ft.</td>
<td></td>
<td>HI UST</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Relative:</td>
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<tr>
<td></td>
<td>Higher</td>
<td></td>
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<td></td>
<td>L53</td>
<td></td>
<td>HI Financial Assurance</td>
<td></td>
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</table>

**HI LUST**
- Facility Status: Active Remediation
- Release ID: 990010
- Facility Id: 9-101198

**HI UST**
- Tank Status: Currently In Use
- Tank Status: Permanently Out of Use
- Date Closed: 10/21/1998
- Facility Id: 9-101198

**HI Financial Assurance**
- Alt Facility ID: 9-101198
- Tank Status: Permanently Out of Use
- Tank Status: Currently In Use

---

**KAPALAMA CHEVRON**

<table>
<thead>
<tr>
<th>Map ID</th>
<th>Direction</th>
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<tr>
<td>L53</td>
<td>North</td>
<td>0.392 mi.</td>
<td>HI LUST</td>
<td>U004221609</td>
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<td></td>
<td>2069 ft.</td>
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<td>HI UST</td>
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<tr>
<td></td>
<td>Relative:</td>
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<tr>
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<td>Higher</td>
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<td>L53</td>
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<td>HI Financial Assurance</td>
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</table>

**HI LUST**
- Facility Status: Site Cleanup Completed with EHE/EHMP
- Release ID: 910023
- Facility Id: 9-101237

**HI UST**
- Tank Status: Currently In Use
- Tank Status: Permanently Out of Use
- Date Closed: 09/18/1989
- Facility Id: 9-101237

**HI Financial Assurance**
- Alt Facility ID: 9-101237
- Tank Status: Permanently Out of Use
- Tank Status: Currently In Use
### Map ID

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<th>Database(s)</th>
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<tbody>
<tr>
<td>54</td>
<td>SW</td>
<td>0.392 mi.</td>
<td>2071 ft.</td>
<td>KAPALAMA INCINERATOR</td>
<td>CERCLIS 1001475694</td>
<td>HISFN0905436</td>
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<tr>
<td>55</td>
<td>NNE</td>
<td>0.399 mi.</td>
<td>2105 ft.</td>
<td>MID PAC PETROLEUM 254539 (PREV: BURT'S UNOCAL SERVICE)</td>
<td>HI LUST U001235009</td>
<td>N/A</td>
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<tr>
<td>56</td>
<td>West</td>
<td>0.400 mi.</td>
<td>2111 ft.</td>
<td>ALPAC CORPORATION</td>
<td>HI LUST U003221749</td>
<td>N/A</td>
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### Site Details

#### KAPALAMA INCINERATOR
- **Address:** 757 KOKEA STREET, HONOLULU, HI 96817
- **Facility Status:** Site Cleanup Completed with EHE
- **Release IDs:** 980023, 900002, 040006
- **Facility ID:** 9-100032

#### MID PAC PETROLEUM 254539 (PREV: BURT'S UNOCAL SERVICE)
- **Address:** 1342 N SCHOOL ST, HONOLULU, HI 96817
- **Facility Status:** Site Cleanup Completed with EHE
- **Release IDs:** 920077
- **Facility ID:** 9-102546

#### ALPAC CORPORATION
- **Address:** 815 WAIKAMOLO RD, HONOLULU, HI 96800
- **Facility Status:** Site Cleanup Completed (NFA)
- **Facility ID:** 9-102546

### Additional Information

- **HI LUST**
  - **Tank Status:** Permanently Out of Use
  - **Date Closed:** 02/25/1992
  - **Facility ID:** 9-102546

- **HI Financial Assurance**
  - **Alt Facility ID:** 9-100032
  - **Tank Status:** Permanently Out of Use
  - **Tank Status:** Currently in Use

- **Click here for full text details**
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<tr>
<td>57</td>
<td>ESE</td>
<td>0.414 mi.</td>
<td>2186 ft.</td>
<td>SNAPPY SERVICE 719 N SCHOOL ST HONOLULU, HI 96817</td>
<td>Higher</td>
<td>HI LUST Site Cleanup Completed with EHE/EHMP</td>
<td>900093</td>
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<tr>
<td>58</td>
<td>South</td>
<td>0.437 mi.</td>
<td>2308 ft.</td>
<td>RICHARD TOM 963 ROBELLO LN HONOLULU, HI 96817</td>
<td>Higher</td>
<td>HI LUST Site Cleanup Completed (NFA)</td>
<td>990055</td>
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<tr>
<td>M59</td>
<td>SSw</td>
<td>0.461 mi.</td>
<td>2436 ft.</td>
<td>HONOLULU COMMUNITY COLLEGE GAS STATION 874 DILLINGHAM BLVD HONOLULU, HI 96817</td>
<td>Higher</td>
<td>HI SHWS</td>
<td>1006820629</td>
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Click here for full text details
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<td>0.465 mi.</td>
<td>2454 ft.</td>
<td>HONOLULU, HI 96817</td>
<td>Site Cleanup Completed (NFA)</td>
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<td>THEO DAVIES CATERPILLAR REPAIR SITE</td>
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<td>63</td>
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<td>0.466 mi.</td>
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<td>64</td>
<td>KING SHELL FOODMART</td>
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<td>SSE</td>
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<td>CLASSIC BOWL</td>
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<tr>
<td>66</td>
<td>HAWAIIAN CANDIES &amp; NUTS. LTD</td>
<td>U001235654</td>
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**HI LUST**

- Facility Status: Site Cleanup Completed (NFA)
- Release ID: 020033
- Release ID: 080030
- Release ID: 030030
- Facility Id: 9-101026

**HI UST**

- Tank Status: Currently In Use
- Facility Id: 9-101026

**HI Financial Assurance**

- Alt Facility Id: 9-101026
- Tank Status: Currently In Use
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<td>67</td>
<td>FARRINGTON HIGH SCHOOL</td>
<td>1564 N KING ST, HONOLULU, HI 96817</td>
<td>Site Cleanup Completed (NFA)</td>
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<td>68</td>
<td>DOLE IWILEI</td>
<td>801 DILLINGHAM BLVD, HONOLULU, HI 96817</td>
<td>Site Cleanup Completed with EHMP</td>
<td>980240, 030004, 030003</td>
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<td>KAMEHAMEHA SCHOOLS - 1336 DILLINGHAM BOULEVARD</td>
<td>1336 DILLINGHAM BLVD, HONOLULU, HI 96813</td>
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<td>HALL MARK DRY CLEANERS</td>
<td>1470 LILIHA ST, HONOLULU, HI 96814</td>
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<td>LANCE GOYA CHEVRON</td>
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**HI LUST**
- Facility Status: Site Cleanup Completed (NFA)
- Facility Status: Site Cleanup Completed with EHMP
- Release ID: 980240
- Release ID: 030004
- Release ID: 030003
- Facility Id: 9-101259

**HI UST**
- Tank Status: Permanently Out of Use
- Date Closed: 10/06/2002
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<td>N72</td>
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<td>1/2-1</td>
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<td>3215 ft.</td>
<td>COSTCO WAREHOUSE</td>
<td>S108008497</td>
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<td>SSW</td>
<td>525 ALAKAWA ST</td>
<td>HONOLULU, HI 96817</td>
<td>HI SHWS</td>
<td>HI ENG CONTROLS</td>
<td>HI INST CONTROL</td>
<td>HI VCP</td>
</tr>
<tr>
<td>South</td>
<td>O74</td>
<td>1/2-1</td>
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<td>P75</td>
<td>1/2-1</td>
<td>0.616 mi.</td>
<td>3250 ft.</td>
<td>1385 COLBURN STREET</td>
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<tr>
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<td>0.616 mi.</td>
<td>3250 ft.</td>
<td>1385 COLBURN ST</td>
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<td>South</td>
<td>P75</td>
<td>1/2-1</td>
<td>0.616 mi.</td>
<td>3250 ft.</td>
<td>KAPALAMA, HI 96817</td>
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**LANCE GOYA CHEVRON (Continued)**

Date Closed: 01/01/1982
Date Closed: 07/01/1997
Facility Id: 9-101259

**HI Financial Assurance**
Alt Facility ID: 9-101259
Tank Status: Permanently Out of Use

*Click here for full text details*
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<th>EDR ID Number</th>
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<td>NUANU AUTO COMPANY LTD</td>
<td>HI SHWS</td>
<td>S111704825</td>
<td>0.616 mi.</td>
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<td>HAWAIIAN GAS PRODUCTS LTD</td>
<td>EDR MGP</td>
<td>1008409006</td>
<td>0.621 mi.</td>
<td>3280 ft.</td>
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<td>GENERAL TIRE</td>
<td>HI SHWS</td>
<td>S106817180</td>
<td>0.630 mi.</td>
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<tr>
<td>IWILEI BUSINESS CENTER</td>
<td>HI SHWS</td>
<td>S106817968</td>
<td>0.646 mi.</td>
<td>3409 ft.</td>
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<td>TRAVEL PLAZA TRANSPORTATION, LLC</td>
<td>HI SHWS</td>
<td>U003154753</td>
<td>0.651 mi.</td>
<td>3438 ft.</td>
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**MAP FINDINGS**

**Relative:** Higher

**Click here for full text details**

**HI LUST**

- Facility Status: Site Cleanup Completed (NFA)
- Release ID: 960094
- Release ID: 950040
- Facility Id: 9-102991

**HI UST**

- Tank Status: Currently In Use
- Tank Status: Permanently Out of Use
- Date Closed: 09/02/1996
- Date Closed: 12/27/1994
- Facility Id: 9-102991
### MAP FINDINGS

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<td>81</td>
<td>SSW</td>
<td>0.697 mi.</td>
<td>3681 ft.</td>
<td>HOME DEPOT</td>
<td>421 ALAKAWA ST</td>
<td>HI SHWS S105887731</td>
<td>HI ENG CONTROLS</td>
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<td>82</td>
<td>SW</td>
<td>0.725 mi.</td>
<td>3829 ft.</td>
<td>BEST BUY</td>
<td>ALAKAWA ST &amp; NIMITZ HWY</td>
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<td>83</td>
<td>SSW</td>
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<td>3928 ft.</td>
<td>BHP GASCO BENZENE SITE</td>
<td>616 IWILEI RD</td>
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<td>Q84</td>
<td>SW</td>
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<td>4028 ft.</td>
<td>MCCAIBE, HAMILTON, &amp; RENNY COMPANY, LTD</td>
<td>1130 N NIMITZ HWY</td>
<td>HI SHWS 1006818946</td>
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<td>85</td>
<td>WSW</td>
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<td>4049 ft.</td>
<td>HOME DEPOT</td>
<td>1305 HART STREET</td>
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<td>86</td>
<td>DOMESTIC COMMERCIAL FISHING VILLAGE</td>
<td>1133 N NIMITZ HWY</td>
<td>0.776 mi.</td>
<td>4099 ft.</td>
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<td>87</td>
<td>373 NORTH NIMITZ HIGHWAY</td>
<td>373 N NIMITZ HWY</td>
<td>0.777 mi.</td>
<td>4104 ft.</td>
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<td>88</td>
<td>SENIOR RESIDENCES AT IWILEI</td>
<td>888 IWILEI RD</td>
<td>0.783 mi.</td>
<td>4132 ft.</td>
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<td>R89</td>
<td>BHP GASCO</td>
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<td>90</td>
<td>LILIHA CIVIC CENTER</td>
<td>337 N KING ST</td>
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<td>4153 ft.</td>
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<tr>
<td>Q91</td>
<td>CHEVRON KAPALAMA TERMINAL</td>
<td>1105 N NIMITZ HWY</td>
<td>0.787 mi.</td>
<td>4156 ft.</td>
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R92  UNOCAL 76 HONOLULU LRNG CTR  RCRA NonGen / NLR  1000167494
SSW  411 PACIFIC ST  FINDS  HID981652696
1/2-1  HONOLULU, HI  96817  HI SHWS
0.799 mi.  HI UST  HI UST
4217 ft.  HI SPILLS
Relative:  HI VCP
Higher  HI Financial Assurance

Click here for full text details

RCRA NonGen / NLR
EPA Id: HID981652696

FINDS
Registry Id:: 110009359826
Registry Id:: 110000495848

HI UST
Tank Status: Permanently Out of Use
Date Closed: 03/07/1997
Facility Id: 9-100108

HI Financial Assurance
Alt Facility Id: 9-100108
Tank Status: Permanently Out of Use

93  IWILEI FRUIT AND VEGETABLE WAREHOUSE  HI SHWS  U003858603
SSE  920 IWILEI ROAD  HI LUST  N/A
1/2-1  HONOLULU, HI  96813  HI UST
0.802 mi.  HI LUST  N/A
4235 ft.  HI UST
Relative:  HI LUST
Higher  HI UST

Click here for full text details

HI LUST
Facility Status: Site Cleanup Completed (NFA)
Release Id: 020031
Facility Id: 9-103747

HI UST
Tank Status: Permanently Out of Use
Date Closed: 05/20/2002
Facility Id: 9-103747

94  HART STREET WWPS  HI SHWS  U003154453
SW  1031 N NIMITZ HWY  HI UIC  N/A
1/2-1  HONOLULU, HI  96817
0.809 mi.  HI UIC  N/A
4273 ft.  HI UIC
Relative:  HI UIC
Higher  HI UIC

Click here for full text details

HI UIC
UIC Permit Number: UO-2174
Facility Id/Lat Long Min Coord: 3-1952.05.1-2

TC4293163.2s Page 32
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<td>ESE</td>
<td>0.809 mi.</td>
<td>4274 ft.</td>
<td>KUAKINI MEDICAL CENTER# 347 N KUAKINI ST HONOLULU, HI 96817</td>
<td>RCRA-SQG FINDS HI SHWS HI LUST HI UST HI SPILLS</td>
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<td><strong>FINDS</strong>&lt;br&gt;Registry ID:: 110046154790</td>
<td><strong>HI LUST</strong>&lt;br&gt;Facility Status: Site Cleanup Completed with EHE/EHMP&lt;br&gt;Facility Status: Site Cleanup Completed (NFA)&lt;br&gt;Release ID: 100019&lt;br&gt;Release ID: 910061&lt;br&gt;Release ID: 980098&lt;br&gt;Facility Id: 9-100264</td>
<td><strong>HI UST</strong>&lt;br&gt;Tank Status: Permanently Out of Use&lt;br&gt;Date Closed: 04/15/1998&lt;br&gt;Date Closed: 03/07/1991&lt;br&gt;Facility Id: 9-100264</td>
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<td>South</td>
<td>0.821 mi.</td>
<td>4337 ft.</td>
<td>420-470 NORTH NIMITZ HIGHWAY 420-470 N NIMITZ HWY HONOLULU, HI 96817</td>
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<td>S106815536 N/A</td>
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<td><strong>HI ENG CONTROLS</strong>&lt;br&gt;N/A</td>
<td><strong>HI Financial Assurance</strong>&lt;br&gt;Alt Facility Id: 9-100264&lt;br&gt;Tank Status: Currently In Use&lt;br&gt;Tank Status: Permanently Out of Use</td>
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<td>97</td>
<td>WNW</td>
<td>0.822 mi.</td>
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<td>FACTORY STREET LEAD 2003 N KING ST HONOLULU, HI 96819</td>
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<td>99</td>
<td>YOUNG BROTHERS REFRIGERATE RELEASE</td>
<td>Higher</td>
<td>0.824 mi.</td>
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<td>100</td>
<td>GTE HAWAIIAN TEL - CONTAMINATED SOIL</td>
<td>Higher</td>
<td>0.827 mi.</td>
<td>4369 ft.</td>
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<td>BREWER ENVIRONMENTAL INDUSTRIES-PACIFIC STREET</td>
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POLYNESIAN HOSPITALITY (Continued)

EPA Id: HI0000589812

FINDS
Registry ID:: 110005722316

HI LUST
Facility Status: Monitored Natural Attenuation
Release ID: 910046
Facility Id: 9-101379

HI UST
Tank Status: Currently in Use
Tank Status: Permanently Out of Use
Date Closed: 08/03/1994
Date Closed: 03/19/1991
Facility Id: 9-101379

HI Financial Assurance
Alt Facility ID: 9-101379
Tank Status: Permanently Out of Use
Tank Status: Currently in Use
Tank Status: Temporarily out of Use

104
South
1/2-1
0.856 mi.
4522 ft.

MID PAC PETROLEUM LLC 2705958
540 N NIMITZ HWY
HONOLULU, HI 96817

Relative:
Higher

HI LUST
Facility Status: Site Cleanup Completed (NFA)
Release ID: 970015
Release ID: 920166
Release ID: 080018
Release ID: 070010
Facility Id: 9-100017

HI UST
Tank Status: Permanently out of Use
Tank Status: Permanently Out of Use
Date Closed: 01/29/2007
Date Closed: 04/07/2008
Date Closed: 04/08/2008
Date Closed: 06/18/2001
Date Closed: 10/01/1996
Date Closed: 06/01/1990
Facility Id: 9-100017

HI Financial Assurance
Alt Facility ID: 9-100017
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<td>SW</td>
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<td>HAWAII STEVEDORES 965 N NIMITZ HWY HONOLULU, HI 96817</td>
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<td>SSE</td>
<td>0.866 mi</td>
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<td>215 NORTH KING STREET CONSTRUCTION SITE, TANKS 1 &amp; 2 215 N KING ST HONOLULU, HI 96814</td>
<td>HI SHWS</td>
<td>S106815334 N/A</td>
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<td>T107</td>
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<td>4598 ft</td>
<td>TOWN INN 248-258 N BERETANIA ST HONOLULU, HI 96817</td>
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<td>109</td>
<td>North</td>
<td>0.881 mi</td>
<td>4650 ft</td>
<td>KAMEHAMEHA SCHOOLS 1887 MAUKAKANE ST HONOLULU, HI 96817</td>
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**MID PAC PETROLEUM LLC 2705958 (Continued)**

Tank Status: Permanently out of Use
Tank Status: Permanently Out of Use

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher

 nhiệm: Higher
### KAMEHAMEHA SCHOOLS (Continued)

Registry ID:: 110055125877  
Registry ID:: 110055117715  
Registry ID:: 110000789406

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HI LUST
- Facility Status: Site Cleanup Completed (NFA)
- Release ID: 930073
- Facility Id: 9-101398

HI UST
- Tank Status: Permanently Out of Use
- Date Closed: 03/08/1993
- Facility Id: 9-101398

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<td>114</td>
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<td>115</td>
<td>WNW</td>
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<td>SSW</td>
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<td>SSW</td>
<td>HAWAIIAN ELECTRIC COMPANY (HECO) - IWIILEI TANK YARD</td>
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<td>Scanned Digital USGS 7.5° Topographic Map (DRG)</td>
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**STREET AND ADDRESS INFORMATION**

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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.
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

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.
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: HONOLULU, HI
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: HONOLULU
Additional Panels in search area: Not Reported

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.

<table>
<thead>
<tr>
<th>MAP ID</th>
<th>LOCATION</th>
<th>GENERAL DIRECTION</th>
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<tbody>
<tr>
<td>Not Reported</td>
<td>From TP</td>
<td>Groundwater Flow</td>
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</table>
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.

<table>
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<tr>
<th>ROCK STRATIGRAPHIC UNIT</th>
<th>GEOLOGIC AGE IDENTIFICATION</th>
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<tr>
<td>System:</td>
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<td>Series:</td>
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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.

<table>
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<tr>
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<th>Soil Map ID: 2</th>
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<tr>
<td>Soil Component Name: Water &gt; 40 acres</td>
<td>Soil Component Name: Hanalei</td>
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<tr>
<td>Soil Surface Texture:</td>
<td>Soil Surface Texture: silty clay</td>
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<tr>
<td>Hydrologic Group: Not reported</td>
<td>Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.</td>
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<tr>
<td>Soil Drainage Class:</td>
<td>Soil Drainage Class: Poorly drained</td>
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<tr>
<td>Hydric Status: Unknown</td>
<td>Hydric Status: Partially hydric</td>
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<td>Corrosion Potential - Uncoated Steel: Not Reported</td>
<td>Corrosion Potential - Uncoated Steel: High</td>
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<td>Depth to Bedrock Min: &gt; 0 inches</td>
<td>Depth to Bedrock Min: &gt; 0 inches</td>
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<td>Depth to Watertable Min: &gt; 0 inches</td>
<td>Depth to Watertable Min: &gt; 30 inches</td>
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No Layer Information available.
### Soil Layer Information

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<th>AASHTO Group</th>
<th>Unified Soil</th>
<th>Saturated hydraulic conductivity micro m/sec</th>
<th>Soil Reaction (pH)</th>
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<td>silty clay</td>
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<td>25 inches</td>
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<td>Max: 7.3 Min: 6.1</td>
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<td>35 inches</td>
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<td>Max: 14 Min: 4.23</td>
<td>Max: 7.3 Min: 6.1</td>
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**Soil Map ID:** 3

**Soil Component Name:** Kawaihapai

**Soil Surface Texture:** stony 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

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<tr>
<th>Layer</th>
<th>Upper</th>
<th>Lower</th>
<th>Soil Texture Class</th>
<th>AASHTO Group</th>
<th>Unified Soil</th>
<th>Saturated hydraulic conductivity micro m/sec</th>
<th>Soil Reaction (pH)</th>
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<td>stony clay loam</td>
<td>Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.</td>
<td>FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay</td>
<td>Max: 42.34 Min: 4.23</td>
<td>Max: 7.3 Min: 6.6</td>
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<tr>
<td>2</td>
<td>22 inches</td>
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<td>sandy loam</td>
<td>Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.</td>
<td>COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.</td>
<td>Max: 141.14 Min: 14.11</td>
<td>Max: 7.3 Min: 6.6</td>
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<tr>
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<td>31 inches</td>
<td>53 inches</td>
<td>sandy loam</td>
<td>Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.</td>
<td>COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.</td>
<td>Max: 141.14 Min: 14.11</td>
<td>Max: 7.3 Min: 6.6</td>
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</tbody>
</table>

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**Soil Map ID: 4**

- **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
- **Hydraulic Status:** Not hydric
- **Corrosion Potential - Uncoated Steel:** Moderate
- **Depth to Bedrock Min:** > 0 inches
- **Depth to Wettable Min:** > 0 inches
### Soil Layer Information

<table>
<thead>
<tr>
<th>Layer</th>
<th>Upper</th>
<th>Lower</th>
<th>Soil Texture Class</th>
<th>Classification</th>
<th>AASHTO Group</th>
<th>Unified Soil</th>
<th>Saturated hydraulic conductivity (μm/sec)</th>
<th>Soil Reaction (pH)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 inches</td>
<td>7 inches</td>
<td>silty clay loam</td>
<td>Clayey Materials (more than 35 pct. passing No. 200), Clayey Soils.</td>
<td>COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.</td>
<td>Max: 14 Min: 4.23</td>
<td>Max: 7.3 Min: 6.6</td>
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<tr>
<td>2</td>
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<td>29 inches</td>
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<td>Clayey Materials (more than 35 pct. passing No. 200), Clayey Soils.</td>
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<td>Max: 7.3 Min: 6.6</td>
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<tr>
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<td>29 inches</td>
<td>38 inches</td>
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<td>Not reported</td>
<td>Max: 42 Min: 1</td>
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**Soil Map ID: 5**

- **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

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### Soil Layer Information

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<th>Soil Texture Class</th>
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<tbody>
<tr>
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<td>FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.</td>
<td>Max: 4.23 Min: 0.42</td>
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## Soil Layer Information

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<th>AASHTO Group</th>
<th>Unified Soil</th>
<th>Saturated hydraulic conductivity micro m/sec</th>
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<td>stony clay</td>
<td>Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.</td>
<td>FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.</td>
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<tr>
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<td>53 inches</td>
<td>stony clay</td>
<td>Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.</td>
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### Soil Map ID: 6

- **Soil Component Name:** Fill land, mixed
- **Soil Surface Texture:** gravelly sandy loam
- **Hydrologic Group:** Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.
- **Soil Drainage Class:** Well drained
- **Hydric Status:** Not hydric
- **Corrosion Potential - Uncoated Steel:** High
- **Depth to Bedrock Min:** > 152 inches
- **Depth to Watertable Min:** > 0 inches

---

<table>
<thead>
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<th>Lower</th>
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<th>Unified Soil</th>
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<th>Soil Reaction (pH)</th>
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<td>gravelly sandy loam</td>
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**Soil Map ID: 7**

**Soil Component Name:** Pearl Harbor

**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:** Partially hydric

**Corrosion Potential - Uncoated Steel:** High

**Depth to Bedrock Min:** > 0 inches

**Depth to Watertable Min:** > 30 inches
**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**

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</tr>
<tr>
<td>Federal FRDS PWS</td>
<td>Nearest PWS within 1 mile</td>
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<tr>
<td>State Database</td>
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**FEDERAL USGS WELL INFORMATION**

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<th>WELL ID</th>
<th>LOCATION FROM TP</th>
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**SOIL LAYER INFORMATION**

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<th>Layer</th>
<th>Upper</th>
<th>Lower</th>
<th>Soil Texture Class</th>
<th>AASHTO Group</th>
<th>Unified Soil Description</th>
<th>Saturated hydraulic conductivity (micro m/sec)</th>
<th>Soil Reaction (pH)</th>
</tr>
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<tbody>
<tr>
<td>3</td>
<td>31 inches</td>
<td>48 inches</td>
<td>muck</td>
<td>A-8</td>
<td>Highly organic soils, Peat.</td>
<td>Max: 0.42</td>
<td>Min: 0.01</td>
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### FEDERAL USGS WELL INFORMATION

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### FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

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Note: PWS System location is not always the same as well location.
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<td>Higher</td>
<td>FED USGS</td>
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<td>SW</td>
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<td>FED USGS</td>
<td>USGS40000269764</td>
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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

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<th>Area</th>
<th>Average Activity</th>
<th>% &lt;4 pCi/L</th>
<th>% 4-20 pCi/L</th>
<th>% &gt;20 pCi/L</th>
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<td>Basement</td>
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<td>0%</td>
<td>0%</td>
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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 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

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.
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

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.

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

STREET AND ADDRESS INFORMATION

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Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
720-963-3647
michael.will@dot.gov

November 21, 2014

In Reply Refer To:
HFPM-16

Ms. Michelle Bogardus
U.S. Department of the Interior
Fish & Wildlife Service
Pacific Islands Fish & Wildlife Office
300 Ala Moana Blvd, Room 3-122
Honolulu, HI 96850

Subject: Notification of Intent to Construct the Hawaii Bridge Program
Request for Species and Critical Habitat List under Section 7, Endangered Species Act

Dear Ms. Michelle Bogardus:

The Federal Highway Administration (FHWA), Central Federal Lands Highway Division (CFLHD), in cooperation with the Hawaii Department of Transportation (HDOT), is planning to undertake environmental studies for the Hawaii Bridge Program. The Program includes work on 12 bridges at 10 locations on the islands of Oahu (4 locations total: 4 locations with 1 bridge each), Kauai (4 locations total: 3 locations with 1 bridge each and 1 location with 3 bridges), and Hawaii (2 locations total: 2 locations with 1 bridge each). Attachment 1, Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu, includes location maps, and project descriptions, for each of the 10 locations.

In accordance with Section 7 of the Endangered Species Act, FHWA-CFLHD and HDOT are requesting a list of threatened, endangered, proposed, and candidate plant and animal species, and critical habitats in the vicinity of each of the bridge projects to enable an appropriate determination for these projects.

Furthermore, to assist us with our assessment, we also respectfully ask for input the USFWS may have in relation to specific avoidance and minimization measures that should be considered for each project. Your response within 30 calendar days of receipt of this letter, as outlined in the ESA Consultation Handbook, would be appreciated.

Should you have any questions, please contact Nicole Winterton, Environmental Protection Specialist, at (720) 963-3689 or by e-mail at Nicole.Winterton@dot.gov.

Sincerely,

[Signature]

J. Michael Will, P.E.
Program Engineering Manager

Enclosure:
Attachment 1: Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu

cc: Nicole Winterton/FHWA-CFLHD
Paul Luersen/CH2M HILL
Elizabeth Cutler/CH2M HILL
November 21, 2014

Mr. Frazer McGilvray
Administrator
Department of Aquatic Resources
1151 Punchbowl St. Room 330
Honolulu, HI 96813

Subject: Notification of Intent to Construct the Hawaii Bridge Program
Request for Information

Dear Mr. Frazer McGilvray:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in cooperation with the Hawaii Department of Transportation (HDOT), is planning to undertake environmental studies for the Hawaii Bridge Program. The Program includes work on 12 bridges at 10 locations on the islands of Oahu (4 locations total: 4 locations with 1 bridge each), Kauai (4 locations total: 3 locations with 1 bridge each and 1 location with 3 bridges), and Hawaii (2 locations total: 2 locations with 1 bridge each). Attachment 1, Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu, includes location maps, and project descriptions, for each of the 10 locations.

We are writing to request information you may have regarding known presence of listed species and designated critical habitat in the vicinity of each of the bridge projects to appropriately assess potential impacts for these projects.

Furthermore, to assist us with our assessment, we also respectfully ask for DAR’s opinion on the likely impact of each of the bridge projects based on the potential issues of the location considering the proposed construction activities and schedule.

Your response within 30 calendar days of receipt of this letter would be appreciated.

Should you have any questions, please contact Nicole Winterton, Environmental Protection Specialist, at (720) 963-3689 or by e-mail at Nicole.Winterton@dot.gov.

Sincerely,

[Signature]
J. Michael Will, P.E.
Program Engineering Manager

Enclosure:
Attachment 1: Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu

Cc: Glenn Higashi/DAR
Nicole Winterton/FHWA-CFLHD
Paul Luersen/CH2M HILL
Elizabeth Cutler/CH2M HILL
Central Federal Lands Highway Division

November 21, 2014

Ms. Lisa Hadway
Administrator
Division of Forestry and Wildlife
Kalanikou Building
1151 Punchbowl St. Room 325
Honolulu, HI 96813

Subject: Notification of Intent to Construct the Hawaii Bridge Program
Request for Information

Dear Ms. Lisa Hadway:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in cooperation with the Hawaii Department of Transportation (HDOT), is planning to undertake environmental studies for the Hawaii Bridge Program. The Program includes work on 12 bridges at 10 locations on the islands of Oahu (4 locations total: 4 locations with 1 bridge each), Kauai (4 locations total: 3 locations with 1 bridge each and 1 location with 3 bridges), and Hawaii (2 locations total: 2 locations with 1 bridge each). Attachment 1, Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu, includes location maps, and project descriptions, for each of the 10 locations.

We are writing to request information you may have regarding known presence of listed species and designated critical habitat in the vicinity of the each of the bridge projects to appropriately assess potential impacts for these projects. Furthermore, to assist us with our assessment, we also respectfully ask for input the DOFAW may have in relation to specific avoidance and minimization measures that should be considered for each project.

To assist us with our assessment, we also respectfully ask for DOFAW’s opinion on the likely impact of each of the bridge projects based on the potential issues of the location considering the proposed construction activities and schedule.

Your response within 30 calendar days of receipt of this letter would be appreciated.

Should you have any questions, please contact Nicole Winterton, Environmental Protection Specialist, at (720) 963-3689 or by e-mail at Nicole.Winterton@dot.gov.

Sincerely,

J. Michael Will, P.E.
Program Engineering Manager

Enclosure:
Attachment 1: Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu

Cc: Nicole Winterton/FHWA-CFLHD
Paul Luersen/CH2M HILL
Elizabeth Cutler/CH2M HILL
Mr. Aaron Nadig  
U.S. Department of the Interior 
Fish & Wildlife Service 
Pacific Islands Fish & Wildlife Office 
300 Ala Moana Blvd, Room 3-122 
Honolulu, HI 96850  
Subject: Notification of Intent to Construct the Hawaii Bridge Program  
Request for Species and Critical Habitat List under Section 7, Endangered Species Act 

Dear Mr. Aaron Nadig: 
The Federal Highway Administration (FHWA), Central Federal Lands Highway Division (CFLHD), in cooperation with the Hawaii Department of Transportation (HDOT), is planning to undertake environmental studies for the Hawaii Bridge Program. The Program includes work on 12 bridges at 10 locations on the islands of Oahu (4 locations total: 4 locations with 1 bridge each), Kauai (4 locations total: 3 locations with 1 bridge each and 1 location with 3 bridges), and Hawaii (2 locations total: 2 locations with 1 bridge each). 
Attachment 1, Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu, includes location maps, and project descriptions, for each of the 10 locations.

In accordance with Section 7 of the Endangered Species Act, FHWA-CFLHD and HDOT are requesting a list of threatened, endangered, proposed, and candidate plant and animal species, and critical habitats in the vicinity of each of the bridge projects to enable an appropriate determination for these projects.

Furthermore, to assist us with our assessment, we also respectfully ask for input the USFWS may have in relation to specific avoidance and minimization measures that should be considered for each project. Your response within 30 calendar days of receipt of this letter, as outlined in the ESA Consultation Handbook, would be appreciated.

Should you have any questions, please contact Nicole Winterton, Environmental Protection Specialist, at (720) 963-3689 or by e-mail at Nicole.Winterton@dot.gov.

Sincerely,

J. Michael Will, P.E. 
Program Engineering Manager

Enclosure: 
Attachment 1: Hawaii Bridges Program Summary Map Set - Hawaii, Kauai, and Oahu 

cc: Nicole Winterton/FHWA-CFLHD 
Paul Luersen/CH2M HILL 
Elizabeth Cutler/CH2M HILL
O – Halona

The proposed project is located on Halona Street, MP 20.21, adjacent to the Interstate Route H-1 on-ramp from Vineyard Boulevard. The purpose of the project is to replace the existing bridge to meet current design standards for roadway width, load capacity, pedestrian traffic, bridge railing and transitions, and bridge approaches. HDOT has also requested the project include provisions to discourage people from making temporary shelters under the bridges along Kapalama Canal.
Subject: Species List for Hawaii Bridges Program, Hawaii, Kauai, and Oahu

Dear Mr. J. Michael Will:

The U.S. Fish and Wildlife Service (Service) received your letter, dated November 21, 2014, requesting a list of federally threatened and endangered species, candidate species, plants and animals of special concern, and critical habitats in the vicinity of the proposed bridge projects. The Federal Highways Administration (FHWA), Central Federal Lands Highway Division (CFLHD), in cooperation with the State of Hawaii Department of Transportation (HDOT), is planning to conduct environmental studies for the proposed rehabilitation or replacement of 12 bridges at 10 locations on the islands of Hawaii, Kauai, and Oahu to improve the safety and reliability of the bridges.

On the island of Hawaii, the Ninole Bridge located along Mamalahoa Highway (Route 11) at mile post 56.7 would be rehabilitated or replaced, addressing bridge width, load capacity, railing, transitions, and approaches. The Hilea Bridge located on Mamalahoa Highway (Route 11) at mile post 57.7 would be rehabilitated or replaced, addressing bridge width, load capacity, railing, and transitions.

On the island of Kauai, Bridge 7E located along Kaumualii Highway (Route 50), approximately 800 feet west of Maluhia Road intersection, would be rehabilitated or replaced, addressing bridge width, load capacity, railing, and transitions. Hanapepe Bridge located on Kaumualii Highway (Route 50) in Hanapepe town would be rehabilitated or replaced, addressing bridge width, load capacity, railing, transitions, approaches, and effects of scour. Kapaa Stream Bridge located on Kuhio Highway (Route 56) near mile post 10 would be rehabilitated or replaced, addressing bridge width, load capacity, railing, transitions, and approaches. This project would also involve improvements to the highway intersection at Mailihuna Road, including roadway
widenning, lighting, signing, pavement markings, drainage, and other improvements such as installation of traffic signals. The three Wainiha Stream bridges located on Kuhio Highway (Route 560) at mile post 6.4 and 6.7 would be replaced. Additionally, three load-restricted bridges which cross Waialoli, Waipa, and Waikoko streams, located at mile posts 3.4, 3.9, and 4.2, will be studied to determine loads and alternatives such as temporary bridges or supports necessary to provide construction access to the Wainiha Stream bridges.

On the island of Oahu, the Halona Bridge located on Halona Street, which crosses Kapalama Canal, would be rehabilitated or replaced, addressing bridge width, load capacity, railing, transitions, approaches, and pedestrian traffic. The Kawela Bridge located on Kamehameha Highway (Route 83) at mile post 11.4 would be replaced, addressing bridge width, load capacity, railing, transitions, and approaches. The Nanahu Bridge located on Kamehameha Highway (Route 83) at mile post 13.4 would be rehabilitated or replaced, addressing bridge width, load capacity, railing, transitions, and approaches. The Roosevelt Bridge located on Kamehameha Highway (Route 99) at mile post 14.4 would be rehabilitated, addressing bridge load capacity, railing, and transitions.

The Service offers the following comments to assist you in your planning process so that impacts to trust resources can be avoided through site preparation, construction, and operation. Our comments are provided under the authorities of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.).

Our databases, including data compiled by the Hawaii Biodiversity and Mapping Program (HBMP), indicate the following species are known to occur or transit through the vicinity of the proposed project areas at Ninole Bridge and Hilea Bridge on the island of Hawaii: the federally endangered Blackburn's sphinx moth (Manduca blackbumi, BSM), Hawaiian goose (Branta sandvicensis), Hawaiian hawk (Buteo solitarius), Hawaiian hoary bat (Lasiurus cinereus semotus), and Hawaiian petrel (Pterodroma sandwichensis); and the threatened Newell’s shearwater (Puffinus auricularis newelli). There is no designated critical habitat in the vicinity of the proposed project areas on the island of Hawaii.

Our databases, including data compiled by the HBMP, indicate the following species are known to occur or transit through the proposed project areas at Bridge 7E, Hanapepe Bridge, Kapaa Stream Bridge, and the Wainiha Stream bridges on the island of Kauai: the endangered Hawaiian black-necked stilt (Himantopus mexicanus knudseni), Hawaiian moorhen (Gallinula chloropus sandvicensis), Hawaiian coot (Fulica alai), Hawaiian duck (Anas wyvilliana), Hawaiian goose, Hawaiian hoary bat, and Hawaiian petrel; the threatened Newell’s shearwater; and a candidate for listing band-rumped storm-petrel (Oceanodroma castro). Additionally, our databases indicate the threatened green sea turtle (Chelonia mydas) is known to occur in the vicinity of the proposed project areas at the Kapaa Stream Bridge and the Wainiha Stream bridges. There is no designated critical habitat in the vicinity of the proposed project areas on the island of Kauai.

The endangered Hawaiian monk seal (Monachus schauinslandi) may use beach habitat in the vicinity of the proposed project at the Kapaa Stream Bridge and the Wainiha Stream bridges. The National Marine Fisheries Service (NMFS) is the Federal agency that consults on potential impacts to monk seals, both in their on-shore and ocean habitats. Therefore, we did not review
the proposed project for potential project impacts to monk seals. We recommend that you contact NMFS regarding the presence of monk seals in the area and potential impacts to the species from the project.

Our databases, including data compiled by the HBMP, indicate the following species are known to occur or transit through the proposed project areas at Kawela Bridge, Nanahu Bridge, and Roosevelt Bridge on the island of Oahu: the endangered Hawaiian black-necked stilt, Hawaiian moorhen, Hawaiian coot, Hawaiian duck, Hawaiian goose, Hawaiian hoary bat, and Hawaiian petrel; and the threatened Newell’s shearwater. Hawaiian geese recently arrived on Oahu. A pair was first observed in early January 2014 at the First Wind Kawaiolao wind farm facility. They have successfully nested, fledging two goslings at the James Campbell National Wildlife Refuge (NWR) near the town of Kahuku. The pair, originally from Kauai, was translocated to Hilo, Hawaii in February 2012, by the State of Hawaii Division of Forestry and Wildlife, and were apparently attempting to return to Kauai when they arrived on Oahu. As of December 2014 the four birds have been seen at the Mililani Agricultural Park, Mililani golf course, and James Campbell NWR.

Additionally, our databases indicate the endangered Hawaiian hoary bat is known to occur or transit through the proposed project area at Halona Bridge on the island of Oahu. There is no designated critical habitat in the vicinity of the proposed project areas on the island of Oahu.

The Service recommends the following measures to avoid and minimize project impacts to the above listed species.

Island of Hawaii

**Blackburn’s sphinx moth**

Adult Blackburn’s sphinx moths feed on nectar from native plants including beach morning glory (*Ipomoea pescaprae*), iliee (*Plumbago zeylanica*), and maiapilo (*Capparis sandw ichiana*). BSM larvae feed upon native tree tobacco (*Nicotiana glauca*), which occupies disturbed areas such as open fields and roadway margins, and the native aiea (*Nothocestrum sp.*), which is found in dry to moist forests at elevations ranging from 1,500 to 5,000 feet. We recommend that a qualified biologist survey the project area for the presence of larval host plants. If larval host plants are detected and will be affected during project construction or operation, we recommend that the biologist document 1) general larval plant density; 2) proximity of larval plants to project sites; 3) average height of the larval plants; 4) signs of larval feeding damage on leaves; and 5) presence of BSM larvae on leaves. We recommend that surveys be conducted for BSM and potential host plants approximately four to eight weeks following significant rainfall and during the wettest portion of the year (usually November-April).

**Hawaiian Goose**

In order to avoid impacts to Hawaiian geese, we recommend a biologist familiar with the nesting behavior of the Hawaiian goose survey the area prior to the initiation of any work, or after any subsequent delay in work of three or more days (during which birds may attempt nesting). If a nest is discovered, work should cease immediately and our office should be contacted for further guidance. Furthermore, all on-site project personnel should be apprised that Hawaiian geese
may be in the vicinity of the project at any time during the year. If a Hawaiian goose (or geese) appears within 100 feet of ongoing work, all activity should be temporarily suspended until the Hawaiian goose (or geese) leaves the area of its own accord.

**Hawaiian Hawk**

Loud, irregular and unpredictable activities, such as using heavy equipment or building a structure, near an endangered Hawaiian hawk nest may cause nest failure. Harassment of Hawaiian hawk nesting sites can alter feeding and breeding patterns or result in nest or chick abandonment. Nest disturbance can also increase exposure of chicks and juveniles to inclement weather or predators. To avoid impacts to Hawaiian hawks, we recommend avoiding brush and tree clearing during their breeding season (March through September). If you must clear the property during the Hawaiian hawk breeding season, we recommend a nest search of the proposed construction site and surrounding area be conducted by a qualified ornithologist immediately prior to start of construction activities. Surveys should ensure that construction activity will not occur within 1,600 feet of any Hawaiian hawk nest.

**Hawaiian Hoary Bat**

The Hawaiian hoary bat roosts in both exotic and native woody vegetation and, while foraging, will leave young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the breeding season, there is a risk that young bats could inadvertently be harmed or killed. To minimize impacts to the endangered Hawaiian hoary bat, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15). Site clearing should be timed to avoid disturbance to Hawaiian hoary bats in the project area.

**Seabirds**

Seabirds, including the Newell’s shearwater, Hawaiian petrel and band-rumped storm petrel, fly at night and are attracted to artificially-lighted areas resulting in disorientation and subsequent fallout due to exhaustion. Seabirds are also susceptible to collision with objects that protrude above the vegetation layer, such as utility lines, guy-wires, and communication towers. Additionally, once grounded, they are vulnerable to predators and are often struck by vehicles along roadways. To reduce potential impacts to seabirds, we recommend the following minimization measures be incorporated into your project description:

- Construction activities should only occur during daylight hours. Any increase in the use of nighttime lighting, particularly during peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality.

- If lights cannot be eliminated due to safety or security concerns, then they should be positioned low to the ground, be motion-triggered, and be shielded and/or full cut-off. Effective light shields should be completely opaque, sufficiently large, and positioned so that the bulb is only visible from below.
Island of Kauai

Please refer to “Hawaiian goose”, “Hawaiian hoary bat”, and “Seabirds” under the Island of Hawaii (above) for recommended measures to avoid and minimize impacts to the Hawaiian goose, Hawaiian hoary bat, and Hawaiian petrel, Newell’s shearwater, and band-rumped storm petrel.

Hawaiian Waterbirds
The Hawaiian stilt, moorhen, coot, and duck are hereafter collectively referred to as “Hawaiian waterbirds.” Our records indicate there is a high probability that Hawaiian waterbirds may occur in the vicinity of the proposed project. We recommend you incorporate the following measures into your project description to avoid and minimize impacts to Hawaiian waterbirds:

- A biological monitor should conduct Hawaiian waterbird and nest surveys at the proposed project site prior to project initiation.
- Any documented nests or broods within the project vicinity should be reported to the Service within 48 hours.
- A 100-foot buffer should be established and maintained around all active nests and/or broods until the chicks/ducklings have fledged. No potentially disruptive activities or habitat alteration should occur within this buffer.
- The Service should be notified immediately prior to project initiation and provided with the results of pre-construction Hawaiian waterbird surveys.
- A biological monitor(s) should be present on the project site during all construction or earth moving activities to ensure that Hawaiian waterbirds and nests are not adversely impacted.
- If a listed Hawaiian waterbird is observed within the project site, or flies into the site while activities are occurring, the biological monitor should halt all activities within 100 feet of the individual(s). Work should not resume until the Hawaiian waterbird(s) leave the area on their own accord.
- A post-construction report should be submitted to the Service with 30 days of the completion of the project. The report should include the results of Hawaiian waterbird surveys, the location and outcome of documented nests, and any other relevant information.

Sea Turtles
Artificial lighting can disorient adult sea turtles and hatchlings by affecting their ability to find the ocean. To minimize potential impacts to sea turtles that may utilize beaches in the project vicinity, no light from the proposed project should be visible from the beach. We recommend installation of shielded lighting at construction sites near beaches and around shoreline developments. Shielded lights reduce the direct and ambient lighting of beach habitats within and adjacent to the project site. Effective light shields should be completely opaque, sufficiently large, and positioned so that light from the shielded source does not reach the beach. Projects should also be designed to minimize adverse impacts to basking or nesting sea turtles from off-leash pets, mammalian predators, and human disturbance.
Island of Oahu

Please refer to "Hawaiian goose", "Hawaiian hoary bat", "Seabirds", and "Hawaiian waterbirds" (above) for recommended measures to avoid and minimize impacts to the Hawaiian goose, Hawaiian hoary bat, Hawaiian petrel, Newell's shearwater, Hawaiian black-necked stilt, Hawaiian moorhen, Hawaiian coot, and Hawaiian duck.

Because the proposed activities may cause soil erosion and sedimentation in sensitive aquatic habitats, we are attaching the Service's recommended Best Management Practices regarding sedimentation and erosion in aquatic environments. We encourage you to incorporate the relevant practices into your project design. In addition to the guidance provided in this letter, the Service anticipates responding to the U.S. Army Corps of Engineers inter-agency notification process and providing further recommendations pursuant to the Fish and Wildlife Coordination Act of 1934 (FWCA), as amended (16 U.S.C. 661 et seq.; 48 Stat. 401); and the Clean Water Act (CWA), as amended (33 U.S.C. 1251 et seq.; 62 Stat. 1155).

If additional information becomes available, or it is determined that the proposed project may affect federally listed species, we recommend you coordinate with our office early in the planning process so that we may further assist you with Endangered Species Act compliance. We appreciate your efforts to conserve endangered species. Please contact Adam Griesemer, Endangered Species Biologist (phone: 808-285-8261, email: adam_griesemer@fws.gov) should you have any questions pertaining to this response.

Sincerely,

Aaron Nadig
Assistant Field Supervisor:
Oahu, Kauai, NWHI, Am.Samoa

Cc: Paul Luersen, CH2M HILL
The U.S. Fish and Wildlife Service recommends that the measures below be incorporated into projects to minimize the degradation of water quality and minimize the impacts to fish and wildlife resources.

1. Turbidity and siltation from project-related work shall be minimized and contained within the vicinity of the site through the appropriate use of effective silt containment devices and the curtailment of work during adverse tidal and weather conditions.

2. Dredging/filling in the marine environment shall be scheduled to avoid coral spawning and recruitment periods and sea turtle nesting and hatching periods.

3. Dredging and filling in the marine/aquatic environment shall be designed to avoid or minimize the loss special aquatic site habitat (beaches, coral reefs, wetlands, etc.) and the function of such habitat shall be replaced.

4. All project-related materials and equipment (dredges, barges, backhoes, etc.) to be placed in the water shall be cleaned of pollutants prior to use.

5. No project-related materials (fill, revetment rock, pipe, etc.) should be stockpiled in the water (intertidal zones, reef flats, stream channels, wetlands, etc.) or on beach habitats.

6. All debris removed from the marine/aquatic environment shall be disposed of at an approved upland or ocean dumping site.

7. No contamination (trash or debris disposal, non-native species introductions, attraction of non-native pests, etc.) of adjacent habitats (reef flats, channels, open ocean, stream channels, wetlands, beaches, forests, etc.) shall result from project-related activities. This shall be accomplished by implementing a litter-control plan and developing a Hazard Analysis and Critical Control Point Plan (HACCP – see http://www.haccp-nrm.org/Wizard/default.asp) to prevent attraction and introduction of non-native species.

8. Fueling of project-related vehicles and equipment should take place away from the water and a contingency plan to control petroleum products accidentally spilled during the project shall be developed. Absorbent pads and containment booms shall be stored on-site, if appropriate, to facilitate the clean-up of accidental petroleum releases.

9. Any under-layer fills used in the project shall be protected from erosion with stones (or core-loc units) as soon after placement as practicable.

10. Any soil exposed near water as part of the project shall be protected from erosion (with plastic sheeting, filter fabric etc.) after exposure and stabilized as soon as practicable (with native or non-invasive vegetation matting, hydroseeding, etc.).
January 9, 2015

U. S. Department of Transportation  
Federal Highway Administration  
Central Federal Lands Highway Division  
Attn: J. Michael Will, Program Engineering Manager  
via email: michael.will@dot.gov  
12300 West Dakota Avenue, Suite 330  
Lakewood, CO 80228

Dear Mr. Will,

SUBJECT: Notification of Intent to Construct the Hawaii Bridge Program, Request for Information, HFPM-16

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments sent to you dated December 18, 2014, enclosed are additional comments from the Division of Aquatic Resources on the subject matter. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Sincerely,

[Signature]

Russell Y. Tsuji  
Land Administrator

Enclosure(s)
MEMORANDUM

TO:  DLNR Agency:

X Div. of Aquatic Resources
___ Div. of Boating & Ocean Recreation
X Engineering Division
X Div. of Forestry & Wildlife
___ Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands

FROM:  Russell Y. Tsuji, Land Administrator

SUBJECT:  Notification of Intent to Construct the Hawaii Bridge Program, Request for Information

LOCATION:  Various (see cover letter) including all Districts except Maui

APPLICANT:  Federal Highway Administration, Central Federal Lands Highway Division, in cooperation with the Hawaii Department of Transportation

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by December 18, 2014. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

We have no objections.
We have no comments.
Comments are attached.

Signed:  [Signature]
Print Name:  [Name]
Date:  [Date]
MEMORANDUM

TO: William Aila Jr., Chairperson
DATE: 12/18/14
FROM: Glenn Higashi, Aquatic Biologist
SUBJECT: Notification of Intent to Construct the Hawaii Bridge Program, Request for Information

Date: 12/17/14
DAR # 5037

Comment | Date Request | Receipt | Referral | Due Date
---------|-------------|---------|----------|----------
12/2/14   | 12/3/14     | 12/4/12 | 12/18/14

Requested by: Russell Y. Tsuji, Administrator
Land Division

Summary of Proposed Project

Title: Notification of intent to Construct the Hawaii Bridge Program - Request for information

Project by: Federal Highway Administration, Central Federal Lands Highway Division, in cooperation with the Hawaii Department of Transportation

Location: Hawaii, Kauai, and Oahu

Brief Description:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in cooperation with the Hawaii Department of Transportation (HDOT), is planning to undertake environmental studies for the Hawaii Bridge Program. The program includes work on 12 bridges at 10 locations on the islands of Oahu (4 locations with 1 bridge each - Halona, Kawela, Nanahu, and Kipapa (Roosevelt bridge)); Kauai (4 locations with 3 locations with 1 bridge each and 1 location with 3 bridges - Bridge No. 7E, Hanapepe, Kapaa, and Wainiha; respectively); and Hawaii (2 locations with 1 bridge each - Ninole, Hilea).

The FHWA is requesting information regarding the known presence of listed species and designated critical habitat in the vicinity of each of the bridge projects to appropriately assess potential impacts for these projects.
They are also requesting DAR's opinion on the likely impact of each of the bridge projects based on the potential issues of the location considering the proposed construction activities and schedule.

All the bridge projects would improve the safety and reliability of the existing bridges, through rehabilitation or replacement, addressing bridge width, load capacity, bridge railing and transitions, bridge approaches. Hanapepe bridge project would also include mitigation to the effects of scour. The project for Wainiha would involve the replacement of the 3 existing temporary bridges.

Comments:

For the aquatic biological resources there are no listed aquatic species and no known designated critical habitat in the vicinity of each of the bridge projects that may impose potential impacts for these projects.

The proposed replacement bridges are not expected to have any significant impact on the aquatic resource values in these areas. However, the stream channel should be maintained to provide a continuous connection to the ocean during stream flows resulting from heavy rains to accommodate the upstream migration of postlarval native Hawaiian stream animals and allow the downstream passage of larval drift to the ocean should recruitment or spawning occur.

Mitigative measures should be implemented during the rehabilitation or construction of the replacement bridges and to minimize the potential for erosion, siltation and pollution of the aquatic environment.

1) lands denuded of vegetation should be planted or covered as quickly as possible to prevent erosion and the vegetation cleared along stream banks should be removed and prevented from falling into the stream/estuary environment;

2) scheduling site work (particularly the excavation and demolition of existing bridge abutments, piers, footings and supports, the construction of bridge foundations structures, and stream bank hardening) during periods of minimal rainfall;

3) prevent construction materials, petroleum products, debris and landscaping products from falling, blowing or leaching into the aquatic environment during the rehabilitation /replacement of the bridges and their associated improvements.

Thank you for providing DAR the opportunity to review and comment on the proposed project. Should there be any changes to the project plans, DAR requests the opportunity to review and comment on those changes.
Central Federal Lands Highway Division
12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
Office: 720-963-3647
Fax:  720-963-3596
Michael.Will@dot.gov

In Reply Refer To:
HFPM-16

Mary Abrams, Field Supervisor
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96850

Re:  Section 7 Consultation for Proposed Halona Street Bridge Replacement Project,
     Interstate Route H-1 (Adjacent), Island of Oahu, Hawaii

Dear Ms. Abrams:

The Central Federal Lands Highway Division (CFLHD) of the Federal Highway Administration (FHWA), in cooperation with the State of Hawaii Department of Transportation (HDOT), is proposing to replace the Halona Street Bridge, adjacent to Interstate Route H-1, in the Kalihi District on the island of Oahu, Hawaii. The purpose of the project is to improve the Halona Street Bridge and its approaches to maintain the Kapalama Canal crossing on Halona Street as a safe and functional component of the regional transportation system for highway users. FHWA is the lead federal agency for this consultation.

The enclosed biological assessment (BA) addresses potential project impacts on the endangered Hawaiian hoary bat (Lasiurus cinereus semotus). The action area contains habitat that could support roosting and foraging for the Hawaiian hoary bat; however, the timing of construction and minimal construction footprint will preclude any major or long-term effects to the species. As such, the BA concludes that the proposed action may affect, but is not likely to adversely affect the Hawaiian hoary bat. To comply with Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(ESA), FHWA is requesting informal consultation on the Hawaiian hoary bat.

If you require further information or have questions, please contact Nicole Winterton, Environmental Protection Specialist, by email at Nicole.winterton@dot.gov or by phone at (720) 963-3689. We appreciate your assistance with this project.

Sincerely,

Michael Will
Project Manager
Enclosure:

*Biological Assessment for the Proposed Halona Bridge Project in Kalihi, Oahu Island, Hawaii*

cc:
Michael Tosatto, National Marine Fisheries Service
Lisa Hadway, State of Hawaii Division of Forestry and Wildlife
Frazer McGilvray, State of Hawaii Department of Aquatic Resources
Michael Tosatto, Administrator  
National Marine Fisheries Service  
1845 Wasp Boulevard, Building 176  
Honolulu, HI 96818

Re: Section 7 Consultation for Proposed Halona Street Bridge Replacement Project,  
Interstate Route H-1 (Adjacent), Island of Oahu, Hawaii

Dear Mr. Tosatto:

The Central Federal Lands Highway Division (CFLHD) of the Federal Highway Administration (FHWA), in cooperation with the State of Hawaii Department of Transportation (HDOT), is proposing to replace the Halona Street Bridge, adjacent to Interstate Route H-1, in the Kalihi District on the island of Oahu, Hawaii. The purpose of the project is to improve the Halona Street Bridge and its approaches to maintain the Kapalama Canal crossing on Halona Street as a safe and functional component of the regional transportation system for highway users. FHWA is the lead federal agency for this consultation.

The enclosed biological assessment (BA) addresses potential project impacts on the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*). The BA concludes that the proposed action *may affect, but is not likely to adversely affect* the Hawaiian hoary bat, and as such, FHWA is requesting informal consultation with the U.S. Fish and Wildlife Service regarding this species.

Federally listed marine species — the endangered Hawaiian monk seal (*Neomonachus schauinslandi*), threatened green sea turtle (*Chelonia mydas*), and endangered Hawksbill sea turtle (*Eretmochelys imbricata*) — are unlikely to occur in the action area. Therefore, it is concluded that the project would have *No Effect* on these species, and they are not evaluated in the BA. Based on your involvement in project-related discussions to date, we are sending you a copy of the BA for your records.

If you require further information or have questions, please contact Nicole Winterton, Environmental Protection Specialist, by email at Nicole.winterton@dot.gov or by phone at (720) 963-3689. We appreciate your assistance with this project.

Sincerely,

Michael Will  
Project Manager
Enclosure:

*Biological Assessment for the Proposed Halona Bridge Project in Kalihi, Oahu Island, Hawaii*

cc:
Joel Moribe, National Marine Fisheries Service
Mary Abrams, U.S. Fish and Wildlife Service
Lisa Hadway, State of Hawaii Division of Forestry and Wildlife
Frazer McGilvray, State of Hawaii Department of Aquatic Resources
BIOLOGICAL ASSESSMENT FOR THE PROPOSED HĀLONA BRIDGE PROJECT IN KALIHI, O‘AHU ISLAND, HAWAI‘I

Prepared for
Federal Highway Administration, Central Federal Lands Highway Division
12300 West Dakota Avenue, Suite 280
Lakewood, Colorado 80228
(720) 963-3689

and

CH2M HILL
1132 Bishop Street, Suite 1100
Honolulu, Hawai‘i 96813
(808) 943-1133

Prepared by
SWCA Environmental Consultants
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Honolulu, Hawai‘i 96813
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SWCA Project No. 27166

Revised January 27, 2016
CONTENTS

1. Introduction ......................................................................................................................................... 1
  1.1. Consultation to Date ....................................................................................................................... 1

2. Proposed Action and Project Description ......................................................................................... 1
  2.1. Survey Area .................................................................................................................................... 3
  2.2. Action Area .................................................................................................................................... 3
  2.3. Conservation Measures .................................................................................................................. 3

3. Methodology and Species Covered in the Evaluation of Potential Impacts .................................. 6

4. Affected Environment ........................................................................................................................ 7
  4.1. General Characteristics .................................................................................................................. 7
  4.2. Soils ................................................................................................................................................ 8
  4.3. Hydrology and Waters of the U.S. ................................................................................................. 8
  4.4. Vegetation .................................................................................................................................... 11
  4.5. Wildlife ........................................................................................................................................ 13
    4.5.1. Birds ..................................................................................................................................... 13
    4.5.2. Mammals .............................................................................................................................. 14
    4.5.3. Reptiles and Amphibians ..................................................................................................... 14
    4.5.4. Terrestrial Invertebrates ....................................................................................................... 14
    4.5.5. Fish ....................................................................................................................................... 14

5. Species and Critical Habitat Considered ........................................................................................ 15
  5.1. Species .......................................................................................................................................... 15
  5.2. Critical Habitat ............................................................................................................................. 15

6. Effects Analysis .................................................................................................................................. 16
  6.1. Hawaiian Hoary Bat ..................................................................................................................... 16
    6.1.1. Effects Analysis and Determination ..................................................................................... 17

7. Conclusion ......................................................................................................................................... 17

8. Literature Cited ................................................................................................................................ 18
APPENDICES

Appendix A. Photographs of Survey Area

FIGURES

Figure 1.  Hālona Bridge survey area. ........................................................................................................ 2
Figure 2.  Hālona Bridge action area. ......................................................................................................... 4
Figure 3.  Soil types in and near the survey area. ....................................................................................... 9
Figure 4.  Delineated non-wetland waters of the U.S. in the survey area. .............................................. 10
Figure 5.  National Wetlands Inventory classification in and near the survey area. ............................... 12

TABLES

Table 1.  Birds Observed by SWCA in and near the Survey Area ............................................................... 13
Table 2.  Species Federally Listed as Endangered or Threatened with Potential to Occur near the Action Area. .......................................................................................................................... 15
1. INTRODUCTION

The Federal Highway Administration, Central Federal Lands Highway Division (FHWA), in partnership with the Hawai‘i Department of Transportation (HDOT), is proposing to improve the Hālona Bridge (project) to meet current design standards for roadway width, load capacity, pedestrian and bicycle traffic, bridge railing and transitions, and bridge approaches. CH2M HILL contracted SWCA Environmental Consultants (SWCA) on behalf of FHWA to complete a biological assessment (BA) for the project. Hālona Street is located between the Vineyard Boulevard H-1 (northbound) on-ramp and the Houghtailing Street H-1 (southbound) off-ramp (Figure 1). Hālona Bridge was built in 1938.

The purpose of this BA is to evaluate the proposed project in sufficient detail to determine its potential effects on federally listed threatened and endangered species. No proposed or candidate species potentially occur in the project action area, and no proposed or designated critical habitat is present within the project action area.

Section 7(a)(1) of the Endangered Species Act (ESA) of 1973 (as amended) directs all Federal agencies to participate in the conservation and recovery of threatened and endangered species. Section 7(a)(2) of the ESA states that each Federal agency shall consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. This project will be federally funded and FHWA is the lead agency for the Section 7 consultation.

1.1. Consultation to Date

Michael Will, Project Manager from the U.S. Department of Transportation, FHWA-Central Federal Lands Highway Division sent a letter to the USFWS on November 21, 2014, requesting a list of federally threatened and endangered species, candidate species, plants and animals of special concern, and critical habitats near the proposed action. USFWS replied to the letter on December 22, 2014, listing the species that may occur on Kaau‘i along with recommended measures that USFWS believes will reduce impacts on each species (USFWS 2014a). Conservation measures that will be incorporated into the proposed project are listed in section 2.3.

CH2M HILL hosted a meeting in their Honolulu Office on March 13, 2015, to discuss the Hawai‘i Bridges Program with the FHWA-Central Federal Lands Highway Division, USFWS, CH2M HILL, State of Hawai‘i Division of Aquatic Resources, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency, and SWCA. On December 11, 2014, CH2M HILL and SWCA also met with the U.S. Army Corps of Engineers at their Honolulu District Office. The purpose of these meetings was to introduce the project locations, and generally discuss potential biological and regulatory issues associated with the Hawai‘i Bridges Program. As recommended by the USFWS, two Fish and Wildlife Coordination Act (FWCA) meetings were held on December 8 and December 15, 2015, to discuss avoidance and minimization measures for fish and wildlife resources and water quality.

2. PROPOSED ACTION AND PROJECT DESCRIPTION

The proposed action in this BA consists of replacing the existing Hālona Bridge with a new precast bridge. The replacement bridge would be a three-span bridge with a total length of approximately 131 feet, a deck width of 39 feet, and a superstructure depth of 2.5 feet. The new bridge would be narrower than the existing bridge because of the removal of the landscaped buffer that sits atop the existing bridge deck. The bridge would be lengthened to match the span of the H-1 Freeway.
Figure 1. Hālona Bridge survey area.
The four existing piers would be removed and replaced with two piers that align with the two existing and adjacent H-1 Bridge piers. The proposed new bridge abutments would be set back from and behind the existing abutments.

Construction would last approximately 13 months. No temporary bridge is planned, and the entire bridge will likely be temporarily closed to expedite construction. Detours through the local county streets will be coordinated. No blasting or dredging is anticipated for the proposed action. To minimize impacts to the surrounding residential areas, night work is not anticipated.

2.1. Survey Area

The survey area is the area within which field observations were made during a September 2014 site visit by SWCA biologists. The survey area consists of Hālona Street from Kaauwai Place to Palama Street, a segment of the Interstate Route H-1 (Lunalilo Freeway), and portions of Kokea Street and Kohou Street (Figure 1). It is 5.37 acres (2.17 hectares) of predominantly residential and developed habitat. Ornamental trees are present on Kohou and Hālona Streets. Elevations in the survey area range from roughly 2 to 24 feet (0.6 to 7.3 meters [m]) above sea level.

2.2. Action Area

The ESA defines an action area as the area within which all of the direct and indirect impacts of the project would occur (50 Code of Federal Regulations 402.02). In other words, it is the geographic area that would be affected by construction and maintenance of the project. The Halona Bridge action area was determined based on potential for construction noise to travel through the surrounding areas. This is because noise would be the most far-reaching impact resulting from the proposed action. The Halona Bridge action area (see Figure 2) extends 1,000 feet (305 m) from the project footprint, covering a total of 111.5 acres. The 1,000-foot (305-m) buffer defines the action area based on the distance a 100-A-weighted-decibel (dBA) noise (such as a rock drill, paver, or impact pile driver) would attenuate to background levels (approximately 50 dBA) over flat terrain with little to no vegetation. This area is conservatively defined and likely encompasses an area larger than the area within which all impacts would occur. The actual distance that noise effects would occur is likely smaller than the action area because quieter equipment would be used and local topography and vegetation would shield the produced noise.

2.3. Conservation Measures

Implementation of the proposed action will include a variety of conservation measures to reduce or eliminate proposed action–related impacts and avoid adverse effects to listed species. Conservation measures for the Hālona Bridge proposed action will consist of the following:

Hawaiian Hoary Bat

- Any fences that may be erected as part of the proposed action will have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) on barbed wire.
- In general, no trees taller than 15 feet (4.6 m) would be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying may be roosting in the trees; however, if a limited number of trees would need to be cleared during that time period, a qualified biologist would use appropriate protocols to surveys for bats prior to trimming or cutting.
Figure 2. Hālona Bridge action area.
Monk Seal and Sea Turtles

- Although not expected to occur within the action area, construction activities will not begin if a monk seal (*Neomonachus schauinslandi*) or listed sea turtle is in the construction area or within 150 feet (46 m) of the construction area. Construction will only begin after the animal voluntarily leaves the area.
- Workers will not attempt to feed, touch, ride, or otherwise intentionally interact with any monk seals or sea turtles.

White Tern

- Tree removal and trimming will be conducted in the fall and early winter (roughly November to January), when white tern (*Gygis alba*) breeding rate is lowest (Vanderwerf 2003).
- Trees will be inspected for white tern eggs or chicks before tree removal.

In addition to the conservation measures, the following best management practices (BMPs) would be implemented to protect water quality, as recommended by the NMFS Protected Resources Division (NOAA NMFS 2015a) and USFWS (USFWS 2014a). The applicability of these measures to the proposed project will depend on the site-specific construction means and methods chosen. The project would also adhere to the requirements of all applicable permits.

- Erosion and sediment control measures would be in place before initiating earth-moving activities. Functionality would be maintained throughout the construction period.
- A contingency plan to control toxic materials will be developed.
- Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.
- All project-related materials and equipment placed in the water will be free of pollutants.
- The project manager and heavy equipment operators will perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations will be postponed or halted if a leak is detected, and they will not proceed until the leak is repaired and the equipment is cleaned.
- Fueling of land-based vehicles and equipment will take place at least 50 feet (15.24 m) away from the water, preferably over an impervious surface. Fueling of vessels will be done at approved fueling facilities.
- Turbidity and siltation from project-related work will be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather and flow conditions.
- No project-related materials (fill, revetment rock, pipe, etc.) will be stockpiled in the water (intertidal zones, reef flats, stream channels, wetlands, etc.) or on beach habitats.
- No contamination (trash or debris disposal, invasive species introductions, attraction of non-native pests, etc.) of adjacent habitats (reef flats, channels, open ocean, stream channels, wetlands, beaches, forests, etc.) shall result from project-related activities.
- Any soil exposed near water as part of the project shall be protected from erosion (with plastic sheeting, filter fabric etc.) after exposure and stabilized as soon as practicable (with native or non-invasive vegetation matting, hydrosweeding, etc.).
3. METHODOLOGY AND SPECIES COVERED IN THE EVALUATION OF POTENTIAL IMPACTS

The USFWS maintains lists of endangered, threatened, proposed, and candidate species known or thought to occur in Hawai‘i. The USFWS also designates critical habitat in the state for some listed species. Endangered and threatened species are protected under the ESA (16 United States Code [USC] 1531 et seq.). The ESA specifically prohibits take, which means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct” of a listed species. Harm includes “significant habitat modification or degradation that kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.”

The species evaluated in this report are all federally protected (endangered and threatened) species, proposed species, and candidates for federal listing.

All information on the vegetation and wildlife in the survey area was derived from biological surveys conducted by SWCA in September 2014 (see Figure 1). In addition to recording wildlife and plants encountered during the surveys, SWCA evaluated habitat for the possible occurrence of federally listed species. As part of that habitat evaluation effort, the presence of any water, wetlands, and special soils was documented.

The determination of potential for local species occurrence (as reported in section 5.1 of this BA) is based on 1) existing information on distribution and 2) qualitative comparisons of the habitat requirements of each species with vegetation communities, landscape features, and/or water quality conditions in the action area. Possible impacts to these species were evaluated based on reasonably foreseeable proposed action–related activities and the local loss of habitat.

The federally listed species in the action area were evaluated for potential to occur in the action area using the following categories:

- **Unlikely to occur**: The action area is within the species’ currently known range, but vegetation communities, soils, water quality conditions, etc., do not resemble those known to be used by the species, or the action area is clearly outside the species’ currently known range.

- **May occur**: The action area is within the species’ currently known range, and vegetation communities, soils, water quality conditions, etc., resemble those known to be used by the species.

- **Known to occur**: The species was documented in the action area either during or before the field surveys by a reliable observer.

Species with the potential to occur in the action area were then further evaluated for possible impacts from the proposed action. Federally protected (i.e., threatened or endangered) species were assigned to one of three categories of possible effect, following USFWS guidelines:

- **No effect**: A determination of no effect means there are absolutely no effects to the species and its critical habitat, either positive or negative. It does not include small effects or effects that are unlikely to occur.

- **May affect, is not likely to adversely affect**: Under this effect determination, all effects to the species and its critical habitat are beneficial, or discountable. Beneficial effects have contemporaneous positive effects without adverse effects to the species (for example, there cannot be “balancing,” so that the benefits of the action will outweigh the adverse effects). Insignificant effects relate to the magnitude of the impact and should not reach the scale where
take occurs. Discountable effects are considered extremely unlikely to occur. Based on best
judgment, a person will not 1) be able to meaningfully measure, detect, or evaluate discountable
effects or 2) expect discountable effects to occur. Determinations of “not likely to adversely
affect, due to beneficial, or discountable effects” require written concurrence from the USFWS.

- **May affect, is likely to adversely affect:** This effect determination means that the proposed action
will have an adverse effect on the species or its critical habitat. Any action that will result in
“take” of an endangered or threatened species is considered an adverse effect. A combination of
beneficial and adverse effects is still considered “likely to adversely affect,” even if the net effect
is neutral or positive. The effect on the species and/or critical habitat must be extremely small to
qualify as a discountable effect. Likewise, an effect that can be detected in any way or that can be
meaningfully articulated in a discussion of the results of the analysis is not discountable; it is an
adverse effect.

As directed by the USFWS, species proposed or candidates for listing are evaluated using the following
effect determination categories. *Jeopardy* is defined under the ESA as occurring when “an action is
reasonably expected, directly or indirectly, to diminish a species’ numbers, reproduction, or distribution
so that the likelihood of survival and recovery in the wild is appreciably reduced.”

- **No effect.**
- **Not likely to jeopardize the continued existence of the species or result in the destruction or
  adverse modification of proposed critical habitat.**
- ** Likely to jeopardize the continued existence of the species or result in the destruction or adverse
  modification of proposed critical habitat.**

### 4. AFFECTED ENVIRONMENT

SWCA conducted a review of available scientific and technical literature regarding natural resources in
and near the survey area and action area. This literature review encompassed a thorough search of
refereed scientific journals, technical journals and reports, environmental assessments and environmental
impact statements, relevant government documents, and unpublished data that provide insight into the
natural history and ecology of the area. SWCA also reviewed available geospatial data, aerial
photographs, and topographic maps of the survey area.

A field reconnaissance of the survey area was conducted by two SWCA biologists on September 11,
2014. Representative portions of the area were driven or walked to describe vegetation types, fauna, and
wetlands or streams, as well as known or suspected threatened, endangered, proposed, or candidate
wildlife or plant species.

#### 4.1. General Characteristics

The survey area and action area is on a low-lying coastal plain within the Kapālama Watershed. Alluvial
material was deposited in the area by the eroding Koʻolau Mountain Range and by changes in sea level
(Sherrod et al. 2007). Mean annual rainfall for this area is approximately 37 inches (940 millimeters
[mm]). Rainfall is typically highest in November–December and lowest in June–August (Giambelluca et
al. 2013). Most of the action area is relatively flat. Elevations at the site range from roughly 2 to 24 feet
(0.6 to 7.3 m) above sea level. Most of the action area is covered in asphalt and concrete-paved roadways.
It is predominately characterized by urban residential development. Several schools, small parks, and
businesses occur in the vicinity.
4.2. Soils

The Natural Resources Conservation Service (NRCS) identifies the following four soil types in the survey area: Kawaihapai stony clay loam, 2%–6% slopes (KlaB); Hanalei silty clay, 0%–2% slopes (HnA); Ewa silty clay loam, moderately shallow, 0%–2% slopes (EmA); and Water > 40 acres (W) (Foote et al. 1972; NRCS 2013) (Figure 3). The Hanalei silty clay, 0%–2% slopes soil type is listed as a hydric soil (NRCS 2012).

4.3. Hydrology and Waters of the U.S.

A single perennial stream, Kapālama Stream, traverses the survey area. Kapālama Stream is approximately 5.6 miles (9 kilometers) (Parham et al. 2008) long, and approximately 0.97 acre (0.39 ha) of non-wetland waters of the U.S. (i.e., open water) was delineated in the survey area (Figure 4).

The stream is channelized and entirely surrounded by urban development; therefore, the original drainage course has been extensively modified. The channelized stream forks in the north portion of the survey area, approximately 300 feet (91 m) upstream of the existing bridge. The channel bed is concrete-lined in the immediate vicinity of the fork; however, according to project engineers, the channel bed comprises natural material closer to the bridge.

According to National Wetlands Inventory (NWI) data, the unnamed right fork terminates before the intersection with North School Street (outside of the action area). The left fork (formally named Kapālama Stream) continues mauka toward the Koʻolau Mountain Range. Downstream of the action area, Kapālama Stream flows southwest between Kokea and Kohou Streets and eventually empties into Honolulu Harbor roughly 0.8 mile (1.3 kilometers) from the survey area.

Standing water was observed in the stream during the survey (Appendix A, Figures A3 and A4). Most of Kapālama Stream in the survey area is tidally influenced from the presence of marine/estuarine fish (striped mullet and great barracuda) near the bridge and observed changes in water levels throughout the day. It is unknown how often water within the channelized forks is tidally influenced.
Figure 3. Soil types in and near the survey area.
Figure 4. Delineated non-wetland waters of the U.S. in the survey area.
The NWI program identifies five wetlands or waterways in the survey area (Figure 5). These comprise E2EM1N (Estuarine, Intertidal, Emergent, Persistent, Regularly Flooded), E1UBL (Estuarine, Subtidal, Unconsolidated bottom), R2USCx (Riverine, Lower Perennial, Unconsolidated Shore, Seasonally Flooded, Excavated), R2USC (Riverine, Lower Perennial, Unconsolidated Shore, Seasonally Flooded), and R4SBCx (Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated). The NWI program identifies an additional Riverine feature — R2UBHx (Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated) — immediately adjacent to the survey area (Figure 5).

4.4. Vegetation

No state or federally listed threatened, endangered, proposed, or candidate plant species were recorded in the survey area and none are expected to occur within the larger action area. Two native Hawaiian plants — 'ae‘ae (Bacopa monnieri) and Cyperus polystachyos — were seen during the survey.¹ These species are indigenous, or found in Hawai‘i and elsewhere.

The vegetation in the action area is composed of mowed grasses, interspersed with weedy non-native grasses and herbaceous plants, as well as scattered ornamental trees and shrubs. Mowed lawns adjacent to houses and the Kapālama Canal (or Kapālama Stream) consist mainly of swollen fingergrass (Chloris barbata), Bermuda grass (Cynodon dactylon), wire grass (Eleusine indica), and Panama paspalum (Paspalum fimbriatum). Non-native herbaceous weeds common in the grassy areas include creeping indigo (Indigofera spicata), morning glory (Ipomoea obscura), pitted beardgrass (Bothriochloa pertusa), Guinea grass (Urochloa maxima), buffel grass (Cenchrus ciliaris), khaki weed (Alternanthera pungens), and spiny amaranth (Amaranthus spinosus).

A few large monkey pod trees (Samanea saman) and rainbow shower trees (Cassia x nealiae) are planted along Kohou Street and Hālona Street (Appendix A, Figures A1 and A2). Other ornamental plantings in the survey area include kou haole (Cordia sebestena), manila palm (Veitchia merrillii), lantana (Lantana camara), wedelia (Sphagneticola trilobata), and mock orange (Murraya paniculata). Sesban tree (Sesbania grandiflora) and sweet potato (Ipomoea batatas) are planted in a garden in the northern portion of Kokea Street in the survey area. Similar ornamental plants are expected to occur in the larger action area.

Within the canal, hydrophytic plants are present near the northern portion of the action area. These include umbrella sedge (Cyperus involucratus), California grass (Urochloa mutica), Cyperus polystachyos, (Ludwigia octovalvis), and ‘ae‘ae.

¹ The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999), Wagner and Herbst (2003), and Staples and Herbst (2005). Recent name changes are those recorded in Wagner et al. (2012). Common/Hawaiian names are provided first, followed by scientific names in parenthesis. If no common or Hawaiian name is known, only the scientific name is provided.
Figure 5. National Wetlands Inventory classification in and near the survey area.
4.5. Wildlife

No state or federally listed threatened, endangered, proposed or candidate wildlife species were observed in the survey area. The following sections describe common wildlife species observed during the site visit.

4.5.1. Birds

All bird species observed in the survey area are commonly found in Hawai‘i’s urban areas, gardens, and waterways. In all, 17 species were documented (Table 1). Four white terns (*Gygis alba*) were observed in-flight, transiting to areas beyond the stream. The white tern is listed under Hawaii Revised Statutes 195D as threatened.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black-crown night-heron</td>
<td><em>Nycticorax nycticorax</em></td>
<td>I</td>
</tr>
<tr>
<td>Cattle egret</td>
<td><em>Bubulcus ibis</em></td>
<td>NN</td>
</tr>
<tr>
<td>Common myna</td>
<td><em>Acridotheres tristis</em></td>
<td>NN</td>
</tr>
<tr>
<td>Garganey</td>
<td><em>Anas querquedula</em></td>
<td>M</td>
</tr>
<tr>
<td>Hawaiian duck-mallard hybrids†</td>
<td><em>Anas sp.</em></td>
<td>NN</td>
</tr>
<tr>
<td>House sparrow</td>
<td><em>Passer domesticus</em></td>
<td>NN</td>
</tr>
<tr>
<td>Japanese white-eye</td>
<td><em>Zosterops japonicus</em></td>
<td>NN</td>
</tr>
<tr>
<td>Java sparrow</td>
<td><em>Padda oryzivora</em></td>
<td>NN</td>
</tr>
<tr>
<td>Pacific golden-plover</td>
<td><em>Pluvialis fulva</em></td>
<td>M</td>
</tr>
<tr>
<td>Red-crested cardinal</td>
<td><em>Paroaria coronata</em></td>
<td>NN</td>
</tr>
<tr>
<td>Red-vented bulbul</td>
<td><em>Pycnonotus cafer</em></td>
<td>NN</td>
</tr>
<tr>
<td>Red junglefowl (chicken)</td>
<td><em>Gallus</em></td>
<td>NN</td>
</tr>
<tr>
<td>Rock pigeon</td>
<td><em>Columbia livia</em></td>
<td>NN</td>
</tr>
<tr>
<td>Spotted dove</td>
<td><em>Streptopelia chinensis</em></td>
<td>NN</td>
</tr>
<tr>
<td>Wandering tattler</td>
<td><em>Tringa incana</em></td>
<td>M</td>
</tr>
<tr>
<td>White tern (fairy tern)</td>
<td><em>Gygis alba</em></td>
<td>I</td>
</tr>
<tr>
<td>Zebra dove</td>
<td><em>Geopelia striata</em></td>
<td>NN</td>
</tr>
<tr>
<td><strong>Total species</strong></td>
<td></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

Notes:
* Status: I = Indigenous, NN = non-native permanent resident, M = migrant.
† These were observations of ducks that are likely hybrids of the native Hawaiian duck (*Anas wyvilliana*) and the introduced mallard (*Anas platyrhynchos*).

Two species of migrant shorebirds, the wandering tattler (*Tringa incana*) and Pacific golden-plover (*Pluvialis fulva*), were observed near the Hālona Bridge. Pacific golden-plovers were seen foraging along the canal, and wandering tattlers were observed roosting on nearby rooftops. Three species of waterbird were observed during this survey: the black-crowned night-heron (*Nycticorax nycticorax*); Hawaiian...
duck-like ducks (*Anas* sp.), which are likely to be mallard–Hawaiian duck hybrids; and a pair of garganey (*Anas querquedula*) ducks. One adult and one juvenile black-crowned night-heron were observed foraging along the northern edge of the canal. Eleven duck hybrids were observed foraging and swimming near the vegetated areas of the canal, and the pair of garganey was observed in water near the bridge. All other bird species observed are introduced species common to developed areas.

Suitable nesting habitat for native Hawaiian waterbirds is not present in the action area. The action area does not provide suitable nesting or foraging habitat for listed seabirds.

### 4.5.2. Mammals

The Hālona Bridge and Kapālama Canal are bordered by residential areas, where it is common to find people walking dogs (*Canis familiaris*). No other mammals were observed during the pedestrian surveys. Mammals that could be expected in the action area include cats (*Felis catus*), mongoose (*Herpestes auropunctatus*), rats (*Rattus* spp.), and mice (*Mus musculus*).

An evaluation of the action area as habitat for the Hawaiian hoary bat, a federally listed mammal, is presented in section 6.

### 4.5.3. Reptiles and Amphibians

The brown anole (*Anolis sagrei*) was frequently observed during the pedestrian survey; individuals were foraging or basking in the sun along the cement sidewalk in the residential area around the canal. A mature red-eared slider turtle (*Trachemys scripta elegans*) was observed swimming in the canal between Olomea Street and Lunalilo Freeway. No other reptiles or amphibians were seen during the survey. None of the observed reptiles are native to the Hawaiian Islands. No threatened green sea turtles (*Chelonia mydas*) were observed during the survey and no records of green sea turtles were found in the survey area; however, these animals have been observed inland in stream as far as approximately 1.8 miles (3 km) on O'ahu (Clark et al. 2011).

### 4.5.4. Terrestrial Invertebrates

Rambur’s forktail (*Ischnura ramburii*), a non-native damselfly, as well as the introduced Chinese dragonfly (*Crocothemis servilia*), were observed during the survey. A Sonoran carpenter bee (*Xylocopa sonorina*) was also observed. No native invertebrate species were recorded during the survey.

### 4.5.5. Fish

In the north portion of the survey area, freshwater from mauka areas of Kapālama Stream mixes into the brackish-water estuarine system. Although the water is turbid, several fish species were observed. Indigenous species observed include striped mullet (*Mugil cephalus*) and great barracuda (*Sphyraena barracuda*) juveniles, both of which occur in estuarine and marine waters. Non-native Poeciliids (*Gambusia affinis* or *Poecilia mexicana*) and tilapia (*Oreochromis* sp. or *Sarotherodon* sp.) were also seen.
5. SPECIES AND CRITICAL HABITAT CONSIDERED

5.1. Species

The species evaluated in this BA consist of all federally protected (i.e., endangered and threatened) species with potential to occur in this portion of O‘ahu.

Federally-listed species that may occur in the action area were identified in a letter from USFWS dated December 22, 2014 and from agency meetings on March 13, 2015, and December 15, 2015 (Section 1.1). Based on current distribution and habitat requirements, one federally-listed species—the Hawaiian hoary bat—may occur in the action area and has potential to use the habitat of the action area. Three marine species — the endangered Hawaiian monk seal, threatened green sea turtle, and endangered Hawksbill sea turtle — are unlikely to occur in the action area and are therefore not evaluated in this BA.

5.2. Critical Habitat

No designated or proposed critical habitat for threatened or endangered species occurs in the action area; therefore, critical habitat is not discussed further in this BA.

<table>
<thead>
<tr>
<th>Table 2. Species Federally Listed as Endangered or Threatened with Potential to Occur near the Action Area.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Name (scientific name)</strong></td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>Mammals</strong></td>
</tr>
<tr>
<td>Hawaiian monk seal (Neomonachus schauinslandi)</td>
</tr>
<tr>
<td>Hawaiian hoary bat (Lasiurus cinereus semotus)</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
</tr>
<tr>
<td>Green sea turtle (Chelonia mydas)</td>
</tr>
</tbody>
</table>
Table 2. Species Federally Listed as Endangered or Threatened with Potential to Occur near the Action Area.

<table>
<thead>
<tr>
<th>Common Name (scientific name)</th>
<th>Status*</th>
<th>Range or Habitat Requirements†</th>
<th>Potential for Occurrence in Action Area</th>
<th>Determination of Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawksbill sea turtle (Eretmochelys imbricata)</td>
<td>Endangered</td>
<td>The hawksbill sea turtle is found in warm tropical waters worldwide. The hawksbill turtle is a shy tropical reef dwelling species that feeds on jellyfish, sea urchins, and sea sponges. It may also eat algae that grows on the reef. In Hawai‘i, nesting occurs on the islands of Hawai‘i, Maui, Moloka‘i, and O‘ahu.</td>
<td>Unlikely to occur; have not been recorded in the action area.</td>
<td>No effect.</td>
</tr>
</tbody>
</table>

Notes:

* Federal (USFWS) status definitions:
  Endangered: Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to engage in any such conduct.
  Threatened: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The ESA specifically prohibits the take (see definition above) of a species listed as threatened.

† Unless otherwise noted, data are from USFWS (2014b).

Suitable nesting habitat for native Hawaiian waterbirds is not present in the action area. The action area does not provide suitable nesting or foraging habitat for listed seabirds.

6. EFFECTS ANALYSIS

Federally protected species that may be affected by the proposed action are discussed in detail in this section.

6.1. Hawaiian Hoary Bat

The Hawaiian hoary bat was listed as an endangered species on October 13, 1970, under the ESA and the State of Hawai‘i’s Endangered Species List. Hawaiian hoary bats are found on Hawai‘i, Maui, Moloka‘i, O‘ahu, and Kaua‘i and has been observed from sea level to approximately 13,000 feet (3,963 m) (USFWS 2014b).

The Hawaiian hoary bat is the only native terrestrial mammal that is still extant within the Hawaiian Islands (USFWS 1998). Hawaiian hoary bats use both closed habitats near vegetation such as tunnelled roadways, and open habitats adjacent to forests, above tree canopies, and over open oceans (Jacobs 1996). Hawaiian hoary bats are insectivores and are regularly observed foraging over streams, reservoirs, and wetlands up to 300 feet (100 m) offshore (U.S. Department of Agriculture 2009). Hawaiian hoary bats forage in open, wooded, and linear habitats with a wide range of vegetation types (USFWS 2014b).

Acoustic surveys for Hawaiian hoary bats were not conducted for the proposed action, but areas of suitable habitat for roosting and foraging were noted during the biological survey. Several of the tree species in the action area—monkey pod, rainbow shower, kou haole, and Manila palms—could be used...
by Hawaiian hoary bats for roosting. The stream corridor in the action area is suitable bat foraging habitat.

Hawaiian hoary bats are believed to be threatened by habitat loss, pesticides, predation, and roost disturbance. Reduction of tree cover and indirect impacts from the use of pesticides may be the primary causes of recent declines (USFWS 2014b).

6.1.1. Effects Analysis and Determination

Acoustic surveys for Hawaiian hoary bats were not conducted, but Hawaiian hoary bats are known to occur on O‘ahu in various habitats (U.S. Department of Agriculture 2009; USFWS 1998). They have been documented roosting in kukui (Aleurites moluccana) and mango (Mangifera sp.) trees, and they may roost in other trees in the action area (e.g., monkey pod) based on their foliage structure. The stream corridor in the action area is also suitable bat foraging habitat.

Direct impacts on bats could occur during vegetation removal if a juvenile bat that is too small to fly but too large to be carried by a parent is present in a tree or branch that is cut down. However, because of the conservation measure that trees would not be cut during the breeding season (June 1 through September 15), direct impacts are unlikely to occur. If a limited number of trees would need to be cleared during that time period, a qualified biologist would use appropriate protocols to surveys for bats prior to trimming or cutting. The potential for direct impacts would also be reduced by ensuring the top wire strand of surrounding fences (if present) is barbless, as listed in the conservation measures in section 2.3.

In the short term, the human noise and disturbance associated with construction activities could temporarily displace bats from roosting and/or foraging habitats. This displacement could alter an individual’s typical foraging and roosting patterns, forcing it to expend energy to search for new foraging and roosting locations. Displacement from roosting habitat could lead to increased predation on individual bats, especially if a bat is forced to leave its roost during daylight hours, making it more visible to potential predators. The potential for these impacts is low considering the project would occur on and immediately adjacent to a heavily traveled highway, and therefore the bats present would already be accustomed to high levels of background noise. Furthermore, roosting and foraging areas occur in the action area, into which bats could be displaced.

Because all impacts on the Hawaiian hoary bat would be discountable or insignificant, the proposed action may affect, but is not likely to adversely affect, individuals or populations of the species.

7. CONCLUSION

One federally listed species has the potential to occur in the action area: Hawaiian hoary bat. Potential impacts from the proposed action to this species are expected to be temporary, discountable, and insignificant. As detailed above, the timing of tree trimming and the minimal construction footprint would ensure that there are no significant or long-term effects to this federally listed species. In general, no major or long-term effects are anticipated from the implementation of the proposed action.

In conclusion, the proposed project may affect, but is not likely to adversely affect the federally listed Hawaiian hoary bat.
8. LITERATURE CITED


Appendix A

Photographs of the Survey Area
Figure A1. Typical vegetation in the survey area, showing monkey pod trees planted in a mowed grassy area on Kohou Street and some hydrophytic plants within sections of the canal.

Figure A2. View of rainbow shower trees and weedy herbs along Hālona Street.
Figure A3. Kapālama Stream looking upstream from the bridge.

Figure A4. Kapālama Stream looking downstream toward the bridge.
AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
NOTICE OF CONSULTATION

STATE OF HAWAII
City and County of Honolulu

Doc. Date: 07/24/15

Notary Name: COLLEEN E. SORANAKA
First Judicial Circuit

Doc. Description: Affidavit of Publication

Julie Clark, being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc., publisher of The Honolulu Star-Advertiser, MidWeek, The Garden Island, West Hawaii Today, and Hawaii Tribune-Herald, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the aforementioned newspapers as follows:

Honolulu Star-Advertiser 1 times on:
07/24/2015

MidWeek 0 times on:

The Garden Island 0 times on:

Hawaii Tribune-Herald 0 times on:

West Hawaii Today 0 times on:

Other Publications: 0 times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

Julie Clark

Subscribed to and sworn before me this 29th day of July, A.D. 2015

Colleen E. Soranaka, Notary Public of the First Judicial Circuit, State of Hawaii
My commission expires: Jan 06 2016

Ad #: 0000779087
TO:

FROM: J. MICHAEL WILL, P.E.
PROJECT MANAGER

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION HALONA STREET (KAPALAMA CANAL) BRIDGE REPLACEMENT PROJECT HONOLULU (KONA) DISTRICT, OAHU ISLAND, KAPALAMA AHUPUAA PROJECT NO. HI STP H1 (1) TAX MAP KEY: (1)1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal)
(1)1-6-006 (Halona Street, Kokea Street, Kohou Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal)

Dear :

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to replace the Halona Bridge over the Kapalama Canal on Hawaii State Highway 98 (HI-98) adjacent to Interstate H-1 (H-1), also known as Halona Street, at Mile Post 20.21 (see attached Area of Potential Effects USGS Map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. We would like to invite you to participate in the Section 106 consultation for the proposed project in accordance with Title 36 of the Code of Federal Regulations, Section 800.3, by providing information and/or by requesting to be a consulting party. This letter also initiates consultations in accordance with HRS Chapter 6E.

Overview of the Undertaking
The proposed project would replace the existing Halona Bridge and its approaches to maintain the Kapalama Canal crossing on Halona Street as a safe and functional component of the regional transportation system for roadway users. The project would also address safety concerns related to public access to the canal below the adjacent H-1 and Olomea Street bridges.
The existing Halona Bridge would be demolished and removed. The replacement bridge would be a three-span bridge with a total length of approximately 131 feet. The bridge would have a deck width of 39 feet and a depth of 2.5 feet.

The four existing piers would be removed and replaced with two piers that would be aligned with the two existing and adjacent H-1 bridge piers. The pier shapes would be similar to the existing H-1 bridge piers. The proposed new bridge abutments would be set back from and behind the existing abutments. The existing abutments would not be removed to minimize impacts to the canal. The canal’s lava rock lining walls, which are located upstream of the Halona Bridge and downstream of the H-1 and Olomea Street bridges, would be retained and protected in place. The existing Kapalama Canal and its lava rock lining walls are potentially eligible for listing on the National Register of Historic Places (NRHP).

The drain pipe outfall makai of the Olomea bridge, in the northwestern corner of the Olomea Street and Kohou Street intersection, would be cut back so that it is flush with the channel wall and would no longer provide an access point for individuals to climb down and access areas beneath the Olomea bridge. The fencing between Olomea Street and H-1 would also be improved. Vertical or cantilevered retaining walls would be added adjacent to the existing Olomea Street bridge on both sides of the canal to deter people from accessing the underside of the bridge.

The proposed improvements would occur within the existing HDOT right-of-way. However, 0.44 acres of land would be needed from four temporary construction parcels to accommodate bridge construction and paving improvements. One of these parcels, the Kapalama Canal, is potentially eligible for listing on the NRHP.

Staging of personnel and equipment would occur within the project limits. Possible staging areas are located along Halona Street (on pavement) north and south of the bridge as well as areas adjacent to the Kohou Street and Kokea Street intersections. The work area would be accessed from the sides of the canal. Construction would occur within the Kapalama Canal under the Halona Bridge and H-1 Bridge, and near the existing pipe outlet makai of the Olomea Bridge.

The Halona Bridge would likely be closed to normal vehicular traffic for the duration of the project, and traffic would be detoured during this time. However, pedestrian and bicyclist access would be maintained in a temporary pedestrian route within the existing landscaped area between the construction work and the H-1 freeway. Access to the H-1 on-ramp would be maintained during construction.

**Area of Potential Effects**

The archaeological and historic architectural Areas of Potential Effects (APE) are illustrated in the attached APE Aerial Imagery map, and include both temporary and permanent impact areas.

**Cultural, Archaeological, and Historical Studies**

To provide you information on the cultural, archaeological, and historical settings of the project area, we are including two studies prepared for this project. Please note that the study areas indicated in the reports are larger than the attached APE map. At the start of the project, we
assumed a large study area so that field findings could inform the conceptual design process at an early stage to help avoid or minimize effects to potentially sensitive sites.

1. Draft Archaeological Inventory Survey Report for the Halona Bridge Replacement Project, Kapalama Ahupuaa, Honolulu District, Oahu
2. Hawaii State Historic Preservation Division (SHPD) Historic Resource Inventory Form (Reconnaissance Level) for Halona Bridge

Consultations
Section 106 notice/advertisement will be included in the Honolulu Star Advertiser. Native Hawaiian organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area are asked to provide a response within 30 days of notification.

Letters for this project are being sent to the following NHOs as well as other organizations with knowledge of cultural, archaeological, and historical resources:

- Office of Hawaiian Affairs
- Kalihi-Palama Hawaiian Civic Club
- Hawaiian Civic Club of Honolulu
- Koolauloa Hawaiian Civic Club
- Oahu Island Burial Council
- Hui Malama I Na Kupuna O Hawaii Nei
- Paulette Kaanohiokalani Kaleikini
- Historic Hawaii Foundation

We welcome any comments you have on this project’s proposed improvements or APE. We are particularly interested in any information you may have on the historic and cultural sites that have been recorded in the area, or other historic or cultural sites about which you may have knowledge. In addition, if you are acquainted with any person or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal, or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area, we would appreciate receiving their names and contact information.

If you have information and/or would like to be a Consulting Party, we would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by US Postal Service to 12300 West Dakota Avenue, Suite 380, Lakewood, CO 80228.
Please feel free to contact Nicole Winterton, Environmental Protection Specialist, by telephone at (720) 963-3689, or email Nicole.Winterton@dot.gov, if you have any questions.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:

- Area of Potential Effects (USGS Map)
- Area of Potential Effects (Aerial Imagery)
- On CD: Draft Archaeological Inventory Survey Report for the Halona Bridge Improvements Project, Kapalama Ahupuaa, Honolulu District, Oahu
- On CD: SHPD Historic Resource Inventory Form (Reconnaissance Level) for Halona Bridge

cc (with enclosures on CD):

Christine Yamasaki, HDOT
Jessica Puff, SHPD
Dr. Susan Lebo, SHPD
Halona Street Bridge Project
Area of Potential Effects (Aerial Imagery)

Notes:
1. High-Res Imagery Source: Google Earth 01/16/2013
3. Imagery base map is not orthorectified; therefore project features may not properly align with the imagery.
Halona Street Bridge Project

Area of Potential Effects (USGS Map)

Central Federal Lands - Kalihi, Oahu

LEGEND

- Area of Potential Effects

Notes:
1. Imagery Source: ESRI USA Topographic Maps
Draft
Archaeological Inventory Survey Report for the Halona Street Bridge (H-1 on-ramp at Vineyard Street) Replacement Project
Kapālama Ahupua‘a, Honolulu (Kona) District, O‘ahu, Federal Highway Administration/ Central Federal Lands Highway Division (FHWA/CFLHD)
Contract DTFH68-13-R-00027
TMKs: [1] 1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal) and 1-6-006 (Halona Street, Kokea Street, Kohou Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal)

Prepared for
CH2M HILL
and on behalf of the
Federal Highway Administration (FHWA)
Central Federal Lands Highway Division (CFLHD)

Prepared by
Trevor M. Yucha, B.S.
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: KAPALAMA 24)

August 2015
## Management Summary

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Date</td>
<td>August 2015</td>
</tr>
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</table>
| Project Number(s) | • FHWA/CFLHD Contract DTFH68-13-R-00027  
• CH2MHILL Project Task ID: 499069.10SU.CS  
• Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAPALAMA 24 |
| Investigation Permit Number | CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological permit number 14-04 (for 2014) and 15-03 (for 2015), issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282. |
| Agencies | FHWA/CFLHD, SHPD |
| Land Jurisdiction | State of Hawai‘i |
| Project Proponent | FHWA/CFLHD, HDOT |
| Project Funding | FHWA/CFLHD, HDOT |
| Project Location | The project area is located within Kapālama Ahupua‘a at the location of the Halona Street Bridge and the Kapālama Canal and includes portions of the H-1 Interstate Highway, and Halona Street from the intersection of Kuipakea Lane to just beyond Kohou Street. The project area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle. |
| Project Description | The purpose of the project is to replace the existing bridge to amend structurally deficient conditions and meet current design standards for roadway width, load capacity, pedestrian/bicycle traffic, bridge railing and transitions, and bridge approaches. This existing bridge was built in 1938. It was determined that this bridge shall be replaced due to the existing superstructure conditions. A single span bridge is preferred, but if additional vertical clearance is needed, a reduced structure depth could be accommodated by using a multiple-span bridge with pier locations matching H-1’s pier locations in the channel. New abutments are proposed to be located behind existing abutments to match the H-1 abutment locations and minimize impacts to the masonry walls along the channel. The proposed bridge width is approximately 46 ft.(14.0 m). A bridge barrier study will be performed as part of the project development |
Cultural Surveys Hawai‘i Job Code: KAPALAMA 24

Management Summary

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Project Acreage</td>
<td>The project area includes approximately 1.5 acres (0.61 hectares).</td>
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<td>Area of Potential Effect (APE)</td>
<td>The APE for the current project is defined as the entire 1.5-acre (0.61 hectare) project area.</td>
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<tr>
<td>Historic Preservation</td>
<td>This AIS investigation was designed to be compliant with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343 and HRS §6E-8/HAR §13-275, respectively).</td>
</tr>
<tr>
<td>Regulatory Context</td>
<td>In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-13-276 and the Secretary of the Interior’s Standards for Archaeology and Historic Preservation. It was conducted to identify, document, and make National Register of Historic Places (National Register) and Hawai‘i Register of Historic Places (Hawai‘i Register) eligibility recommendations¹ for any cultural resources/historic properties². This report is also intended to support any project-related historic preservation consultation with stakeholders, such as State and County agencies and interested Native Hawaiian Organizations (NHOs) and community groups, if applicable. A companion architectural study (Ruzicka 2015) is being conducted by Mason Architects, Inc. in conjunction with this AISR. When applicable, the information from the architectural study has been incorporated into the present AIS document. No previous archaeological studies have been conducted and no previously documented cultural resources have been reported within the project area.</td>
</tr>
<tr>
<td>Fieldwork Effort</td>
<td>Fieldwork was conducted on 19 September 2014 by CSH archaeologists Joanne DeMaio Starr, M.A. and Nifae Hunkin, B.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). This work required approximately 1 person-day to complete.</td>
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<td>Consultation</td>
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with community, agency, and Native Hawaiian Organizations has been initiated and is on-going. Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Halona Street Bridge (Ishihara and Hammatt 2015). No cultural resources have been assessed as having traditional cultural significance to an ethnic group (Criterion “e”) within the project area.

**Cultural Resources Identified**

Two cultural resources were identified within the project area:

SIHP # 50-80-14-7807 is the Halona Street Bridge. As this is an architectural cultural resource, the assessment of significance (pursuant to HAR §13-13-275-6), and determination of eligibility to the National and Hawai‘i Register (35 CFR 60.4 and HAR §13-198-8, respectively) was conducted by Mason Architects, Inc. (Ruzicka 2015). Ruzicka (2015) evaluated SIHP # -7807 for significance under Criterion “A” (associated with events that have made a significant contribution to the broad patterns of our history), specifically development of Vineyard Street and the Kapālama Canal. However, due to the lack of integrity, SIHP # -7807 was determined by Ruzicka (2015) to be not significant and not eligible to the National Register and Hawai‘i Register. CSH concurs with this assessment and determination.

SIHP # 50-80-14-7808 is the Kapālama Canal and associated lava rock walls. As this is an architectural cultural resource, the assessment of significance (pursuant to HAR §13-13-275-6), and determination of eligibility to the National and Hawai‘i Register (35 CFR 60.4 and HAR §13-198-8, respectively) was conducted by Mason Architects, Inc. (Ruzicka 2015). SIHP # -7808 was assessed by Ruzicka (2015) as significant under Criterion “A” (associated with events that have made a significant contribution to the broad patterns of our history) and was determined to be eligible to the National Register and Hawai‘i Register. CSH concurs with this assessment and determination.

**Effect Recommendation**

In accordance with Federal regulations (36 CFR 800.5), CSH’s project-specific effect recommendation is “No adverse effect.” Under Hawai‘i State historic preservation review legislation, the project’s effect recommendation is “No historic properties affected” (in accordance with HAR §13-13-275-7). To help avoid impact to the lava rock walls of the Kapālama Canal (SIHP # -7808), the existing abutments for the Halona Bridge (SIHP # -7807) will not be removed; however, the tops of the existing abutments will be cut down to accommodate deeper bridge girders.

**Mitigation Recommendations**

No further historic preservation work is recommended.

1Cultural resource significance is evaluated and expressed as eligibility for listing on the National and/or Hawai‘i Registers. To be considered eligible for listing on the National and/or Hawai‘i Registers a cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following broad cultural/historic significance criteria: “A” reflects major trends or events in the history of the
state or nation; “B” is associated with the lives of persons significant in our past; “C” is an excellent example of a site type/work of a master; and “D” has yielded or may be likely to yield information important in prehistory or history.

In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old (although there are exceptions) and include buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance.

Historic properties, as defined under Federal historic preservation legislation (36 CFR 800.16), are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPD. Under Federal legislation, a project’s (undertaking’s) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under State law, and a project’s effect and potential mitigation measures are evaluated based on the project’s potential impact to “significant” historic properties (those historic properties assessed as significant using the five broad State of Hawai‘i significance criteria).
Table of Contents

Management Summary .................................................................................................................................................. i

Section 1 Introduction ............................................................................................................................................... 1

1.1 Project Background .............................................................................................................................................. 1
1.2 Historic Preservation Regulatory Context ............................................................................................................. 1
1.3 Environmental Setting .......................................................................................................................................... 7
1.3.1 Natural Environment ..................................................................................................................................... 7
1.3.2 Built Environment ....................................................................................................................................... 7

Section 2 Methods .................................................................................................................................................. 9

2.1 Field Methods ....................................................................................................................................................... 9
2.1.1 Pedestrian Survey ........................................................................................................................................ 9
2.1.1 GPS Data Collection ................................................................................................................................... 9
2.2 Laboratory Methods ......................................................................................................................................... 9
2.3 Research Methods ........................................................................................................................................... 9
2.4 Consultation Methods .................................................................................................................................... 9

Section 3 Background Research ............................................................................................................................... 11

3.1 Traditional and Historical Background ............................................................................................................... 11
3.1.1 Mythological and Traditional Accounts ...................................................................................................... 11
3.1.2 Stories of Heroes and Gods .......................................................................................................................... 11
3.1.3 Legend of the Tapa Board .......................................................................................................................... 12
3.1.4 Keanakamanō, the Cave of the Shark .......................................................................................................... 13
3.1.5 Early Historic Period ................................................................................................................................. 15
3.1.6 The Māhele and the Kuleana Act ............................................................................................................... 18
3.1.7 Mid- to Late 1800s ..................................................................................................................................... 20
3.1.8 1900s ......................................................................................................................................................... 25
3.2 Previous Archaeological Research ..................................................................................................................... 36
3.2.1 Palama Fire Station (Neller 1980) ............................................................................................................... 36
3.2.2 Dunn et al. 1991 ........................................................................................................................................ 36
3.2.3 Bishop Museum (Dixon 1993) ................................................................................................................... 36
3.2.4 Austin Lane, Kapālama (Jourdane 1994; Hammatt 1995) ........................................................................ 36
3.2.5 Corner of North King and Houghtailing Streets (Nakamura et al. 1994) ................................................. 43
3.2.6 Kamehameha Homes Project, Kapālama (Borthwick et al. 1995) ........................................................... 43
3.2.7 Kamehameha Heights, Puea and Kaʻahumanu Cemeteries (McIntosh and Cleghorn 2006) .......... 43
3.2.8 Walgreens Development Project, North School Street (Dey and Hammatt 2008) .......................... 43
3.2.9 Kalihi Beretania 24-Inch Water Main Project (Hammatt and Chiogioji 2008) ................................. 43
3.2.10 Kalihi/Nu‘uanu Sewer Rehabilitation Project (Hunkin et al. 2012) .................................................. 44
3.2.11 Honolulu High-Capacity Transit Corridor Project (Hammatt 2013) ................................................ 44
3.2.12 Kalihi Valley Sewer System Improvements, Kapālama (Hunkin and Hammatt 2013) ................. 44
3.2.13 Medina and Hammatt 2013 .................................................................................................................. 44
3.2.14 Traffic Control Signal Improvements along Dillingham Boulevard (Medina et al. 2013)......... 44
3.2.15 Honolulu Community College (Pammer and McDermott 2014) .................................................. 44
3.2.16 Farrington High School (Stine et al. 2014) ............................................................................................ 45

Section 4 Results of Fieldwork ............................................................................................................................... 46

AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)
List of Figures

Figure 1. Portion of the 1998 USGS 7.5-minute topographic Honolulu quadrangle showing the location of the project area..............................................................

Figure 2. Tax Map Key (TMK) 1-6-002, showing project area at the H-1 Interstate Highway crossing at Kapālama Canal (Hawai‘i TMK Service)..............................................................

Figure 3. TMK: 1-6-006, showing project area at the H-1 Interstate Highway crossing at Kapālama Canal (Hawai‘i TMK Service)..............................................................

Figure 4. Aerial photograph (Google Earth 2013), showing project area at the H-1 Interstate Highway crossing at Kapālama Canal..............................................................

Figure 5. 2013 aerial photograph (Google Earth 2013) with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972)............................

Figure 6. 1817 map of south coast of O‘ahu by Otto von Kotzebue (1817) of the Russian ship *Rurik*, showing density of habitations and agriculture around Kapālama (The project area and map have been geo-referenced. The project area is located on a ridge, and it should be noted that this early map should be understood as a “sketch”)........................................

Figure 7. 1855 map of Honolulu by Lt. Joseph de LaPasse of the French vessel, *L‘Eurydice* (reprinted in Fitzpatrick 1986:82-83), showing lo‘i, habitations, and fishponds in Kapālama..............................................................

Figure 8. 1885 Brown map of Kapālama depicting LCAs in the vicinity of the project area and the planned extension of the Vineyard Street right-of-way........................................

Figure 9. 2013 aerial photograph with an overlay of land commissions awards in the vicinity of the project area (Google Earth 2013)..............................................................

Figure 10. 1893 Wall map of Honolulu showing project area surrounded by rice fields............

Figure 11. 1897 Monsarrat map of the Honolulu District showing the project area in a rice plantation..............................................................

Figure 12. 1919 U.S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the project area......................

Figure 13. 1927 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the project area..............................................................

Figure 14. 1933 U.S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the project area......................

Figure 15. 1943 U.S. Army War Department map, Honolulu Quadrangle showing commercial and residential development in Kapālama, near the project area......................

Figure 16. 1950 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the project area..............................................................

Figure 17. 1952 USGS aerial photograph showing project area................................................

Figure 18. 1953 Honolulu USGS Topographic Quadrangle, showing commercial and residential development in Kapālama, near the project area........................................

Figure 19. 1978 USGS aerial photograph, Honolulu Quadrangle, showing commercial and residential development in Kapālama near the project area........................................

Figure 20. Previous archaeological studies within a 0.8 km (0.5 mile) radius of the project area

Figure 21. Previously identified historic properties within a 0.8 km (0.5 mile) radius of the project area..............................................................
Figure 22. 2013 Google Earth aerial photograph showing the locations of cultural resources identified within the project area. .................................................................48
Figure 23. Portion of 1998 Honolulu USGS topographic quadrangle showing the locations of cultural resources identified within the project area ..................................................49
Figure 24. Department of Public Works plan for Kapālama Drainage Vineyard Street Bridge (Halona Street Bridge) ...........................................................................................51
Figure 25. SIHP # -7807, Halona Street Bridge, view to southwest ..................................52
Figure 26. SIHP # -7807, Halona Street Bridge including date inscription of “1938” on the northeast corner of the bridge, view to north ...............................................................52
Figure 27. SIHP # -7807, Halona Street Bridge including inscription of “KAPALAMA CANAL” on the northwest corner of the bridge, view to east ..................................................53
Figure 28. SIHP # -7808, Kapālama Canal from the Halona Street Bridge (SIHP # -7807), view to north ..................................................................................................................56
Figure 29. SIHP # -7808, Kapālama Canal from north end of project area, view to south ......56
Figure 30. SIHP # -7808, Kapālama Canal from the south side of the H-1 Interstate Highway, view to north ................................................................................................................57
Figure 31. SIHP # -7808, Kapālama Canal from the south side of the H-1 Interstate Highway, view to southwest ................................................................................................................57
Figure 32. SIHP # -7808, Kapālama Canal showing potential multiple construction phases of the canal walls, view to southwest ................................................................................58
Figure 33. SIHP # -7808, Kapālama Canal showing inscription on concrete wall of “Kapalama Canal 1965,” view to northwest .............................................................58

List of Tables

Table 1. Construction Timeline of Hawaii 72, Later Renumbered as H-1 Interstate Highway ....35
Table 2. Previous Archaeological Studies within a 0.8 km (0.5 mile) Radius of the Project Area (arranged chronologically) ......................................................................................38
Table 3. Previously Identified Historic Properties within a 0.8 km (0.5 mile) Radius of the Project Area ..................................................................................................................42
Table 4. Sites Identified within the Current Project Area .........................................................47
Section 1  Introduction

1.1 Project Background

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) has completed this archaeological inventory survey report for the Halona Street Bridge Replacement project, Kapālama Ahupua‘a, Honolulu (Kona) District, O‘ahu, FHWA/CFLHD Contract DTFH68-13-R-00027, TMKs: [1] 1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal) and 1-6-006 (Halona Street, Kokea Street, Kohou Street and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal). The project area is located within Kapālama Ahupua‘a at the location of the Halona Street Bridge and the Kapālama Canal and includes portions of the H-1 Interstate Highway, and Halona Street from the intersection of Kuipaakea Lane to just beyond Kohou Street. The project area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and a 2013 aerial photograph (Figure 4).

The purpose of the project is to replace the existing bridge to amend structurally deficient conditions and meet current design standards for roadway width, load capacity, pedestrian/bicycle traffic, bridge railing and transitions, and bridge approaches. This existing bridge was built in 1938. It was determined that this bridge shall be replaced due to the existing superstructure conditions. A single span bridge is preferred, but if additional vertical clearance is needed, a reduced structure depth could be accommodated by using a multiple-span bridge with pier locations matching H-1’s pier locations in the channel. New abutments are proposed to be located behind existing abutments to match the H-1 abutment locations and minimize impacts to the masonry walls along the channel. The proposed bridge width is approximately 46 ft (14.0 m). A bridge barrier study will be performed as part of the project development to consider a variety of types and shapes to meet TL-3 requirements. The bridge railing height will be a minimum of 3 ft 6 inches (1.07 m). Additional bridge width and features will be explored to restrict access to the underside of the bridge. Foundations for the new bridge are expected to consist of deep foundations.

The project area includes approximately 1.5 acres (0.61 hectares). The APE for the current project is defined as the entire 1.5-acre project area.

1.2 Historic Preservation Regulatory Context

This AIS investigation was designed to be compliant with both Federal and Hawai‘i State environmental and historic preservation review legislation. Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343 and HRS §6E-8/Hawai‘i Administrative Rules [HAR] §13-275, respectively).
Introduction

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Introduction

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Figure 3. TMK: 1-6-006, showing project area at the H-1 Interstate Highway crossing at Kapālama Canal (Hawai‘i TMK Service)
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AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

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Figure 4. Aerial photograph (Google Earth 2013), showing project area at the H-1 Interstate Highway crossing at Kapālama Canal
In consultation with the SHPD, this AIS investigation fulfills the requirements of HAR §13-13-276 and the Secretary of the Interior’s Standards for Archaeology and Historic Preservation. It was conducted to identify, document, and make National Register of Historic Places (National Register) eligibility recommendations for any cultural resources/historic properties. This report is also intended to support any project-related historic preservation consultation with stakeholders, such as State and County agencies and interested Native Hawaiian Organizations (NHOs) and community groups, if applicable.

A companion architectural study (Ruzicka 2015) is being conducted in conjunction with this AISR. When applicable, the information from the architectural study has been incorporated into the present AIS document.

No previous archaeological studies have been conducted and no previously documented cultural resources have been reported within the project area.

Definitions of Cultural Resources and Historic Properties

As discussed in the following paragraphs, there are important distinctions between the Federal and Hawai‘i State definitions of historic properties. To eliminate any confusion these different definitions might cause, CSH has opted in this document to use the more generic term “cultural resources” as defined below in its discussion of the cultural remains within the current project area.

In historic preservation parlance, cultural resources are the physical remains and/or geographic locations that reflect the activity, heritage, and/or beliefs of ethnic groups, local communities, states, and/or nations. Generally, they are at least 50 years old (although there are exceptions) and include buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and in some instances, natural landscape features and/or geographic locations of cultural significance.

Historic properties, as defined under Federal historic preservation legislation (36 CFR 800.16), are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria. Determinations of eligibility are generally made by a federal agency official in consultation with the SHPD. Under Federal legislation, a project’s (undertaking’s) potential effect on historic properties must be evaluated and potentially mitigated. Under Hawai‘i State historic preservation legislation, historic properties are defined as any cultural resources that are 50 years old, regardless of their historic/cultural significance under State law, and a project’s effect and potential mitigation measures are evaluated based on the project’s potential impact to “significant” historic properties (those historic properties assessed as significant under the five broad State of Hawai‘i significance criteria).
1.3 Environmental Setting

1.3.1 Natural Environment

Kapālama is a small valley, which was once watered by two small streams, the Kapālama and Niuhelewai streams. The ahupua’a (land division) of Kapālama is pie-shaped with its apex at approximately 609 m (2,000 ft) AMSL (above mean sea level) on the ridge that separates Nu‘uanu and Kalihi valleys. The shore frontage (presently “Kapālama Basin”) is part of the Honolulu Harbor protected shoreline. In 1961, the development of the Kapālama Canal, which follows the lower course of Niuhelewai Stream, channelized the lower streams. Temperatures in the project area range from 60–90° F, while rainfall varies from 50–127 cm (20–50 inches) per year (Juvik and Juvik 1998:62–64).

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), soils within the project area include Kawaihapai stony clay loam, 2 to 6% slopes (KlaB) and Hanalei silty clay loam, 0 to 2% slopes (HnA) (Figure 5).

Soils of the Kawaihapai Series are described as follows:

This series consists of well-drained soils in drainage-ways and on alluvial fans on coastal plains on the islands of Oahu and Molokai. These soils formed in alluvium derived from basic igneous rock in humid uplands. They are nearly level to moderately sloping. Elevations range from nearly sea level to 300 feet. The annual rainfall amounts to 30 to 50 inches. [Foote et al. 1972:63-64]

Soils of the Hanalei Series are described as follows:

This series consists of somewhat poorly drained to poorly drained soils on bottom lands on the islands of Kauai and Oahu. These soils developed in alluvium derived from basic igneous rock. They are level to gently sloping. Elevations range from sea level to 800 feet. The annually rainfall amounts to 20 to 120 inches. [Foote et al. 1972:38]

Vegetation observed within the project area included California grass (Urochloa mutica), sensitive plant (Mimosa pudica), and Java plum (Syzygium cumini).

1.3.2 Built Environment

The project area is located within urban Honolulu. The project area’s built environment includes a portion of Halona Street, the Halona Street Bridge, and the Kapālama Canal. Halona Street is the former extension of Vineyard Boulevard, which was replaced by a portion of the H-1 Interstate Highway in the 1960s. The Halona Street Bridge is a continuous concrete cast-in-place bridge constructed in 1938. The Kapālama Canal is a channelized drainage that extends through urban Honolulu and is used to control the runoff from both Niuhelewai and Kapālama streams.
Cultural Surveys Hawai‘i Job Code: KAPALAMA 24

Introduction

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Figure 5. 2013 aerial photograph (Google Earth 2013) with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972)
Section 2  Methods

2.1 Field Methods

CSH completed the fieldwork component of this AIS under archaeological permit number 14-04 (for 2014) and 15-03 (for 2015), issued by the SHPD pursuant to HAR §13-13-282. Fieldwork was conducted on 19 September 2014 by CSH archaeologists Joanne DeMaio Starr, M.A. and Nifae Hunkin, B.A. under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). This work required approximately 1 person-day to complete.

Fieldwork included 100% pedestrian inspection of the project area and GPS data collection.

2.1.1 Pedestrian Survey

A 100%-coverage pedestrian inspection of the project area was undertaken for the purpose of cultural resource identification and documentation. The pedestrian survey was accomplished through systematic sweeps spaced 5 m apart.

2.1.1 GPS Data Collection

Cultural resources were located using a Trimble Pro XH mapping grade GPS unit with a real-time differential correction. This unit provided sub-meter horizontal accuracy in the field. GPS field data was post-processed, yielding horizontal accuracy between 0.5 and 0.3 m. GPS location information was converted into GIS shape files using Trimble’s Pathfinder Office software, version 2.80, and graphically displayed using ESRI’s ArcGIS 9.1.

2.2 Laboratory Methods

No cultural material was collected during the AIS. No laboratory analysis was conducted.

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 historic photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2000).

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of cultural resources in the project area.

2.4 Consultation Methods

The Halona Street Bridge Replacement project is a HDOT and FHWA/CFLHD partnership project, which includes numerous proposed bridge improvement and replacement projects in the State of Hawai‘i. Presently, National Historic Preservation Act Section 106 consultation with community, agency, and Native Hawaiian Organizations has been initiated and is on-going.

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Cultural consultation is also being conducted by CSH for a cultural impact assessment (CIA) for Halona Street Bridge (Ishihara and Hammatt 2015).

No cultural resources have been assessed as having traditional cultural significance to an ethnic group (Criterion “e”) within the project area.
Section 3  Background Research

3.1 Traditional and Historical Background

The project is located within the ahupuaʻa (traditional land division) of Kapālama in the Oʻahu moku (district) of Kona, now called the District of Honolulu. The ahupuaʻa of Kalihi lies to the west and the ahupuaʻa of Nuʻuanu lies to the east.

3.1.1 Mythological and Traditional Accounts

The place name Kapālama is often understood to refer to an enclosure (pā) of lama wood that surrounded the place of residence of high ranking aliʻi (chiefs) (Pukui et al. 1974:87). McAllister (1933:88) relates, “Kapālama is said to have obtained its name from an establishment in which the young aliʻi were kept just before pairing off for offspring.” This information probably came from Nathaniel Emerson, who translated David Malo’s *Ka Moʻolelo Hawaiʻi*. Emerson added many notes to his English translation, including the following:

> Hoonoho ia means put in an establishment, placed under the care of a guardian or duenna [chaperone]. Such an establishment was surrounded by an enclosure, pa, made of the sacred lama. Hence this special care or guardianship was called palama. It is said that an establishment of this kind was anciently placed at that suburb of Honolulu which to this day bears the name of Kapālama. [Malo 1951:139; note by N.B. Emerson]

Westervelt (1923:165) attributes the Oʻahu place name to a chiefess of Oʻahu who lived in that area. This chiefess was named Kapālama, the grandmother of Lepeamoa (Hawaiian for “cockscomb”). A chief of Kauaʻi named Keāhua traveled to Oʻahu to take Kauhao, the daughter of Kapālama, as his wife. He angered a kupua (supernatural being that can change form) called Akuapehaule (god of swollen billows) who forced the couple to hide in the uplands of the Wailua River valley of Kauaʻi.

Keāhua’s daughter was born as an egg, and was adopted by the chiefess Kapālama to raise on Oʻahu at her home, also named Kapālama. When the egg hatched, Lepeamoa was a bird with feathers in all the colors of the rainbow. She became able to turn herself into a beautiful young woman wearing a feather lei. The girl was so beautiful that a rainbow was always present above her. The girl was guarded by her ancestress, Keaolewa (“the moving cloud”), who could also change forms between human and bird. The lower ridge separating Kapālama and Nuʻuanu (ʻĀlewa Heights) may have been named for this ancestress.

The parents of Lepeamoa had another child, a son called Kauʻilani, who was so strong that he was able to defeat the kupua who had threatened his parents. After Kauʻilani’s victory over the kupua he went to find his sister, searching for the rainbow sign of her presence. In her compound he found Kapālama who advised him to hide in Lepeamoa’s house, wait until she was asleep in her bird form, and catch and hold her until she acknowledged him as her brother. Her advice worked, and Lepeamoa lived with her brother thereafter (Westervelt 1923:164-184).

3.1.2 Stories of Heroes and Gods

In the legend of Palila, the hero’s war club could magically carry him far distances in a single flight. Palila came to the plain of Keahumoa in ‘Ewa to participate in the athletic games given by
the O'ahu king, Ahuapau. The residence of this chief was said to be at Kalaepōhaku, near Wailukuio in Kapālama (Fornander 1917:5(1):142). Kalapōhaku Peak (meaning “the stone promontory”) is near the intersection of School and Alaneo streets in Kapālama.

A place named Niuhelewai (lit. “coconut going in water”) in lower Kapālama, located makai (seaward) of King Street (Fornander 1917:4(3):530-531; Fornander 1919:5(2):368) was associated with the deity Haumea and the hero, Kaulu, who was known for his great strength.

Kaulu was born in Kailua on the windward side of O'ahu. His older brother Kaeha was taken by the spirits to a realm of gods in the sky. For love of his brother, Kaulu followed him to this realm, playing a number of tricks on the gods including Makali’i, the god of plenty, who had a magic fish net that would fill with fish whenever used. After playing the tricks, Kaulu then had to rescue his brother from the wrath of the various spirits. The brothers finally returned to the land of men on O'ahu, setting down at Moanalua (ahupua'a [land division] west of Kapālama).

A hiki laua ma Moanalua, i Papakolea, hoonoho o Kaulu ia Kaeha ilaila; hele mai ia o Kaulu a loaa o Haumea i Kapālama. He ‘kua o Haumea no Oahu nei, e noho ana ia i Niuhelewai, he wahine of Haumea.

When they arrived at Papakolea, Moonalua, Kaulu left Kaeha at this place while he continued on his way to Kapālama in search of Haumea. Haumea was a spirit that lived at Niuhelewai, Oahu. It was a female spirit.

[Fornander 1917:4(3):530-531]

Haumea, the goddess of childbirth, had a home at Niuhelewai in Kapālama; she challenged anyone who passed by, often killing them. Kaulu challenged Haumea to a fight on the following day. That night he flew back up to the spirit land in the clouds and borrowed the magic nets of Makali’i, and then threw them over Haumea’s house. When Haumea could not break through these nets, she fell asleep in exhaustion, tangled in the nets. While asleep, Kaulu burned down her house, killing her.

3.1.3 Legend of the Tapa Board

A brief mention is made of Kapālama in the Legend of the Tapa Board, which has several different versions (Sterling and Summers 1978:25–26, 149; Thrum 1910:129–131). Tapa was placed on a wooden board (also called an anvil), and beaten by women with tapa sticks to soften and smooth out the fibers. This pounding made a resonant sound, and women could often identify the owner of the board by its sound. One day a woman in Kahuiku on O'ahu took her favorite tapa board to a pool to clean it and left it at the side of the pool. The next day the board was missing. The pool is identified as Waiakaole, Punaho'olapa, or Waikalai, all in Kahuku, in various versions. The woman first searched the windward districts of the island, but never heard the distinctive ringing sound of her own favorite board. After several months without finding her board, she traveled to the leeward side of O'ahu.

She went from Kahuku on the Koolau side to Kaneohe where she spent the night. There was no sign of the anvil in Koolau, because the sign she sought was the sound it made . . . She went on and spent the night at Wailupe but did not find hers. She heard other anvils but they were not hers. The night turned into day and she went on to Kapālama where she slept but did not hear what she sought till she came to
Waipahu. [Ka Loea Kalaiaina, 10 June 1899; English translation in Sterling and Summers 1978:25]

At Waipahu Spring in the ‘Ewa District, she finally heard the sound of her own board. She followed the sound to the uplands of Waikele and found a woman beating tapa on her board. The woman claimed she had found the board one day floating on the water at a spring near her house. This legend illustrates the belief of the ancient Hawaiians that there were underground streams and passages that led from one side of the island to the other. In one version of this story, the people of ‘Ewa followed the woman back to Kahuku so she could prove the board was the same one she had lost. They wrapped a bundle of ti leaves and cast them into the pool near the house of the Kahuku woman. Then returning to ‘Ewa, they saw the same bundle of ti leaves a few days later in Waipahu at the spring. Because of this, the Waipahu spring was called Ka-puka-na-wai-o-Kahuku, which means “outlet of water from Kahuku.”

3.1.4  Keanakamanō, the Cave of the Shark

Near the Kamehameha Schools there was once a cave called Keanakamanō, which means “cave of the shark” (Sterling and Summers 1978:323). The Hawaiians have many stories concerning legendary caves that connected inland springs to the sea or extended below the Ko‘olau Mountains, connecting the leeward and windward sides of the island.

On the Kamanaiaki side of the Kalihi Valley there was once a shallow cave called Keana Kamano. It was called the cave of the sharks because the big shark gods from Pearl Harbor often went there to rest.

Keana Kamano led into the fabulous underground cave believed in olden times to occupy the center of the island of Oahu.

One branch of the cave led around and under the mountains to Pearl Harbor. Another branch of the cave led to the center of the Island where there was a sacred pool for swimming.

Hawaiians living today can tell of elders who once traveled these caves and who once swam in the sacred pool. An earthquake about 1900 closed up the caves and no one has been known to travel them since.

It may be that the cave-in of the Wilson Tunnel occurred over the old lava tube leading to Pearl Harbor. [Taylor 1954]

An access street called Kealamanō (“the way of the shark”) on the Kamehameha School’s Kapālama Heights campus is named for this cave. The shark referred to is Kamohoali‘i, king of the sharks, who is the older brother of Pele, the Hawaiian volcano goddess. On the long trip Pele’s family made to Hawai‘i, it was Kamohoali‘i who acted as the navigator. Don Mitchell, who said that earthquakes in 1900 caused the collapse of the cave (1993), states the following:

His [Kamohoali‘i] favorite pastime was to swim through the extensive water-filled lava tubes or tunnels that extended from Pearl Harbor to areas under Kalihi Valley. As the tunnels rose above sea level, he assumed his human form and walked to his cave, Keanakamanō, on Kapālama Heights. [Mitchell 1993:146]
3.1.5 Traditional Accounts of Battles at Niuhelewai Stream in Kapālama

Two accounts of traditional Hawaiian warfare suggest mass killings in the vicinity of "Niuhelewai" which is the stream generally now known as Kapālama Canal.

3.1.5.1 Kahahawai‘a Defeat of Kahāhana (AD 1780-1783)

Niuhelewai Stream was the location for a famous battle between Kahahawa‘i, the war chief of Kahekili, king of Maui, and the O‘ahu ruling chief Kahāhana. Fornander (1919:498) states in a footnote to a story that Niuhelewai was the name of the locality of the Pālama cane field between the fire and pumping stations. Ross Cordy (2002:19) places Kahāhana’s reign on O‘ahu around the year 1780 to his death in 1783 after this battle.

I ka wa e noho ana o Kahekili he ‘lii no Maui, a o Kahahana he li‘i no Oahu nei iloko oia kau i holomai ai o Kahahawai me na koa e kaua ia Oahu. Ma keia kaua ana ua hee a ua luku ia na kanaka Oahu, ma Niuhelewai, a ua hoi ka wai i uka o ka muliwai, no ka piha i na kanaka.

When Kahekili was reigning as king of Maui, and Kahahana was king of O‘ahu, it was during this period that Kahahawai with a number of warriors came to make war on O‘ahu. In this battle the people of O‘ahu were defeated and slaughtered at Niuhelewai, and the waters of the stream were turned back, the stream being dammed by the corpses of the men. [Fornander 1919:498-499]

3.1.5.2 The Rebellions of the ‘Ewa and Kona Chiefs (post-1783)

After Kahāhana’s death, the chiefs of Maui took over O‘ahu. Some of the chiefs from the O‘ahu districts of ‘Ewa and Kona conceived a plot to murder their new overlords but the Maui chiefs were warned. Although the main backers of the plot were the chiefs of Waipi‘o, ‘Ewa, they were temporarily able to convince Kahekili that the conspiracy originated on Kaua‘i, thus the phrase, Waipi‘o kīmopō, “Waipi‘o of the secret rebellion” (Pukui 1983:319). Eventually the truth was revealed and:

A no kēia mea, ulu maila ke kaua kūloko o Kona me ‘Ewa, nā moku o O‘ahu i luku nui ‘ia; ua luku ‘ia nā moku o O‘ahu i luku nui ‘ia; ua luku ‘ia nā kāne, nā wāhine a me nā keiki, a ua pani kūmano ‘ia nā kahawai a me nā muliwai i nā heana o nā kānaka o Kona a me ‘Ewa. ‘O nā kahawai i ‘oi aku ka nui o nā heana, a ho‘i hou ka wai i uka, ‘o ia nō ‘o Makaho a me Niuhelewai ma Kona, a ‘o Kaho‘ā‘ai‘ai ho‘i ko ‘Ewa. He kūmukena ka nui o nā mea he make, ke lilo ka wai i mea ‘awa-awa ke inu aku. Ua ‘ōlelo mai ho‘i ka po‘e ‘ike maka ‘O ka lolo ka mea i ‘awa-awa ai ‘o ka wai.’ [Kamakau 1996:91, Ka Nūpepa Kū‘oko‘a, 39 March 1867]

. . . the districts of Kona and ‘Ewa were attacked, and men, women, and children were massacred, until the streams of Makaho and Niuhelewai in Kona [in Kapālama] and of Kaho‘a‘ai‘ai in ‘Ewa were choked with the bodies of the dead, and their waters became bitter to the taste, as eyewitnesses say, from the brains that turned the water bitter. All the O‘ahu chiefs were killed and the chiefesses tortured. [Kamakau 1992:138]
3.1.6 Early Historic Period

The *ahupua‘a* of Kapālama is between the *ahupua‘a* of Nu‘uanu to the east and Kalihi to the west. Although Kapālama is not a major river valley like Nu‘uanu or Kalihi, it is watered by two smaller streams, the Kapālama and Niuhelewai. The shore frontage (presently “Kapālama Basin”) is part of the Honolulu Harbor protected shoreline. Kapālama Ahupua‘a offered desirable environmental conditions for traditional Hawaiian subsistence practices. The well-watered flood plain would have allowed for the development of an extensive *lo‘i* system, and the protected shoreline and fringing reef would have allowed for ease of ocean access to the productive near-shore fisheries. E.S. Craighill Handy, who gathered information on former planting areas from local informants in the 1930s and 1940s, reported the following: “Kapālama had two streams watering its terrace area [for taro], which was almost continuous from Iwilei up to the foothills above School Street, an area measuring about three quarters of a mile both in depth inland and in breadth” (Handy 1940:79).

The lower lands were used for taro cultivation; the uplands also had considerable resources. In the early nineteenth century, sandalwood trees were still present in the forests. These trees were extensively harvested between 1810 and 1830 as the fragrant wood could be sold to ship captains sailing to China to trade for exotic Asian goods.

Otto von Kotzebue’s journal and map of Honolulu provide one of our earliest accounts of the environs of Kapālama ca. 1817 (Kotzebue 1967:339-341). Kotzebue’s 1817 map of Honolulu (Figure 6), shows large taro fields (and trees) on both sides of the mouth of Kalihi and Nu‘uanu streams extending to the coast. The path shown was probably the main trail and the route traveled by Kotzebue himself. The 1817 map does not show any taro fields in Kapālama, but a later 1855 map by LaPasse (Figure 7) does show extensive taro *lo‘i* (irrigated patches) in the *makai* section of Kapālama.

Kamehameha I, after the devastations to the population caused by the wars of conquest and a ca. 1804 epidemic, encouraged people to replant the land and he set aside several large tracts, including tracts in Kapālama, for them to grow crops for their own use and for trade with visiting ships. The Hawaiian historian Samuel Kamakau noted, “After the pestilence had subsided the chiefs again took up farming, and Kamehameha cultivated land at Waikiki, Honolulu, and Kapālama, and fed the people” (Kamakau 1992:190).

Another early Hawaiian historian, John Papa ʻĪʻī, knew personally that, “He [Kamehameha] also lived in Honolulu, where his farms at Kapālama, Keoneula, and other places became famous. These tasks Kamehameha tended to personally, and he participated in all the projects” (ʻĪʻī 1959:69).

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a predominantly Native Hawaiian environment—still a “village”—on the brink of western-induced transformation:

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 south-easterly,
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TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)

Figure 6. 1817 map of south coast of O‘ahu by Otto von Kotzebue (1817) of the Russian ship *Rurik*, showing density of habitations and agriculture around Kapālama (The project area and map have been geo-referenced. The project area is located on a ridge, and it should be noted that this early map should be understood as a “sketch”)

16
Cultural Surveys Hawai’i Job Code: KAPALAMA 24

Background Research

AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O'ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)

Figure 7. 1855 map of Honolulu by Lt. Joseph de LaPasse of the French vessel, L’Eurydice (reprinted in Fitzpatrick 1986:82-83), showing lo’i, habitations, and fishponds in Kapālama

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ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds
the north-east part of the village or town . . .

Below us, on the south and west, spread the plain of Honolulu, having its fish-ponds
and salt making pools along the sea-shore, 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 1981:92–93]

3.1.7 The Māhele and the Kuleana Act

In 1845, the Hawaii 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 between the Hawaiian government, the King,
the ali‘i (royalty), and the common people as codified in the Māhele Book (1848), which
introduced the concept of private property into Hawaiian society.

In 1848, the crown (Hawaiian government), Kamehameha III, and other ali‘i such as Victoria
Kamāmalu received their land titles, called Konohiki Awards. The Konohiki award claimant had
to pay a commutation fee of one-third of the value of their unimproved lands. Usually this fee was
settled when the ali‘i “returned” some of his awarded lands, and “retained” others. The returned
lands usually then became Government Lands, which were set aside to generate revenue for the
government, or Crown Lands, which were lands reserved for the monarchy (Chinen 1958:8). In
the petitioning for Land Commission Awards (LCAs) for their kuleana (lands), the commoners
had to provide testimony from witnesses, including statements regarding the boundaries of the
land and its use. In the 1790s, after Kamehameha had conquered O‘ahu, Kapālama is specifically
mentioned along with Nu‘uanu, Mānoa, and Waikīkī as having been “farmed” by Kamehameha.
The desirability of Kapālama Ahupua‘a is supported by the fact that Kamehameha “kept of himself” the ahupua‘a during the post-1795 division of O‘ahu lands (Kameʻeleihiwa 1992:59). The ahupua‘a of Kapālama was awarded to Moses Kekūāiwa, son of Kekūanao‘a and Kīna‘u (who had earlier been married to Kamehameha I). The lands passed down in turn to his sister Victoria
Kamāmalu, to her brother Lot Kamehameha, to his half-sister Ruth Keʻelikōlani, and then to her
first cousin, Bernice Pauahi Bishop. The will of Mrs. Bishop set many of her lands as a trust to
provide financial aid to educational and charitable institutions, including the schools she founded
to educate Hawaiian children (Mitchell 1993:9).

Subsequent to the Māhele award for the bulk of the ahupua‘a, individual kuleana (commoner)
lots were awarded pursuant to the 1850s Kuleana Act. The first detailed map of Kapālama, made
by J.F. Brown in 1885 (Figure 8), shows a traditional Hawaiian landscape of small kuleana LCA
parcels extending across the Kapālama plain. Mid-nineteenth century Māhele documents identify
these kuleana parcels as comprising house sites and irrigated taro fields. The map also indicates
large areas set aside for rice fields near the central ‘auwai in land managed by the konohiki (land
agent for the ali‘i; in this case Moses Kekūāiwa). The LCA testimony for Kapālama indicates there
was intensive cultivation of taro in the area, maintenance of fishponds, habitation, and some
indication of the use of the kula (pasture or waste land). The kuleana to Hawaiian makaʻāinana
were located on the flood plain to the east of Waiakamilo/Houghtailing Street and included houses
Figure 8. 1885 Brown map of Kapālama depicting LCAs in the vicinity of the project area and the planned extension of the Vineyard Street right-of-way
and \textit{lo'i} (pond fields) for the cultivation of \textit{kalo} (taro). The taro patches in the vicinity were just downstream of Niuhelewai (Kapālama) Stream. Roughly 100 \textit{kuleana} lots were awarded in Kapālama. The claimants were generally awarded one to six separate \textit{ʻāpana} (lots), sometimes contiguous or in the same \textit{ʻili} (land division smaller than an \textit{ahupuaʻa}), but also sometimes scattered through several \textit{ʻili}. LCA documentation notes the presence of house sites, irrigated taro fields (\textit{lo'i}), and aquaculture fishponds in the immediate vicinity. The pattern of land-award distribution shown in the LCAs suggests the traditional Hawaiian practice of maintaining residences dispersed within and throughout their agricultural fields continued in Kapālama at least until the mid-nineteenth century.

The project area is located within portions of LCA 732:2 (to Kuinui) and 918:2 (to Upai) (Figure 9 and Appendix A). The claims include house lots and associated taro patches and pastureland.

### 3.1.8 Mid- to Late 1800s

The project area vicinity is shown on the 1893 Wall map of Honolulu (Figure 10) as surrounded by rice cultivation but with a north/south trending railroad spur crossing the east portion of the project area. The purpose of the railroad spur is unclear and may have been just to facilitate the loading of rice.

The Kapālama area on the 1897 Monsarrat map (Figure 11) is dominated by the Kamehameha Schools complex with only a few scattered houses such as the Houghtailing home. The main street is King Street, which extends through Kapālama, including a mule-drawn tramway, which had its stables southwest of the Kapālama Canal project block. The Oʻahu Insane Asylum was \textit{mauka} (inland) of the future H-1 Interstate Highway corridor. The project area is shown in the middle of a rice plantation.

A site in Kapālama called Kaiwiʻula (“the red bone”) was chosen for the first Kamehameha School for Boys, which opened in 1887. The construction of many wood frame buildings followed including a principal’s house, dormitories, faculty cottages, a preparatory school, a dining hall and kitchen, gymnasiums, and manual school shops. Two stone buildings were constructed first. The Bishop Hall, the main administration building for the school, was completed in 1891 and the Bishop Memorial Chapel was completed in 1897. In 1938, the grounds, the chapel, and the preparatory buildings were sold to the territorial government in order to build an auditorium for the Wallace R. Farrington High School. The chapel was demolished in 1954 (Mitchell 1993:1–42). The first buildings of Farrington High School were constructed in 1940, designed by the noted Hawaiian architect Charles W. Dickey (Farrington High School 2014).

Mr. Charles Bishop was interested in preserving the many artifacts in the possession of his late wife and those of the late Queen Emma, who in 1884 willed her “native curiosities” to him “on the condition that at some future day then, together will all similar articles belonging to the late Bernice Pauahi Bishop . . . be presented to him as trustees of an institution to be called the Kamehameha Museum . . .” (Rose 1980:10). The trustees of Bishop Estate chose a site near the Kamehameha School for Boys and the museum, housed in Bishop Hall, opened to the public in 1891. The official name of the institution was the Bernice Pauahi Bishop Museum but it was also called \textit{Hale Hōʻikeʻike o Kamehameha}, or Museum of Kamehameha, the name Queen Emma
preferred (Rose 1980:21). In 1894, a new Polynesian Hall was added, in 1903 a Hawaiian Hall, in 1911 the Pākī Hall, and in 1925 the Konia Hall. In 1947, the Kamehameha Schools moved their
Figure 9. 2013 aerial photograph with an overlay of land commissions awards in the vicinity of the project area (Google Earth 2013)
Figure 10. 1893 Wall map of Honolulu showing project area surrounded by rice fields

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Figure 11. 1897 Monsarrat map of the Honolulu District showing the project area in a rice plantation
cultural surveys hawaii job code: kapalama 24

background research

aisr for the halona street bridge (h-1 on-ramp at vineyard street), kapālama, honolulu, o'ahu

25

3.1.9 1900s

3.1.9.1 Residential and commercial development

A series of USGS maps, U.S. Army War Department maps, and aerial photographs (Figure 12 through Figure 19) depict the accelerated development of residential neighborhoods and commercial centers in the first half of the twentieth century.

A 1919 map (Figure 12) depicts the grid-like establishment of residential neighborhoods surrounding the Kamehameha School Complex in Kalihi-Pālama. The rice paddies and pineapple plantations are no longer shown, although some of the open areas on the map mauka of King Street may still have been cultivated for these crops, or turned into truck farms. There are no open spaces

Mr. Houghtailing located the ponds, taro fields, and rice patches from School Street to Liliha Street; other taro patches were in the area “between Palama Street and Liliha Street, below School Street down to what in now Vineyard Street” (UH 1984:1100). These rice ponds and taro patches, usually operated by the Chinese, were cultivated up to the 1920s when many were filled in for the development of residential subdivisions. The Japanese took over some of the land as truck farms, and Japanese also gradually took over the small stores once operated by Chinese.

Portions of the H-1 Interstate Highway corridor extend through these rice fields and near the pineapple plantations, which are generally makai of King Street, although there was a rice mill mauka of the project area near the Insane Asylum. Again, there is an established bridge on King Street at the Kapālama Stream crossing. There are no specific structures within or adjacent to the Kapālama project area block.

Mr. George Houghtailing’s grandfather came to Hawai‘i around 1845, married a Hawaiian woman in 1850 and ran the Bay Horse Saloon on Bethel and Hotel Street in Honolulu. During the Māhele, he was given several kuleana, later consolidated into a 15-acre tract along a road later named after him, Houghtailing Road. The family home was between School and Vineyard streets, now the location of Damien High School, as described by Mr. Houghtailing:

On the premises there was a large pond which had a natural spring and which also fed the lower land where we had taro patches and cultivated the other truck gardening on the land. The land was quite open. We had a couple of bay horses and raised chickens and pigs for family consumption. There was a large open area fronting Houghtailing Road which was used as a park for the neighborhood kids. [UH 1984:1099]

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Figure 12. 1919 U.S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the project area
Figure 13. 1927 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the project area

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Figure 14. 1933 U.S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the project area
Figure 15. 1943 U.S. Army War Department map, Honolulu Quadrangle showing commercial and residential development in Kapālama, near the project area
Figure 16. 1950 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the project area.
Figure 17. 1952 USGS aerial photograph showing project area

AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O'ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)
Figure 18. 1953 Honolulu USGS Topographic Quadrangle, showing commercial and residential development in Kapālama, near the project area

AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O'ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)
Figure 19. 1978 USGS aerial photograph, Honolulu Quadrangle, showing commercial and residential development in Kapālama near the project area.
shown in the Nu‘uanu area at this time. On the 1897 Monsarrat map, (see Figure 11) houses were spaced only along the main roads. By 1919, homes are packed in small residential blocks.

A 1933 U.S. Army War Department map (see Figure 14) continues the trend to greater density in grid-like residential blocks. On this map dashed lines, representing planned roads, are shown in the once empty space east of the Kamehameha Schools campus. The area around Pālama Settlement east of Niuhelewai Stream is also a densely packed neighborhood. This is in contrast to the Nu‘uanu area which still has large houses separated by large yards. A 1943 U.S. Army War Department map (see Figure 15) illustrates the density of homes along the street grids in lower and upper Kalihi-Kapālama. In upper Kalihi, Farrington High School has now taken the place of the Kamehameha Schools. The street grid east of the high school is still in the planning stages. Palama has now become not only a residential area, but has commercial warehouses and stores, mainly lined along King Street. In Nu‘uanu many of the large houses and wide spaces between houses have been lost.

The 1950 Sanborn Fire Insurance map depicts the density of houses and house lots located in the general vicinity of the project area (see Figure 16). There are also large areas of vacant land within the current project area.

A 1952 aerial photograph (see Figure 17) shows substantial housing development but the north and south portions of the project area are still in areas of vacant land.

The 1953 USGS map (see Figure 18) illustrates the large number of schools and churches near the H-1 Interstate Highway corridor. Labeled are Fern School, Kalihi Waena School, Kalākaua School, St. Anthony’s School, and Pu‘uhale School. Lower Kalihi holds Farrington High School, Likelike, St. Theresa School, and the Kaiulani School in Kapālama. The Nu‘uanu survey area is near Kauluwala School, Kuakini Hospital, Liliuokalani Gardens, and Foster Park (Foster Botanical Garden).

3.1.9.2 H-1 Interstate Highway

As the project area lies directly adjacent to the H-1 right-of-way, it is appropriate to give a little background on the history of H-1. It appears construction for the H-1 in the area of Kalihi-Kapālama started in 1960 from Fort Shafter to Houghtailing Street. Although this was not the place of origin for the H-1 system, it was the first time federal money was to be used in Hawai‘i for an Interstate system. Prior to 1960 the H-1 was called the Lunalilo Freeway. This early highway is shown on a 1978 aerial photograph (see Figure 19). The website AARoads has compiled a timeline for the H-1 construction (Table 1).

AARoads (2012) reports that, “Portions of H1 predate statehood, as an upgrade of Lunalilo Street, the freeway’s namesake. The oldest section, from Punahou street east to King Street (Exits 23-25), was open before 1959. Originally signed as Hawaii 72.”

The Hawaiian Historical Society provides a timeline in a little more detail for the earliest stretch of H-1, the Mauka Arterial.

The pioneering highway in Hawai‘i was the Mauka Arterial (later christened Lunalilo Freeway). The three ‘Ewa-bound lanes, extending one mile between Old Wai‘alae Road and Alexander Street, were opened to traffic November 9, 1953. The Kaimuki-bound lanes along the same stretch were opened and the highway was formally dedicated on January 5, 1954. [Schmitt 2013]
Table 1. Construction Timeline of Hawaii 72, Later Renumbered as H-1 Interstate Highway

<table>
<thead>
<tr>
<th>Year</th>
<th>Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953</td>
<td>First section of the Mauka Arterial opened; Mauka Arterial was approximately a mile section around University Avenue, present-day Mile 24</td>
</tr>
<tr>
<td>1959</td>
<td>At statehood, first section of what is now called Lunalilo Freeway opened between Punahou St (Mile 23) and King St (Mile 25); maps show proposed route from Punahou St west to Middle St (present H-1/H-201 interchange)</td>
</tr>
<tr>
<td>1960</td>
<td>Lunalilo Freeway extended west to Ke‘eauamoku St (approx. 1/2 mile west of Punahou St); section of present-day H-201 opened through Fort Shafter, signed as Hawaii 72; sections from Fort Shafter east to Houghtailing St (Exit 20B) and Pali Hwy interchange (exit 21A/B) under construction</td>
</tr>
<tr>
<td>1961</td>
<td>Open sections are Pu‘uola Rd (present-day H-201) to Houghtailing St (Exit 20B), Pali Hwy interchange, and Ke‘eauamoku St to King St</td>
</tr>
<tr>
<td>1964</td>
<td>Section from Kapahulu St (Mile 25) east to Koko Head Ave (Exit 26A) under construction</td>
</tr>
<tr>
<td>1965</td>
<td>Kapahulu St to Koko Head Ave opened; short 1/2 mile section under construction, filling gap in existing freeway sections between King St and Kapahulu St</td>
</tr>
<tr>
<td>1967</td>
<td>H-1 first appears on maps, cosigned with Hawaii 72; freeway continuous from Pu‘uola Rd east to Pele St (just east of Pali Hwy, Hawaii 61), as well as existing sections from Ke‘eauamoku St to King St and Kapahulu St to Koko Head Ave; western section between Kunia Rd and Kamehameha Hwy (Exits 5 through Exit 8A) open, with section between Miles 0 and 5 under construction</td>
</tr>
<tr>
<td>1968</td>
<td>Gap between King St and Kapahulu St opened; H-1 extended east to present terminus east of Kilauea Ave; still a gap between Pele and Ke‘eauamoku Sts</td>
</tr>
<tr>
<td>1972</td>
<td>H-1 opened from Kamehameha Hwy (Western terminus) to Kaimakani St, immediately west of Hālawa interchange; Hālawa interchange and sections of H-1 to Middle St proposed; from Middle St east to Kilauea Ave completed freeway; Hawaii 72 truncated at eastern end of H-1; orphaned section between Pu‘uola Rd and Middle St is re-signed as Hawaii 78</td>
</tr>
<tr>
<td>1986</td>
<td>H-1 completed between Nimitz Hwy and Middle St (Miles 18-19); through lanes of H-1 east use Middle St tunnel, completed in 1961 for Middle St off-ramp</td>
</tr>
</tbody>
</table>

AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O'ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)
3.2 Previous Archaeological Research

Development within a 0.8 km (0.5 mile) radius of the project area is primarily residential with some light industry. Most of the development in the area, including the H-1 Interstate Highway corridor itself, has occurred prior to the late 1970s when archaeological investigation became standard during project planning and construction activities. The locations of previous archaeological studies conducted within a 0.8 km (0.5 mile) radius of the project area are shown in Figure 20 and listed in Table 2. The findings of these archaeological studies are shown in Figure 21 and listed in Table 3. These studies and their findings are discussed in more detail in the following paragraphs.

3.2.1 Palama Fire Station (Neller 1980)

During excavations at the Palama Fire Station in September 1980, the SHPD made a site visit to the project. A large charcoal deposit was observed in an excavation sidewall which contained several basalt cobbles. No further information was obtained due to the backfilling of the excavation prior to the SHPD’s return to document the feature. It could not be determined whether the deposit represented a historic feature or a traditional imu (earth oven) pit; however, no historic artifacts were observed in association with the feature.

3.2.2 Dunn et al. 1991

During archaeological monitoring at the Pālama Chevron Station, highly fragmented human skeletal remains were observed (Dunn et al. 1991). The minimum number of individuals (MNI) appeared to be five—but this was not altogether clear. Of interest was the following comment:

A parishioner of Kaumakapili Church mentioned to PHRI field personnel that the survey area was once a cemetery. Mr. Tom Dye of the DLNR said that older residents of the area had once mentioned that when they were younger they regarded the area as ‘spooky,’ and that this may be attributable to the fact that they had heard there were burials in the area. [Dunn et al. 1991:10]

Fragmentary human skeletal remains were reported at 80 cm below surface, 105 cm below surface, and 120 cm below surface (Dunn et al. 1991:1, 4).

3.2.3 Bishop Museum (Dixon 1993)

This archaeological monitoring project at the Bishop Museum took place during installation of electrical service for the Space Exhibit in August 1992. Museum staff recognized the potential for subsurface pre- and post-Contact Hawaiian cultural material and human remains as well as the possibility of early historic material on museum property. Stratigraphy and back dirt was observed during mechanical trenching conducted on the Great Lawn. Dixon found no evidence of pre-Contact deposits; however some historic artifacts were found in a fill layer possibly dating back to the Kamehameha Schools period and given SHPD Site number 50-Oa-A6-26.

3.2.4 Austin Lane, Kapālama (Jourdane 1994; Hammatt 1995)

A burial in a coffin was found during construction of a water line on Austin Lane and reported to the SHPD (Jourdane 1994). CSH (Hammatt 1995) conducted background on the property and disinterred the burial. The human remains, designated SIHP # -4929, were turned over to the SHPD for reburial.
Figure 20. Previous archaeological studies within a 0.8 km (0.5 mile) radius of the project area
Table 2. Previous Archaeological Studies within a 0.8 km (0.5 mile) Radius of the Project Area (arranged chronologically)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Location</th>
<th>Results (SIHP # 50-80-14-****)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neller 1980</td>
<td>Field reconnaissance</td>
<td>Kapālama Fire Station</td>
<td>Massive charcoal deposit observed in trench, but significance not determined</td>
</tr>
<tr>
<td>Dunn et al. 1991</td>
<td>Archaeological monitoring</td>
<td>Pālama Chevron Station, Kapālama</td>
<td>Nine test trenches for pipelines excavated; burials, human skeletal remains, and historic artifacts (SIHP # -3373) recorded; burials were victims of nineteenth-century epidemics</td>
</tr>
<tr>
<td>Dixon 1993</td>
<td>Archaeological monitoring</td>
<td>Bishop Museum grounds near Violet St, Kapālama</td>
<td>No evidence of pre-Contact cultural deposits found; however, historic artifacts found in backfill; Bishop Museum designated SIHP # -1353 as an historic property</td>
</tr>
<tr>
<td>Jourdan 1994</td>
<td>Burial report</td>
<td>Austin Lane, Kapālama</td>
<td>Historic human coffin burial (SIHP # -4929) found during excavation on Austin Lane</td>
</tr>
<tr>
<td>Nakamura et al. 1994</td>
<td>Archaeological assessment</td>
<td>North King and Houghtailing, Kapālama</td>
<td>No archaeological historic properties found, however, some 50+ year-old buildings found during assessment</td>
</tr>
<tr>
<td>Borthwick et al. 1995</td>
<td>Archaeological inventory survey</td>
<td>Kamehameha Homes, Kapālama</td>
<td>No subsurface features found during excavation of 16 trenches on a 14-acre survey area</td>
</tr>
<tr>
<td>Hammatt 1995</td>
<td>Burial disinterment</td>
<td>Austin Lane, Kapālama</td>
<td>Historic coffin burial at Austin Lane (SIHP # -4929) disinterred; burial probably associated with Kaumakapili Church cemetery, used from 1870s to at least 1921</td>
</tr>
<tr>
<td>McIntosh and Cleghorn 2006</td>
<td>Archaeological monitoring</td>
<td>Kamehameha Heights Water System, Kapālama</td>
<td>Before sewer improvements, Pacific Legacy conducted testing and monitoring to determine if nearby historic graves from Ka‘ahumanu and Maluhiu Cemeteries extended under Kapālama Ave; ten trenches excavated but no cultural deposits or human bones found</td>
</tr>
<tr>
<td>Dey and Hammatt 2008</td>
<td>Archaeological monitoring</td>
<td>1520 North School St, Kapālama</td>
<td>No culturally significant material observed</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Location</td>
<td>Results (SIHP # 50-80-14-****)</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hammatt and Chiogioji 2008</td>
<td>Archaeological inventory survey</td>
<td>BWS Kalihi-Beretania Water Main, Kapālama and Nu‘uanu</td>
<td>Survey confirmed areas affected by proposed water main work were along asphalt areas; two early twentieth-century bridges on Judd and Nu‘uanu streets recommended for architectural evaluation</td>
</tr>
<tr>
<td>Burke et al. 2010</td>
<td>Archaeological monitoring</td>
<td>Houghtailing St, Kapālama</td>
<td>No archaeological material observed within sediments disturbed by project’s activities at Houghtailing St by H-1</td>
</tr>
<tr>
<td>Hunkin et al. 2012</td>
<td>Archaeological monitoring</td>
<td>Kalihi-Nu‘uanu Sewer Rehabilitation project</td>
<td>No cultural deposits identified; isolated human femur fragment found in fill material in one of western Punchbowl slope areas; no site number assigned to this fragment, which was handed over to SHPD for reburial</td>
</tr>
<tr>
<td>Hammatt 2013</td>
<td>Archaeological inventory survey</td>
<td>City Center portion of Honolulu High-Capacity Transit Corridor project</td>
<td>Two historic properties identified near current project area—SIHP #s -7426 (subsurface wetland deposit) and -7506 (subsurface incinerated trash deposit); wetland sediments identified along Dillingham Blvd; incinerated trash deposits encountered within HCC campus at corner of Dillingham Blvd and Kokea St</td>
</tr>
<tr>
<td>Hunkin and Hammatt 2013</td>
<td>Archaeological monitoring</td>
<td>Kalihi Valley sewer system, Kapālama</td>
<td>No cultural deposits noted</td>
</tr>
<tr>
<td>Medina and Hammatt 2013</td>
<td>Archaeological monitoring</td>
<td>Waiakamilo Rd and McNeill St intersection traffic signals</td>
<td>No historical properties or human remains encountered</td>
</tr>
<tr>
<td>Medina et al. 2013</td>
<td>Archaeological monitoring</td>
<td>Traffic control signal along Dillingham Blvd</td>
<td>Two historic properties reported, SIHP #s -7426 (previously identified historic property consists of former wetland/agricultural sediments that may have been utilized during late pre-to early post-Contact period) and -7515 (newly identified historic property related to creation of Kapālama Canal during 1920s and in-filling of surrounding area for purposes of urban development)</td>
</tr>
</tbody>
</table>

AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O'ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Location</th>
<th>Results (SIHP # 50-80-14-****)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pammer and McDermott 2014</td>
<td>Archaeological inventory survey</td>
<td>Honolulu Community College</td>
<td>Two previously recorded historic properties identified within survey area: SIHP #s -7426 (wetland sediments) and -7506 (incinerated trash layer)</td>
</tr>
<tr>
<td>Stine et al. 2014</td>
<td>Archaeological monitoring</td>
<td>Farrington High School property</td>
<td>No cultural deposits identified during monitoring of three excavations</td>
</tr>
</tbody>
</table>
Figure 21. Previously identified historic properties within a 0.8 km (0.5 mile) radius of the project area
Table 3. Previously Identified Historic Properties within a 0.8 km (0.5 mile) Radius of the Project Area

<table>
<thead>
<tr>
<th>SIHP #</th>
<th>Site Type/ Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-80-14-1302</td>
<td>Palama Fire Station</td>
<td>Neller 1980</td>
</tr>
<tr>
<td>50-80-14-1353</td>
<td>Bishop Museum Complex</td>
<td>Dixon 1993</td>
</tr>
<tr>
<td>50-80-14-3373</td>
<td>Subsurface cultural deposit, burial</td>
<td>Dunn et al. 1991</td>
</tr>
<tr>
<td>50-80-14-4929</td>
<td>Burial (coffin)</td>
<td>Jourdane 1994; Hammatt 1995</td>
</tr>
<tr>
<td>50-80-14-5368</td>
<td>Kūwili Fishpond</td>
<td>McDermott and Mann 2001</td>
</tr>
<tr>
<td>50-80-14-7426</td>
<td>Subsurface wetland sediments</td>
<td>Hammatt 2013, Medina et al. 2013</td>
</tr>
<tr>
<td>50-80-14-7506</td>
<td>Subsurface incinerated trash deposit</td>
<td>Hammatt, 2013; Pammer and McDermott 2014</td>
</tr>
<tr>
<td>50-80-14-7515</td>
<td>Subsurface dredge sediment</td>
<td>Medina et al. 2013</td>
</tr>
<tr>
<td>50-80-14-9768</td>
<td>Wallace Rider Farrington High School</td>
<td>Hawai‘i Register Nomination form</td>
</tr>
<tr>
<td>50-80-14-9851</td>
<td>Kaumakapili Church</td>
<td>Hawai‘i Register Nomination form</td>
</tr>
</tbody>
</table>
3.2.5 Corner of North King and Houghtailing Streets (Nakamura et al. 1994)

The Bernice Pauahi Bishop Museum (Nakamura, Pantaleo, and Sinoto) carried out an archaeological assessment of land in Kapālama on the corner of North King and Houghtailing streets. Background research identified no historic sites within the survey area. Research also showed pre- and early post-Contact use of the area for agriculture but suggested that disturbance in the area from urbanization in the 1900s had reduced the possibility of finding intact deposits from an earlier time.

3.2.6 Kamehameha Homes Project, Kapālama (Borthwick et al. 1995)

CSH (Borthwick et al. 1995) carried out an archaeological subsurface inventory survey of the Kamehameha Homes project in Kapālama. The crew excavated 16 trenches spaced to cover the entire 13.96-acre survey area. All of the trenches had a landscape layer associated with mechanical terracing of the area by bulldozers. No significant finds were reported.

3.2.7 Kamehameha Heights, Puea and Kaʻahumanu Cemeteries (McIntosh and Cleghorn 2006)

In 2006, Pacific Legacy conducted pre-construction testing along the Puea and Kaʻahumanu Cemeteries before improvements were made to the Kamehameha Heights water system, due to concerns that unmarked graves could lie outside the modern boundary of the cemeteries. No cultural deposits or human remains were found in the ten test trenches along the north and east streets bounding the cemeteries.

3.2.8 Walgreens Development Project, North School Street (Dey and Hammatt 2008)

In 2008, CSH completed an archaeological monitoring program for a Walgreens development project. Background research identified no historic sites, a low potential for pre-Contact or early post-Contact Hawaiian cultural remains, and a low to moderate potential for early historic remains. Subsequent fieldwork confirmed a lack of pre-Contact or early post-Contact cultural material within that survey area.

3.2.9 Kalihi Beretania 24-Inch Water Main Project (Hammatt and Chiogioji 2008)

CSH carried out an archaeological inventory survey of the proposed Board of Water Supply Kalihi Beretania 24-Inch Water Main project in Nuʻuanu and Kapālama. No prehistoric properties were identified within the survey area but the study emphasized the need to consider the Judd Street and Nuʻuanu Avenue bridges as historic properties. Background research showed the survey area to be part of an expansive agricultural system during the pre- and early post-Contact period. As the survey area was confined to roadway corridors, subsequent testing revealed mostly grading and fill disturbance from roadway construction and utility trenching. No pre- or early post-Contact cultural material was observed during archaeological testing within the survey area.

3.2.10 Traffic Management System Project, Houghtailing Street by the H-1 (Burke et al. 2010)

In 2010, CSH completed an archaeological monitoring program for a Traffic Management System PH 1 project. Background research identified no sites but suggested a potential for early historic remains. Subsequent field monitoring produced no significant finds within the survey area.
3.2.11 Kalihi/Nu‘uanu Sewer Rehabilitation Project (Hunkin et al. 2012)

In 2012, CSH conducted monitoring for the Kalihi-Nu‘uanu Sewer project. No cultural deposits were identified in any of the monitored excavation trenches. One isolated human femur fragment was found in fill material in one of the western Punchbowl slope areas. No site number was assigned to this fragment, which was handed over to the SHPD for reburial.

3.2.12 Honolulu High-Capacity Transit Corridor Project (Hammatt 2013)

CSH performed AIS testing for the Honolulu High-Capacity Transit Corridor project (City Center) within numerous locations between Middle Street and Ala Moana Center. Testing identified multiple sites, two of which were identified near the current project area—SIHP #s -7426 (subsurface wetland deposit) and -7506 (subsurface incinerated trash deposit). The wetland sediments were identified within 28 AIS test excavations along Dillingham Boulevard, makai of the current project (T-054 through T-082). The incinerated trash deposits were encountered within three test excavations (T-064, T-066, and T-067) within the HCC campus at the corner of Dillingham Boulevard and Kokea Street.

3.2.13 Kalihi Valley Sewer System Improvements, Kapālama (Hunkin and Hammatt 2013)

In 2013, CSH monitored a portion of the Kalihi Valley Sewer System Improvement project near the junction of Houghtailing Street and North School Street in Kalihi. Due to the survey area’s close proximity to Ka‘ahumanu, Puea, and Maluhia Cemeteries, project proponents decided to enact a monitoring project for the installation of two water lines to mitigate any adverse effect to historic properties or burials in the survey area. No cultural deposits or historic properties were observed during excavations. The stratigraphy consisted of various layers of imported fill associated with historic and modern development overlying naturally deposited sediment and bedrock.

3.2.14 Medina and Hammatt 2013

In 2013, CSH (Medina and Hammatt 2013) reported on the results of archaeological monitoring for traffic control signal improvements for the Waiakamilo Road and McNeill Street intersection. No historical properties or human remains were encountered as a result of construction activities.

3.2.15 Traffic Control Signal Improvements along Dillingham Boulevard (Medina et al. 2013)

In 2013, CSH (Medina et al. 2013) reported on the results of archaeological monitoring for traffic control signal improvements along Dillingham Boulevard between Kokea Street and Kohou Street, involving excavations within city streets and sidewalks for subsurface electrical lines, conduits, and boxes. Two historic properties were observed during the course of archaeological monitoring consisting of SIHP #s -7426, a previously identified historic property consisting of former wetland/agricultural sediments that may have been utilized during the late pre-to early post-Contact period, and -7515, a newly identified historic property related to the creation of Kapālama Canal during the 1920s and the in-filling of the surrounding area for the purposes of urban development.

3.2.16 Honolulu Community College (Pammer and McDermott 2014)

In 2013, CSH conducted an archaeological inventory survey on the campus of Honolulu Community College. A total of eight backhoe-assisted excavations were excavated to assess the...
stratigraphy and determine the potential for buried archaeological deposits. Two previously recorded historic properties were identified with the survey area, SIHP #s -7526 (wetland sediments) and -7506 (incinerated trash deposit). Both sites were assessed as significant under criterion “d,” but no further work was recommended.

3.2.17 Farrington High School (Stine et al. 2014)

In 2013, CSH conducted archaeological monitoring for renovations and replacements of electrical vaults and lines at Farrington High School. Fieldwork was conducted from 27–29 June 2012. No new historic properties were identified. One previously identified property, Wallace Rider Farrington High School (SIHP # -9768) was placed on the State Register of Historic Places in 1993. No significant cultural material or human remains were observed during monitoring.

3.3 Background Summary and Predictive Model

Based on background research, the primary area of traditional Hawaiian settlement and intensive agriculture within Kapālama seems to have been in the upper valleys, as well as near streams and springs. The project sits within the central area of Kapālama along the drainage of Kapālama and Niuhelewai streams. Historically, agriculture and habitation were intensive in this area. Historically, the area encompassed by the survey area was used for rice cultivation, but immediate habitation within the survey area does not seem to have been prevalent.

Traditional Hawaiian land use indicated in the adjacent land commission awards (LCAs) documentation consisted of habitation, irrigated taro fields (loʻi), kula (dryland plots used for cultivation and/or pasture), and aquaculture via fishponds. The majority of kuleana land claims located near the project area were located near the freshwater sources of Kalihi and Niuhelewai streams as they were the most arable sources of land. This is the area described as an uncultivated plain in John Papa ʻĪʻī’s (1959) account of the area in 1810, until you reached “the taro patches of Kalihi.” Major strife is indicated ca. 1782 in the defeat of the Oʻahu ruling chief Kahāhana when the dead backed up the lagoonal backwaters (muliwai) of Niuhelewai Stream—but this may have been well seaward of the current project area. Another uncertainty pertains to the indicated ca. 1855 burial ground on the plains of Kaiwiʻula which may have been near the current project area.

By the twentieth century, the coastal and central sections of Kapālama had become suburbs of Honolulu. Much development in Kapālama primarily occurred prior to the late 1970s when archaeological investigation became standard during construction activities. As a result, few archaeological studies have been conducted in this area. The only previous projects located within the current project area consist of projects dealing with the H-1 Interstate Highway. No previously recorded archaeological sites are located within or directly adjacent to the current project area. Historic infrastructure relating to the Halona Street Bridge and the Kapālama Canal are anticipated within the project area.
Section 4  Results of Fieldwork

A 100% pedestrian inspection of the project area was conducted on 19 September by Joanne DeMaio Starr, M.A. and Nifae Hunkin, B.A. The pedestrian inspection included the documentation of two cultural resources within the project area and a description of the overall project area including ground visibility, modern use or disturbance, and vegetation.

The current project area includes the Halona Street Bridge (SIHP # -7807) and portions of the Kapālama Canal (SIHP # -7808), both of which were constructed in the early part of the twentieth century. The Halona Street Bridge is a continuous concrete cast-in-place bridge constructed in 1938. The Kapālama Canal is a channelized drainage that extends through urban Honolulu and is used to control the runoff from both Niuhelewai and Kapālama streams. Complete descriptions of these cultural resources are provided in Section 5.

The project area also includes a portion of Halona Street, which is the former extension of Vineyard Boulevard that was replaced by a portion of the H-1 Interstate Highway in the 1960s. The total extent of Halona Street includes approximately 0.9 km of two-lane, asphalt paved roadway extending one way from Vineyard Boulevard at the entrance of Likelike Elementary School in the southeast to the intersection of Houghtailing Street to the northwest.

The project area is completely developed. The only vegetation present within the project area includes small portions of mowed grass islands along the Kapālama Canal and between Halona Street and the westbound lanes of the H-1 Interstate.
Section 5  Cultural Resource Descriptions

Two cultural resources were identified within the current project area. They are summarized in Table 4 and depicted on Figure 22 and Figure 23.

Table 4. Sites Identified within the Current Project Area

<table>
<thead>
<tr>
<th>SIHP #</th>
<th>Formal Type</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-80-14-7807</td>
<td>Bridge (Halona Street Bridge)</td>
<td>Transportation</td>
</tr>
<tr>
<td>50-80-14-7808</td>
<td>Kapālama Canal</td>
<td>Water Control</td>
</tr>
</tbody>
</table>
Figure 22. 2013 Google Earth aerial photograph showing the locations of cultural resources identified within the project area.
Figure 23. Portion of 1998 Honolulu USGS topographic quadrangle showing the locations of cultural resources identified within the project area.

AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O'ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)
### 5.1 SIHP # 50-80-14-7807

<table>
<thead>
<tr>
<th>FORMAL TYPE:</th>
<th>Bridge</th>
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</thead>
<tbody>
<tr>
<td>FUNCTION:</td>
<td>Transportation</td>
</tr>
<tr>
<td>NUMBER OF FEATURES:</td>
<td>1</td>
</tr>
<tr>
<td>AGE:</td>
<td>Historic (1938)</td>
</tr>
<tr>
<td>TAX MAP KEY:</td>
<td>TMK: [1] 1-6-006 (Halona Street, Kohou Street, Kokea Street, and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal)</td>
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<tr>
<td>LAND JURISDICTION:</td>
<td>City and County of Honolulu, HDOT</td>
</tr>
<tr>
<td>PREVIOUS DOCUMENTATION:</td>
<td>None</td>
</tr>
</tbody>
</table>

SIHP # -7807 is the Halona Street Bridge, located along Halona Street northeast of the H-1 Interstate Highway and spanning the Kapālama Drainage Canal (see Figure 23). Halona Street Bridge is identified as a continuous concrete cast-in-place bridge (Figure 24 and Figure 25). The existing structure was built in 1938, however, half of the bridge (the downstream/makai portion) was removed during the construction of the H-1 freeway. The bridge is marked with the inscriptions “1938” and “KAPALAMA CANAL” (Figure 26 and Figure 27).

The Halona Street Bridge was not included within previous statewide historic bridge inventory studies. Architectural recording conducted during the current project states the following:

> The Halona Street Bridge does not appear to be eligible for the Hawaii or National Register of Historic Places due to a lack of integrity of its 1938 form. This is due to the removal of the southwest parapet, reduction of the roadway width, and construction of the adjacent H1 Freeway [Ruzicka 2015:9-4]

As this is an architectural cultural resource, the assessment of significance (pursuant to HAR §13-13-275-6), and determination of eligibility to the National and Hawai‘i Register (35 CFR 60.4 and HAR §13-198-8, respectively) was conducted by Mason Architects, Inc. (Ruzicka 2015). Ruzicka (2015) evaluated SIHP # -7807 for significance under Criterion “A” (associated with events that have made a significant contribution to the broad patterns of our history), specifically development of Vineyard Street and the Kapālama Canal, however, due to the lack of integrity, SIHP # -7807 was determined by Ruzicka (2015) to be not significant and not eligible to the National Register and Hawai‘i Register. CSH concurs with this assessment and determination.
AISR for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapālama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapālama Canal)
Figure 25. SIHP # -7807, Halona Street Bridge, view to southwest

Figure 26. SIHP # -7807, Halona Street Bridge including date inscription of “1938” on the northeast corner of the bridge, view to north
Figure 27. SIHP # -7807, Halona Street Bridge including inscription of “KAPALAMA CANAL” on the northwest corner of the bridge, view to east
5.2 SIHP # 50-80-14-7808

<table>
<thead>
<tr>
<th>FORMAL TYPE:</th>
<th>Kapālama Canal</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNCTION:</td>
<td>Water control</td>
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<tr>
<td>NUMBER OF FEATURES:</td>
<td>1</td>
</tr>
<tr>
<td>AGE:</td>
<td>Historic</td>
</tr>
<tr>
<td>TAX MAP KEY:</td>
<td>TMKs: [1] 1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal) and 1-6-006 (Halona Street, Kohou Street, Kokea Street, and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal).</td>
</tr>
<tr>
<td>LAND JURISDICTION:</td>
<td>City and County of Honolulu, HDOT</td>
</tr>
<tr>
<td>PREVIOUS DOCUMENTATION:</td>
<td>None</td>
</tr>
</tbody>
</table>

SIHP # -7808 is the Kapālama Canal extending northeast to southwest beneath the Halona Street Bridge and Halona Street within the project area (see Figure 23). The Kapālama Canal is a channelized drainage that extends through urban Honolulu and controls the runoff from both Niuhelewai and Kapālama streams. The total extent of the Kapālama Canal includes approximately 1.5 km from Kapālama Basin in Honolulu Harbor in the southwest to 0.9 km north of Halona Street Bridge where the canal splits into two drainages along Kohou Street and Kokea Street.

The portion of SIHP # -7808 within the project area measures 209.6 m (687.7 ft) long with a variable width between 24.0 m (78.7 ft) and 31.0 m (101.7 ft). This portion of the canal is defined by basalt stone walls that extend from the base of the canal to above the street level (Figure 28 through Figure 31). The stonework observed on the face of the wall suggests multiple phases of construction. Where exposed, the foundation of the canal walls was observed as one to two courses of water-rounded, dry-stacked basalt boulders. Two additional phases of mortared dressed basalt stonework are visible, one extending from the base of the canal to the modern ground surface (six to eight courses), and one extending above the ground surface forming a low wall or curb (two to three courses) (Figure 32). The majority of the wall is constructed of dressed basalt blocks measuring approximately 0.3 m (1 ft) by 0.3 m (1 ft). The canal walls are approximately 2.5 m (8.2 ft) tall from the base to the top. The top of the wall is capped with concrete and a chain-link fence has been installed along the top of the wall to prevent intrusion. Several culvert pips are exposed within the wall that provide drainage for the surrounding urban community.

The earliest depiction of the channelization of Kapālama and Niuhelewai streams is shown on the 1943 U.S. Army War Department map extending along the northwestern boundary of the project area (see Figure 15). This early alignment closely conforms to the natural stream channels of Kapālama and Niuhelewai streams and may have been a temporary design to allow for the construction of Kapālama Canal to the southwest. Historic maps indicate the Kapālama Canal was constructed before 1950 (see Figure 16). An inscription in the concrete wall adjacent to the Halona Street Bridge reads “Kapalama Canal 1965,” which may be indicative of improvements to the canal during the construction of the H-1 Interstate Highway (Figure 33).
SIHP # 50-80-14-7808 is the Kapālama Canal and associated lava rock walls. As this is an architectural cultural resource, the assessment of significance (pursuant to HAR §13-13-275-6), and determination of eligibility to the National and Hawai‘i Register (35 CFR 60.4 and HAR §13-198-8, respectively) was conducted by Mason Architects, Inc. (Ruzicka 2015). SIHP # -7808 was assessed by Ruzicka (2015) as significant under Criterion “A” (associated with events that have made a significant contribution to the broad patterns of our history) and was determined to be eligible to the National Register and Hawai‘i Register. CSH concurs with this assessment and determination.
Figure 28. SIHP # -7808, Kapālama Canal from the Halona Street Bridge (SIHP # -7807), view to north

Figure 29. SIHP # -7808, Kapālama Canal from north end of project area, view to south
Figure 30. SIHP # -7808, Kapālama Canal from the south side of the H-1 Interstate Highway, view to north

Figure 31. SIHP # -7808, Kapālama Canal from the south side of the H-1 Interstate Highway, view to southwest
Figure 32. SIHP # -7808, Kapālama Canal showing potential multiple construction phases of the canal walls, view to southwest

Figure 33. SIHP # -7808, Kapālama Canal showing inscription on concrete wall of “Kapalama Canal 1965,” view to northwest
Section 6  Summary and Interpretation

At the request of CH2M HILL and on behalf of the FHWA/CFLHD, CSH has prepared this archaeological inventory survey report for the Halona Street Bridge replacement project, Kapālama Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMKs: [1] 1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal) and 1-6-006 (Halona Street, Kohou Street, Kokea Street, and H-1 Interstate Highway Rights-of-Way, and Kapālama Canal).

Background research has indicated Kapālama was a focus for habitation and agriculture in the pre-Contact and post-Contact periods, although it was not as densely inhabited as Nu‘uanu Valley to the east and Kalihi Valley to the west. Stretching out from the base of the ridge toward Honolulu Harbor was the well-watered taro area of Kapālama described by Handy and Handy (1972:475) as “almost continuous from Iwilei up to the foothills of above School Street, an area measuring about three quarters of a mile both in depth inland and in breadth.” Historic information indicates that traditionally, habitation was focused within the same well-watered plain, which extended to the shoreline. John Papa ʻĪʻī (1959:58) noted “innumerable people all over the farming area.”

During and after the Māhele, the importance of Kapālama is evident in the fact that Kamehameha kept these lands for himself and then passed them on to his family through his grandchildren Moses Kekūāiwa, Victoria Kamāmalu, and Lot Kamehameha, and eventually to Bernice Pauahi Bishop where they became part of her estate. Roughly 100 kuleana lots were awarded to Hawaiian commoners in Kapālama. These kuleana lands were located on the flood plains to the east of Waiakamilo/Houghtailing Street and included house and lo‘i for the cultivation of kalo.

The first detailed map of Kapālama, made by J.F. Brown in 1885, shows a traditional Hawaiian landscape of small kuleana LCA parcels extending across the Kapālama plain (see Figure 8). The project area is located within portions of LCA 732:2 (to Kuinui), 918:2 (to Upai), 1746 (to Nakaikuaana), 2266:3 (to Kuhiana), 2268:1 (to Kapahu), and 2937 Part 2:2 (to Wm. Harbottle) (see Figure 9 and Appendix A). The claims include house lots and associated taro patches and pastureland.

The former taro land that the entire project area was a part of was converted to rice fields between the 1870s and 1910. Subsequently it became housing and industrial subdivisions in the early twentieth century. This land use change was facilitated by the construction of Kapālama Canal. The canal channelized Kapālama and Niuhelawai streams and allowed for sub-street storm drain runoff collection. During the last half of the twentieth century, the Kapālama area continued to undergo changes associated with the urban expansion of Honolulu. Increased housing, industrial, and commercial activities continue to occur today.

Previous archaeological studies have documented architectural historic properties such as the Palama Fire Station (SIHP # -1302), Kaumakapili Church (SIHP # -9851), Wallace Rider Farrington High School (SIHP # -9768), and the Bishop Museum Complex (SIHP # -1353) as well as subsurface cultural deposits including wetland sediments (SIHP # 7426), incinerated trash deposits (SIHP # -7506), and burials (SIHP #s -3373 and -4929).
Two cultural resources have been identified within the project area. These cultural resources include the Halona Street Bridge (SIHP # -7807) and portions of the Kapālama Canal (SIHP # -7808), both of which were constructed in the early part of the twentieth century.

Halona Street Bridge (SIHP # -7807) is identified as a continuous concrete cast-in-place bridge. The existing structure was built in 1938, however half of the bridge (the downstream/makai portion) was removed during the construction of the H-1 freeway. The bridge is marked with the inscriptions “1938” and “KAPALAMA CANAL.” This bridge was determined by Ruzicka (2015) to not be a significant historic property.

The Kapālama Canal (SIHP # -7808) is a channelized drainage that extends through urban Honolulu and is used to control the runoff from both Niuhelewai and Kapālama streams. The total extent of the Kapālama Canal includes approximately 1.5 km from Kapālama Basin in Honolulu Harbor in the southwest to 0.9 km north of Halona Street Bridge where the canal splits into two drainages along Kohou Street and Kokea Street.
Section 7  Significance Assessments

As discussed in Section 1.2, cultural resources, are generally at least 50 years old (although there are exceptions) and include: buildings and structures; groupings of buildings or structures (historic districts); certain objects; archaeological artifacts, features, sites, and/or deposits; groupings of archaeological sites (archaeological districts); and, in some instances, natural landscape features and/or geographic locations of cultural significance. The current investigation was tasked with the identification of archaeological cultural resources, however, this report also includes, where appropriate, the architectural cultural resources documented and evaluated in the companion architectural survey conducted by Mason Architects, Inc. (Ruzicka 2015).

For a cultural resource to be significant under HAR §13-275-6, the cultural resource should possess integrity of location, design, setting, materials, workmanship, feeling, and/or association, and meet one or more of the following criterion:

“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 important 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 with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

Cultural resource significance was evaluated and expressed by Ruzicka (2015) as eligibility for listing on the National Register (pursuant to 36 CRE 60.4) and/or the Hawai‘i Register (pursuant to HAR §13-198-8). To be considered eligible for listing on the National and/or Hawai‘i Register, a cultural resource should possess integrity as described above, and meet one or more of the following broad significance criteria:

“A” that are associated with events that have made a significant contribution to the broad patterns of our history;

“B” that are associated with the lives of persons significant in our past;

“C” that embody the distinctive characteristics of a type, period, or method of construction, or that represent that work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;

“D” that have yielded, or may be likely to yield, information important in prehistory or history;
SIHP # 50-80-14-7807 is the Halona Street Bridge. As this is an architectural cultural resource, the assessment of significance (pursuant to HAR §13-13-275-6), and determination of eligibility to the National and Hawai‘i Register (35 CFR 60.4 and HAR §13-198-8, respectively) was conducted by Mason Architects, Inc. (Ruzicka 2015). Ruzicka (2015) evaluated SIHP # -7807 for significance under Criterion “A” (associated with events that have made a significant contribution to the broad patterns of our history), specifically development of Vineyard Street and the Kapālama Canal, however, due to the lack of integrity, SIHP # -7807 was determined by Ruzicka (2015) to be not significant and not eligible to the National Register and Hawai‘i Register. CSH concurs with this assessment and determination.

SIHP # 50-80-14-7808 is the Kapālama Canal and associated lava rock walls. As this is an architectural cultural resource, the assessment of significance (pursuant to HAR §13-13-275-6), and determination of eligibility to the National and Hawai‘i Register (35 CFR 60.4 and HAR §13-198-8, respectively) was conducted by Mason Architects, Inc. (Ruzicka 2015). SIHP # -7808 was assessed by Ruzicka (2015) as significant under Criterion “A” (associated with events that have made a significant contribution to the broad patterns of our history) and was determined to be eligible to the National Register and Hawai‘i Register. CSH concurs with this assessment and determination.

The distinctive dressed basalt block walls of the Kapālama Canal (see Figure 28 through Figure 32) are a contributing feature of the Kapālama Canal’s significance assessment. These dressed basalt block walls are not present under the SIHP # -7807 Halona Street Bridge (see Figure 25) which is supported by concrete bridge abutments. The concrete bridge abutments of the Halona Street Bridge are not regarded as contributing features to the significance of the Kapālama Canal.
Section 8  Project Effect and Mitigation Recommendations

8.1 Project Effect

In accordance with Federal regulations (36 CFR 800.5), CSH’s project-specific effect recommendation is “No adverse effect.” Under Hawai‘i State historic preservation review legislation, the project’s effect recommendation is “No historic properties affected” (in accordance with HAR §13-13-275-7).

To help avoid impact to the lava rock walls of the Kapālama Canal (SIHP # -7808), the existing abutments for the Halona Bridge (SIHP # -7807) will not be removed; however, the tops of the existing abutments will be cut down to accommodate deeper bridge girders.

8.2 Mitigation Recommendations

No further historic preservation work is recommended.
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TMKs: [1] 1-6-002 (Olomea St and H-1 Interstate Hwy ROW, and Kapalama Canal) and 1-6-006 (Halona St., Kohou St., Kokea St., and H-1 Interstate Hwy ROW, and Kapalama Canal)
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Appendix A  Land Commission Awards

A.1 LCA 732 (to Kuinui)

Greetings to the Land Commissioner: I hereby tell of my claim for my house lot at Leleo in Honolulu. The boundaries are: north, a hog enclosure; east, an irrigation channel; south, the irrigation channel; west, the house lot of Kuluahi. The interest in this place was from Kamehameha I. My interest is from my wahine, whose own kupunas and makuas lived here and are buried here. It was I who made the fence; one house stands here, which is mine. No one has objected until this time. I also have four taro patches which are adjacent to the po'alima patches and the stream. They were planted so the stream could irrigate the taro, from the side which adjoins my patches. When I got these taro patches, they were only weed grown, no food was planted and I myself made the patches. They are under the authority of the konohiki.

I am, with aloha,

KUINUI X

F.T. 200v2

Claim 732, Kuinui, February [1848]

Umi, sworn, this place is in Leleo, Honolulu aina, consisting of two pieces, a house lot and kalo ground bounded:

Waititi and Mauka by a water run called Kahala

Ewa by land of Kulamai

Makai by lot of Kulaaka.

It is fenced and and [sic] has 3 house on it; two belong to claimant and one to Kamakakoa, wahine. Claimant got it from Malaikoa in 1828 and has occupied it ever since. I know of no counter claimant.

Kalo land is in Palama, bounded:

Waititi by William Stevens's

Mauka and Ewa by land of Lauu and kalo patches

Makai by land of Puloa.

There are 4 patches. Claimant held it formerly under Keaniani, and since her death under rent to Kanau. He has held it since 1834 and pays his labour days for possession.

I do not know of any counter claimant.

F.T. 205-206v2

Page 2 of 4
https://www.waihona.com/purchase.asp 10/22/2014

Claim 732, Kuinui, February 23 [1848]

Umi, sworn, I know this land it is in Leleo, Honolulu aina. It consists of two parts, i.e. house lot & kalo land.

1. The house lot is bounded:
Mauka & Waititi by alaala water course
Ewa by Kukuwai
Makai by land of Kulauuka.

It is fenced & has 3 houses on it; two of which are claimants and one is Kamakakoa's. Claimant got his title in 1828 from Malaikoa and has occupied it in peace ever since.

N.T. 527-528v2

No. 732, Kuinui

Umi, sworn by the Bible and stated, "I have seen this place. It is at Leleo in Honolulu district.
Aala is on the Waikiki and toward the mountainside
Kuluahi's lot, Ewa and
Kulauka is toward the sea.

This place has been enclosed and there are three houses on the inside. Kuinui had received his interest from Malaekoa. Probably that was the year 1828 and he has lived there since that time to this day. I have also known that Kuinui also has taro land at Kapalama;
Kiwini's lot is Waikiki
Naluaii's lot, toward the mountain
He (Kuinui) is on the Ewa side and
Paoaaloa, toward the sea.

Kuinui's interest is from Keaniani and he had this land in the year 1834. Kanoa is the konohiki at this time and has four patches. I have not known that anyone has objected to Kuinui, altho' he is working for the konohikis at this time.

See page 536

N.T. 536v2

No. 732, Kuinui, From page 527, February 23 [1848]
Haikauai, sworn by the Bible and stated, "My testimony of the house lot and the taro land of Kuinui is the same as the statements of Umi which have been read here, and I believe they are very authentic.

Page 527

[Award 732; R.P. 2465; Leleo Honolulu Kona; 1 ap.; .56 Ac.; R.P. 2465 & 6726; Kapalama Kona; 2 ap.; 1.55 Acs]

A.2 LCA 918 (to Upai)

To the Land Commissioners, Greetings: I hereby tell you of my house lot claim at Iwilei in Honolulu. The boundaries are: north, the lot of Kanakanui, east, the lot of Kalaeloa, South, the lot of Haaliku, west, a road. I have occupied this place from the time of Kamehameha 1. It was infertile kula with spiny nohu weed, but at this time it has been improved and completely fenced and a house stands in it which is mine. I held it peacefully and at this time Kelliahonui is objecting. There are also some taro patches; there are three together in one place at Kumuhau in Kapalama, which adjoin the patches of Kauioao and Halulu which have been held peacefully under the konohiki.

I am, with thanks,

UPAI X

F.T. 263v2

Claim 918, Upai, 3 April [1848]

Kekai, sworn, This is a house lot in Honolulu aina, bounded:

Ewa by Kauahanui's place
Mauka by Kailailoa's
Waititi by Poaliku's
Makai by Kealiiahonu's waste land.

It is fenced and claimant has one house on it, who I know to have lived there without dispute ever since 1834. He [She] took it up as waste land.

Kalaeloa, sworn, confirmed the previous testimony and knew of no counter claim.

N.T. 605v2

No. 918, Upai, April 3 [1848]

Kekai, sworn and stated, "I have seen this place in Honolulu here adjoining to Kapalama and the boundaries are:

Kanakanui's land, Ewa
Kalaeloa's land, mountain-side  
the konohiki's land, oceanside and  
Koaliku's land, Waikiki.  

This place has been enclosed, it is idle and Upai has lived here in peace to this time."  
Kalaeloa, sworn and said, "I have seen this place and everything is just as Kekai has  
related here and no one has ever objected."  
N.T. 19v10  

No. 918, Upai, Land Office, 1 July 1851  
Kekai, sworn, he has seen his [her] land at Kumuohau, Kapalama - 3 taro patches in 1  
land section.  
Mauka and Waikiki, Makai by the king's land  
Ewa by a ditch.  
Land from Upai's husband named Kealaiki. He had received it from Oliver Holmes at  
the time of Kamehameha I. No disputes to the present.  
Kaiuiaao, sworn, both known in the same way.  
[Award 918; R.P. 4428; Iwilei Honolulu Kona; 1 ap.; .2 Ac.; R.P., 691; Kumuulu  
Kapalama Kona; 1 ap.; .4 Ac.]
Common / Present Name: Halona Street Bridge
Historic Name: Vineyard Street Bridge

Address: Halona Street at Kapalama Drainage Canal
City/ Town/ Location: Honolulu
County: Honolulu

TMK [(X)-X-X-XXX:XXX]: between (1)-1-6-006:030 on northwest and (1)-1-6-006:047 on southeast
Subdivision/Neighborhood: n/a
Latitude: 21d-19m-36.85s N
Longitude: 157d-52m-02.37s W

Original Use: Vehicular bridge
Current Use: Vehicular bridge

Architect/ Builder (if known): Department of Public Works, Bureau of Plans, City and County of Honolulu, C.T. Loo, engineer.
Date of Construction (if known): 1938
Alterations (additions, etc.) if known: The five span, 1938 bridge was altered in 1963 when the adjacent H1 freeway was constructed. The southwest parapet and end stanchions were removed and the roadway width reduced from about 40' to 26'-6". The abandoned sidewalk on the southwest side that abuts the H1 freeway concrete barrier is likely the original sidewalk from the 1938 bridge. The curb edge of this abandoned sidewalk is about 40' from the curb at the opposite sidewalk at the extant bridge parapet. This corresponds to the approximate 40' roadway width in 1938 when the bridge carried Vineyard Street. It is likely that the bridge parapet that was removed ca. 1963 was at about the position of the current H1 freeway concrete barrier.

Original Location, if moved: ______
Reason for move (if known): ______

Condition:
- Excellent
- Good
- Fair
- Deteriorated

Condition Explanation: ______

Eligibility (select all that apply):
- National Register of Historic Places
- State Register of Historic Places
- Not Eligible
- Eligible
HAWAI? 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.

- Listed
- Contributing to Historic District:
  Name of District:
- Unknown

Criteria of Significance (select all that apply)
- A: Associated with Events
  Event: Development of Vineyard St. and Kapalama Canal.
- B: Associated with Significant Person(s)
  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. Explain: ______

Halona Bridge, view facing northwest

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials (please check those materials that are visible):</td>
</tr>
<tr>
<td>Height</td>
</tr>
<tr>
<td>- Stories: ______  N/A  Other: bridge</td>
</tr>
<tr>
<td>- Below Ground  Other: bridge</td>
</tr>
<tr>
<td>Exterior Walls (siding):</td>
</tr>
<tr>
<td>- Aluminum Siding  Log  Vinyl Siding  Engineered Siding</td>
</tr>
<tr>
<td>- Asbestos  Metal  Plywood</td>
</tr>
<tr>
<td>- Brick  Shingles-Asphalt  OSB</td>
</tr>
<tr>
<td>- Ceramic  Shingles-Wood  Fiberboard</td>
</tr>
<tr>
<td>- Concrete  Stone  Fiber Cement</td>
</tr>
<tr>
<td>- Horizontal Wood Siding  Stucco  Other: ______</td>
</tr>
<tr>
<td>- Vertical Wood Siding</td>
</tr>
<tr>
<td>Roof:</td>
</tr>
<tr>
<td>- Asphalt, shingle  Metal  Ceramic Tile</td>
</tr>
<tr>
<td>- Asphalt, roll  Slate  Wood Shingle</td>
</tr>
<tr>
<td>- Other: ______  Built Up  None</td>
</tr>
<tr>
<td>Foundation:</td>
</tr>
<tr>
<td>- Brick  None – on earth  Stone</td>
</tr>
<tr>
<td>- Concrete Block  Poured Concrete  Other: ______</td>
</tr>
<tr>
<td>- Concrete Slab  Raised/Pile</td>
</tr>
<tr>
<td>Structural Support:</td>
</tr>
<tr>
<td>- Baled Hay  Frame-wood  Puddled Clay</td>
</tr>
<tr>
<td>- Concrete Block  Frame-metal/steel  Rammed Earth</td>
</tr>
<tr>
<td>- Concrete Framed  Brick-load bearing  Sod</td>
</tr>
<tr>
<td>- Concrete Poured  Stone-load bearing  Other: ______</td>
</tr>
<tr>
<td>Windows:</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Double Hung Sash</td>
</tr>
<tr>
<td>Stained Glass</td>
</tr>
<tr>
<td>Replacement</td>
</tr>
<tr>
<td>Jalousie</td>
</tr>
<tr>
<td>Glass Block</td>
</tr>
</tbody>
</table>

| Lanai(s): | | | |
| --- | --- | --- | |
| Arcade | Balcony | Porte-Cochere | Recessed |
| | | | |
| Stoop | Portico | Verandah | Wrap-around |
| | | | |
| None | Other: | |

| Chimney: | | | |
| --- | --- | --- | |
| Brick | Concrete | Stuccoed Masonry | |
| | | | |
| Stone | Stove Pipe | Siding | |
| | | | |
| None | Other: | |

FOR SHPD USE ONLY: Site # Click here to enter text. TMK # Click here to enter text.
Narrative Description:

The Halona Street Bridge (Feature MAI A) is a 108' long, five span, reinforced concrete deck bridge that carries the two traffic lanes of Halona Street one way over the Kapalama Drainage Canal in the Kalihi-Palama neighborhood of Honolulu. The overall width of the bridge includes the 26'-6" wide roadway and a 7'-2" wide sidewalk at the upstream (northeast) side of the bridge. The bridge has only one parapet at the upstream side. The other was removed ca. 1963 for the construction of the H1 freeway bridge.

The setting of the bridge is urban with the H1 freeway paralleling Halona Street and abutting the bridge on the southwest side. The upstream sides of the Kapalama Drainage Canal are lined with roughly coursed concrete rubble masonry. To the northeast (upstream) there is a wide view along Kokea and Kohou Streets upstream to where the canal ends at the mouth of Kapalama Stream and the junction of an unnamed drainage channel. Houses line Kokea and Kohou Streets. In the distance, the Koolau Range is visible.

The 3'-3" high concrete parapet of the Halona Street Bridge has narrow arched openings that are typical of 1930s concrete bridges in Hawaii. The arched openings are 6" wide and 1'-2" high and are on 1' horizontal spacing and are set in a 1'-9" high portion of the parapet that is between the 7" high cap rail and the 11" high (typical) base. The parapet is 88'-6" long between the end stanchions which are curved in plan. Each end stanchion is about 3'-6" high on a 9'' high (typical) base and is about 1'-10" thick. The curving end stanchions measure about 5'-9" around the front curve and about 4'-3" around the rear curve. Each has a large incised panel, 5' wide x 2' high that has the inscription "KAPALAMA CANAL" or "1938" in 3" high block letters.

The Halona Street roadway has one 14' wide lane and one 12'-6" wide lane. Both lanes are northbound, Halona Street is one way. Off the Halona Street roadway on the southwest side, a curb leads to a 13'-8" wide strip of level earth that is sparsely planted with grass and short weeds. This strip has a chain-link fence, about 6' from the Halona Street curb, which prevents entry to the H1 freeway. At the southwest side of the earth strip, on the freeway side of the fence, is an abandoned sidewalk about 6' or 7' wide that is abutted on the southwest side by the concrete traffic barrier of the freeway. The outer two spans of the five-span bridge are each about 25' and the three center spans are each about 16'. The bridge has concrete abutments. The concrete rubble masonry of the canal lining begins at the edge of the abutments. Four transverse beams on concrete piles driven into the bed of the canal support the bridge. The beams have chamfered noses on their upstream ends and the concrete piles are typically 1' square and set on about 8' spacing.

Halona Street Bridge is bridge number 003000H10202075 in the National Bridge Inventory database. It was last inspected on June 26, 2013 by the State of Hawaii, Department of Transportation, Highways Division.

Integrity: The ca. 1963 construction of the adjacent H1 Freeway has removed about half of the bridge, only the upstream parapet, sidewalk, and two traffic lanes remain. The bridge is on its original location, but all other
aspects of integrity have been reduced by the freeway construction and removal of the bridges historic fabric. The bridge does not retain the integrity necessary for eligibility to the National Register of Historic Places.

Nearby Resources:

Within the Area of Potential Effect (APE), additional resources were identified:

Feature MAI B: Kapalama Drainage Canal including lava rock lining walls. Location: The canal extends under the bridge in a general northeast to southwest orientation. Lava rock lining walls are upstream of Halona Street Bridge, and downstream of the H1 and Olomea Street bridges. Description and evaluation: The Kapalama Drainage Canal extends from Honolulu Harbor about 1 3/8 miles to Kapalama Avenue. The Halona Street Bridge is about ¾ mile from the harbor. For most of its length, from the harbor to a fork in the canal that is about 350' above the Halona Street Bridge, the canal is between about 60' to 100' wide. At the fork, the main branch of the canal extending north toward Kapalama Street is about 35' wide. The lesser channel, extending east along Kokea Street is about 15' wide.

The canal typically has 6' high earthen banks below King Street. Above King Street the canal is channelized with hardened side walls of lava rock and concrete mortar that are about 8’ high. The walls feature faced stones set in rough courses with protruding, V-profile mortar joints.

The Kapalama Drainage Canal was completed in February 1939 after about a year of construction by the Hawaiian Contracting Company. Planning for the canal dates to the early 1920s when the potential commercial value of the low-lying land of the Kapalama area was recognized. Beginning in 1924, dredging spoils from Honolulu Harbor were used to fill about 11 acres of a 58-acre section makai of Vineyard Street that had been condemned by the Territory Board of Health as unsanitary. Spoils from the 1925-26 dredging of the Kapalama Basin were used to bring the remaining acreage up to grade level. Along with this filling project, the City and County of Honolulu formed a drainage plan to prevent heavy rains from inundating the new land. This design combined the two streams of the area, Niuhelewai and Kapalama in to the Kapalama Drainage Canal, that was ultimately routed along the approximate contour of Niuhelewai Stream.

The plans for the canal languished until late 1937 or early 1938, when construction got underway. The canal and stonework was accomplished under a Works Progress Administration (WPA) project that built the Kapalama Drainage Canal. A WPA grant of $310,000 partially funded the overall $670,000 cost of the canal. Most of the balance was funded by bond sales by the City and county of Honolulu and from the flood control fund of the city and county.

The Kapalama Drainage Canal and its lava rock and concrete side walls are evaluated as potentially eligible for the National Register under Criterion A for their association with WPA projects in Hawaii and under Criterion C as an example of vernacular building materials.
During the field inspection of Halona Street/ Vineyard Boulevard for a distance of up to about ½ mile on either side of the Halona Street Bridge the following features were noted which are outside the APE.

Feature MAI C: On Tong Tung Heong Society building, 544 N. Vineyard Blvd. (TMK 1-7-032: 082). Location: About ½ mile southeast of the Halona Street Bridge on Vineyard Blvd. Description and evaluation: This two-story, residential-scale building, built in 1937, is of wood construction with a gable roof. It has a projecting second floor lanai over the front entry that is supported by paired, square columns. This building is outside the APE and was not evaluated for eligibility for the National Register of Historic Places.

Feature MAI D: Buck Toy Club building, 572 N. Vineyard Blvd. (TMK 1-7-032: 025). Location: About 2200’ south east of the Halona Street Bridge on Vineyard Blvd. Description and evaluation: This 1957 building, designed by Honolulu architect Ray Akagi, is two-story, built of concrete block with retail spaces on the first floor and areas for club members on the second floor. The building has a gablet on hip roof with “Orientalist” upturned corners and closed eaves that is covered with green glazed tiles. The front façade has a cantilevered canopy. An interior stairway has a moon gate entrance on the front façade that is closed by a Chinese-motif metal gate. The upper part of the front façade has two panels faced with thin courses of stone that flank three bays of windows with Chinese-detailed muntins. Each stone-work panel has a small window, and a small octagonal window is set in the second floor above the moon gate. All three of these small windows have Chinese-inspired decorative grilles. The sashes, muntins, and grilles of all windows, as well as the moon gate are painted bright red. This building is outside the APE and was not evaluated for eligibility for the National Register of Historic Places.

Feature MAI E: Palama Settlement, 810 N. Vineyard Blvd. (TMK 1-7-045: 001). Location: About 1100’ southeast of the Halona Street Bridge. Description and evaluation: Two large, two-story Greek Revival Style wooden buildings built ca. 1925 with full-height entry porch with square columns, broken pediment and rectangular transom at the entry. The buildings are outside the APE and were not evaluated for eligibility for the National Register of Historic Places.
Halona APE
Historic Resources
within the APE

MAI B
LAVA ROCK
WALLS

MAI A
HALONA ST.
BRIDGE

AREA OF POTENTIAL
EFFECT (APE)
Statement of Significance

Historical Context:

The Halona Street Bridge, in its present five-span form, was built in 1938 by the City and County of Honolulu under Job No. 44-37. This 1938 construction added two, approximate 25' spans on each side of the existing center three spans (approximately 16' spans). At the time of this 1938 construction, it carried Vineyard Street across the canal and was called the Vineyard Street Bridge. The original construction date for the older, three span bridge is not known, but it is likely to be ca. 1930, which is the date of construction for the Dillingham Boulevard bridge, about one mile downstream from the Halona Street Bridge. The Dillingham Boulevard Bridge was built about eight years before the Kapalama Drainage Canal was built (1938). The canal banks at Dillingham are earth and not stabilized with retaining walls, as are the banks at Halona Street. It appears that the 1938 canal was built under the Dillingham Bridge without disturbing it. At Halona Street (Vineyard) in 1938 when the canal was built, the existing 3 span bridge was lengthened with two additional spans to cross the canal between its newly built lava rock retaining walls. The stabilization of the banks of the canal using the lava rock retaining walls was extended downstream to the King Street Bridge (1938).

At the time of the 1938 construction, the older parapets of the bridge (of unknown design) were removed and parapets with arched openings and curved end stanchions were built. The 1938 bridge was about 56’ wide.

Original drawings for the five span (1938) bridge are dated November 17, 1937. They were produced by the Department of Public Works, Bureau of Plans, City and County of Honolulu and are signed by the City and County Engineer, B. F. Rush. The engineer of the bridge is indicated in the title block as C. T. Loo.

Significance Statement:

Halona Street Bridge is not included in the November 2013 Hawaii State Historic Bridge Inventory and Evaluation by MKE Associates, LLC, and Fung Associates, Inc. It is also not included in the 1983 Historic Bridge Inventory, Island of Oahu by Bethany Thompson.

Although the Halona Street Bridge is significant under Criterion A for its association with the transportation history of the area, it does not appear to be eligible for the Hawaii or National Register of Historic Places due to a lack of integrity of its 1938 form. This is due to the ca. 1963 removal of the southwest parapet, reduction of roadway width, and construction of the adjacent H1 Freeway.

References

Drawings:

Historic drawings are available at the Hawaii Department of Transportation, Highway Design Section database as electronic scans. These include:
Job No. 44-37 Kapalama Drainage, 5 sheets. Dated 1937

FAP No. U-072-1(3) Lunalilo Freeway, 106 sheets. Dated 1963

Sources:


City Planning Commission, City and County of Honolulu, map "Proposed Street Plan Kapalama Section," December 1922.


"Delay Seen On Flood Project." Honolulu Advertiser. October 1, 1937. p. 3.


TO:  THE HONORABLE SUZANNE CASE, CHAIRPERSON  
DEPARTMENT OF LAND AND NATURAL RESOURCES  

ATTN:  SUZANNE CASE  
STATE HISTORIC PRESERVATION OFFICER  

FROM:  J. MICHAEL WILL, P.E.  
PROJECT MANAGER  

SUBJECT: NATIONAL HISTORIC PRESERVATION ACT, SECTION 106 AND HAWAII REVISED STATUTES, CHAPTER 6E CONSULTATION  
HALONA STREET (KAPALAMA CANAL) BRIDGE REPLACEMENT PROJECT  
HONOLULU (KONA) DISTRICT, OAHU ISLAND, KAPALAMA AHUPUAA  
PROJECT NO. HI STP H1 (1)  
TAX MAP KEY: (1)1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal)  
(1)1-6-006 (Halona Street, Kokea Street, Kohou Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal)  

Dear Ms. Case:

The Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), in partnership with the State of Hawaii Department of Transportation (HDOT), is proposing to replace the Halona Street Bridge over the Kapalama Canal on Hawaii State Highway 98 (HI-98) adjacent to Interstate H-1 (H-1), also known as Halona Street, at Mile Post 20.21 (see attached Area of Potential Effects [APE] U.S. Geological Survey map for project location). The proposed project is considered a federal action and undertaking, and will comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006), as well as Hawaii Revised Statutes (HRS) Chapter 6E. This letter is to initiate consultation with the State Historic Preservation Division (SHPD) under Section 106 in accordance with Title 36 of the Code of Federal Regulations (CFR), Section 800.3, and with HRS Chapter 6E-8.  

Overview of the Undertaking  
The proposed project would replace the existing Halona Street Bridge and its approaches to maintain the Kapalama Canal crossing on Halona Street as a safe and functional component of the regional transportation system for roadway users.  

The existing Halona Street Bridge would be demolished and removed. The replacement bridge would be a precast three-span bridge with a total length of approximately 131 feet. The bridge
would have a deck width of 39 feet and a depth of 2.5 feet. The new bridge would raise the road profile slightly higher than the existing bridge but would be narrower because of the removal of the landscaped buffer that sits atop the existing bridge deck.

The four existing piers would be removed and replaced with two piers that would be aligned with the two existing and adjacent H-1 bridge piers. The pier shapes would be similar to the existing H-1 bridge piers. The proposed new bridge abutments would be set back from and behind the existing abutments. The tops of the existing abutments would be cut down to accommodate the deeper bridge girders. The canal’s lava rock lining walls, which are located upstream of the Halona Street Bridge and downstream of the H-1 and Olomea Street bridges, would be retained and protected in place adjacent to the bridge; however, removal of the existing bridge features may result in some physical damage to the lava rock walls. The existing Kapalama Canal and its lava rock lining walls have been determined by FHWA to be eligible for listing on the National Register of Historic Places (NRHP) (see eligibility discussion below). Photos will be taken prior to the start of construction. If the walls are physically affected during construction, the stone will be salvaged and repaired to match its existing condition.

The proposed improvements would occur within the existing HDOT right-of-way. In addition, 0.44 acre of land would be needed from four temporary construction parcels owned by the City of Honolulu to accommodate bridge construction and paving improvements. One of these parcels, the Kapalama Canal, is eligible for listing on the NRHP.

Staging of personnel and equipment would occur within the project limits. Possible staging areas are located along Halona Street (on pavement) north and south of the bridge, as well as areas adjacent to the Kohou Street and Kokea Street intersections. The work area would be accessed from the sides of the canal. Construction would occur within the Kapalama Canal under the Halona Street Bridge.

The Halona Street Bridge would likely be closed to vehicular traffic for the duration of the project, and traffic would be detoured during this time. However, pedestrian and bicyclist access would be maintained in a temporary pedestrian route within the existing landscaped area between the construction work and the H-1 freeway. Access to the H-1 on-ramp would be maintained during construction. Archaeological monitoring will be conducted for all initial ground disturbance and excavation activities during construction.

Area of Potential Effects
The archaeological and historic architectural APE are illustrated in the attached APE Aerial Imagery map, and includes both temporary and permanent impact areas. The APE was developed to be sufficiently large to accommodate potential improvements on the other side of H-1; however, none were identified as necessary. The APE comprises 1.5 acres and includes the following TMKs: (1)1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal), and (1)1-6-006 (Halona Street, Kokea Street, Kohou Street and H-1 Interstate Highway Rights-of-Way, and Kapalama Canal).

Determination of Eligibility
Pursuant to NHPA Section 106 and HRS Chapter 6E-8, a cultural resources investigation was performed within a field survey area that included the project’s APE. The cultural resources investigation comprised an archival literature review, an architectural reconnaissance survey, and an archaeological inventory survey. The surveys identified two resources within the APE: the Halona Street Bridge (SIHP #50-80-14-7807) and the Kapalama Canal and associated lava rock walls (SIHP #50-80-14-7808). The surveys did not identify any new archaeological or
architectural resources within the APE. FHWA believes all historic properties with potential to be affected by the undertaking have been identified.

The Halona Street Bridge lacks integrity and is evaluated by Mason Architects as not eligible for listing on the NRHP or the Hawai‘i Register of Historic Places (HRHP). Mason Architects evaluated the Kapalama Canal and its lava rock walls as eligible for the NRHP and HRHP under Criterion A and Criterion C.

FHWA is in agreement with the recommendations of Mason Architects and has therefore determined that SIHP #50-80-14-7808, the Kapalama Canal and associated lava rock walls, is eligible for the NRHP under Criterion A for its association with Works Project Administration projects in Hawaii and Criterion C as an example of vernacular building materials. FHWA has also determined that the Halona Street Bridge (SIHP #50-80-14-7807) lacks integrity and is therefore not eligible for listing on the NRHP.

Detailed information on the cultural, archaeological, and historical settings of the project area and the evaluation of eligibility are provided in two studies prepared for this project, included on the enclosed CD:

1. Draft Archaeological Inventory Survey Report for the Halona Bridge Replacement Project, Kapalama Ahupu‘aa, Honolulu District, Oahu
2. SHPD Historic Resource Inventory Form (Reconnaissance Level) for Halona Bridge

**Determination of Effects**

FHWA has determined that the undertaking will result in a **No Adverse Effect** finding on the Kapalama Canal (SIHP #50-80-14-7808) in accordance with Federal regulations (36 CFR 800.5). In addition, FHWA and HDOT have determined the project will result in an **Effect, With Agreed Upon Mitigation** finding on the Kapalama Canal in accordance with HAR §13-13-275-7. The removal of the existing bridge superstructure that is in contact with the lava rock lining walls may cause minor and incidental damage to the Kapalama Canal wall on the upstream east and upstream west portions of the bridge abutments. The area in contact with lava rock lining walls is approximately 13 square feet at each location to total 26 square feet. Every effort will be made to not impact the lava rock lining walls. Photos of the lava rock walls will be taken prior to the start of construction. In the event of cracked mortar or loosened lava rock stones they will be salvaged and replaced and the mortar restored to match the existing condition.

A detailed Determination of Effects memorandum is enclosed with this letter.

As part of the environmental process for this undertaking, FHWA must also comply with Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966. The intent of the Section 4(f) Statute, 49 U.S.C. Section 303, and the policy of the FHWA is to strive to avoid transportation use of historic sites and publicly owned recreational areas, parks, wildlife and waterfowl refuges. However, the legislation states that a transportation project may be approved if it results in a **de minimis** impact. As defined in FHWA’s implementing regulations (23 CFR 774), “for historic sites, **de minimis** impact means that the FHWA has determined, in accordance with 36 CFR part 800, that no historic property is affected by the project or that the project will have ‘no adverse effect’ on the historic property in question.” This project has been determined to have **no adverse effect** on the Kapalama Canal. Based on the findings outlined above, FHWA-CFLHD may make a **de minimis** finding for the Section 4(f) requirements for the Kapalama Canal.
Consultations
Section 106 notice/advertisement was published in the Honolulu Star-Advertiser on July 24, 2015. Native Hawaiian Organizations and Native Hawaiian descendants with ancestral, lineal, or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area were asked to provide a response within 30 days of notification.

Section 106 consultation letters were sent to the following organizations as potential consulting parties:

- Office of Hawaiian Affairs
- Kalihi Palama Hawaiian Civic Club
- Hawaiian Civic Club of Honolulu
- Koolauloa Hawaiian Civic Club
- Oahu Island Burial Council
- Paulette Kaanohiokalani Kaleikini
- Historic Hawaii Foundation

Request for Concurrence
We request your concurrence with the APE and Determinations of Eligibility and Effects. We would appreciate a written response within 30 days from date of receipt, by email at Michael.will@dot.gov or by U.S. Postal Service to 12300 West Dakota Avenue, Suite 380A, Lakewood, CO 80228-2583.

Please feel free to contact Nicole Winterton, Environmental Protection Specialist, at (720) 963-3689 or by email at nicole.winterton@dot.gov, if you have any questions. We look forward to working with the SHPO on these needed improvements.

Sincerely yours,

J. Michael Will, P.E.
Project Manager

Enclosures:
- Area of Potential Effects (USGS Map)
- Area of Potential Effects (Aerial Imagery)
- Determination of Effects Memorandum, with attached design drawings
- On CD: Draft Archaeological Inventory Survey Report for the Halona Bridge Improvements Project, Kapalama Ahupuaa, Honolulu District, Oahu
- On CD: SHPD Historic Resource Inventory Form (Reconnaissance Level) for Halona Bridge

cc (with enclosures on CD):

Kevin Ito, HDOT
Todd Nishioka, HDOT
Jessica Puff, SHPD
Susan Lebo, SHPD
Draft

Cultural Impact Assessment for the
Halona Street Bridge (H-1 on-ramp at Vineyard Street)
Kapālama Ahupua‘a, Honolulu (Kona) District, O‘ahu,
Federal Highway Administration/
Central Federal Lands Highway Division (FHWA/CFLHD)
Contract DTFH68-13-R-00027
TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and
1-6-006 (Kapālama Canal)

Prepared for
CH2M HILL
and on behalf of the
Federal Highway Administration (FHWA)
Central Federal Lands Highway Division (CFLHD)

Prepared by
Nicole Ishihara, B.A.
and
Hallett H. Hammatt, Ph.D.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: KAPALAMA 25)

December 2015
Management Summary

Reference

Cultural Impact Assessment Report for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama Ahupua‘a, Honolulu (Kona) District, O‘ahu, Federal Highway Administration/Central Federal Lands Highway Division (FHWA/CFLHD) Contract DTFH68-13-R-00027, TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal) (Ishihara and Hammatt 2015)

Date

December 2015

Project Number(s)

- FHWA/CFLHD Contract Code: DTFH68-13-R-00027
- CH2MHILL Project Task ID: 499069.10SU.CS
- Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAPALAMA 25

Agencies

FHWA/CFLHD, SHPD

Land Jurisdiction

State Department of Transportation (HDOT)

Project Proponent

FHWA/CFLHD, HDOT

Project Funding

FHWA/CFLHD

Project Location

The study area is located within Kapālama Ahupua‘a at the location of the Halona Street Bridge and the Kapālama Canal and includes portions of the H-1 Interstate Highway and Halona Street from the intersection of Kuipakaeka Lane to just beyond Kohou Street. The study area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.

Project Description

The purpose of the project is to replace the existing bridge to meet current design standards for roadway width, load capacity, pedestrian traffic, bridge railing and transitions, and bridge approaches. The existing bridge was built in 1938. It was determined that this bridge shall be replaced due to the existing superstructure conditions. A single span bridge is preferred, but if additional vertical clearance is needed, a reduced structure depth could be accommodated by using a multiple-span bridge with pier locations matching H-1’s pier locations in the channel. New abutments are proposed to be located behind existing abutments to match the H-1 abutment locations and minimize impacts to the masonry walls along the channel. The proposed bridge width is approximately 46 feet (ft). A bridge barrier study will be performed as part of the project development to consider a variety of types and shapes to meet TL-3 requirements. The bridge railing height will be a minimum of 3 ft 6 inches. Additional bridge width and features will be explored to restrict access to the underside of the bridge. Foundations for the new bridge are expected to consist of deep foundations.

Project Acreage

The study area includes approximately 4.9 acres.
Document Purpose

This CIA was prepared to comply with the State of Hawai‘i’s environmental review process under 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 for this project yielded the following results (presented in approximately chronological order):

1. Kapālama is often understood to refer to an enclosure (pā) of *lama* wood that surrounded the residences of high ranking *ali‘i* (chief) (Pukui et al. 1974:87). McAllister (1933:88) relates that Kapālama is said to obtain its name from an establishment for young *ali‘i* who were paired off for offspring. Westervelt (1923:165) attributes the place name to a chiefess of O‘ahu named Kapālama, the grandmother of Lepeamoia.

2. Kapālama Ahupua‘a consists of two streams: Kapālama and Niuhelewai (“coconut going [in] water”). The two streams merge and extend through the central fertile former taro and rice fields draining into Kūwili II, a fishpond. Other fishponds within Kapālama include Loko Kapukai and Loko Kealia. Pukui et al. (1974) did not offer any translations, however, the word *keālia* is the word for “salt bed,” which may indicate that at least one of these ponds was used for salt collection.

3. Two accounts of warfare occurred in Kapālama: Kahahawa‘i defeated Kahāhana with Niuhelewai as the location of the battle; and the rebellion of the ‘Ewa and Kona chiefs, which occurred after Kahāhana’s death. The latter battle took place at Makaho and Niuhelewai streams as well as Kahoha‘ai’ai Stream in ‘Ewa.
4. LCA testimonies for Kapālama Ahupua’a indicate intense taro cultivation of the area, maintenance of fishpond, habitation, and some use of kula (pasture, plain) lands. Large areas were also set aside for the cultivation of rice.

5. An area known as Kaiwi‘ula within Kapālama Ahupua’a was chosen for the first Kamehameha School for Boys, which opened in 1887. The construction of a principal’s house, dormitories, faculty housing, a preparatory school, dining hall, kitchen, school shops, and administrative buildings followed the opening of the school.

6. Charles Bishop was interested in preserving artifacts and personal treasures of his late wife, Bernice Pauahi Bishop, as well as the late Queen Emma who willed these possessions to him with the condition of curating these items and naming it the Kamehameha Museum. The trustees of the Bishop Estate chose a site near the Kamehameha School for Boys. The museum was housed in Bishop Hall and opened in 1891. In 1894, Polynesian Hall was added; in 1903, Hawaiian Hall opened; in 1911, Pākī Hall was added; and in 1925 the Konia Hall.

7. In 1947, the Kamehameha Schools moved their campus to Kapālama Heights and the former school grounds were transferred to the Bishop Museum Trust. In 1980, Bishop Hall was formally transferred to Bishop Museum.

8. The construction of the H-1 Interstate Highway began during the 1960s from Fort Shafter to Houghtailing Street. It was the first time federal monies were being used in Hawai‘i to construct an interstate highway system.

9. There have been no previous archaeological studies or State Inventory of Historic Properties (SIHPs) reported within the current study area. However, several burial sites (SIHP #s 50-80-14-3373, subsurface cultural deposit and burial; and -4929, coffin burial) were found south of the project area.

10. Several historic properties found in the vicinity of the project area also reflect the diverse pre-Contact (SIHP # 50-80-14-5368, Kuwili Fishpond) and post-Contact (SIHP # 50-80-14-7506, subsurface incinerated trash deposit) history of the area and the shift in the cultural landscape of Kapālama.

<table>
<thead>
<tr>
<th>Results of Community Consultation</th>
<th>CSH attempted to contact Native Hawaiian Organizations (NHOs), agencies, and community members. Consultation was received from the following community members:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Jan Becket, retired Kamehameha Schools teacher, author, photographer, knowledgeable in cultural sites, Kona Moku Representative for the Committee on the Preservation of Historic Sites and Cultural Properties</td>
<td></td>
</tr>
</tbody>
</table>
2. Melvin Ishihara, former Executive Director of the Public Utilities Commission and former resident of Kapālama Ahupua‘a
3. DeSoto Brown, historian at Bishop Museum

Impacts and Recommendations

Based on information gathered from the cultural and historic background, the proposed project may potentially impact undetected ʻiwi kūpuna (ancestral bones). CSH identifies potential impacts and makes the following preliminary recommendations. Please note that CSH is still awaiting approval of an interview transcription and summary that was conducted for this study and the impacts and recommendations may change pending approval of interview transcriptions and summary.

1. Māhele documents indicate the vicinity and a portion of the project area was once under intense habitation and cultivation by. Previous archaeology conducted south of the project area has yielded ʻiwi kūpuna (SIHP # 50-80-14-3373 and -4929). However, no archaeology has been conducted within the project area. Based on these findings, there is a high possibility ʻiwi kūpuna may be present within the project area and that land-disturbing activities during construction may uncover presently undetected burials or other cultural finds. Should burials (or other cultural finds) be encountered during ground disturbance or via construction activities, all work should cease immediately and the appropriate agencies should be notified pursuant to applicable law, HRS §6E.
Table of Contents

Management Summary ........................................................................................................................................ i

Section 1 Introduction ....................................................................................................................................... 1
  1.1 Project Background ................................................................................................................................. 1
  1.2 Document Purpose ................................................................................................................................. 1
  1.3 Scope of Work .......................................................................................................................................... 5
  1.4 Environmental Setting ............................................................................................................................ 5
    1.4.1 Natural Environment .......................................................................................................................... 5
    1.4.2 Winds, Rains, and Seas of Kapālama .............................................................................................. 7
    1.4.3 Built Environment .............................................................................................................................. 8

Section 2 Methods ........................................................................................................................................ 9
  2.1 Archival Research .................................................................................................................................... 9
  2.2 Community Consultation ....................................................................................................................... 9
    2.2.1 Scoping for Participants .................................................................................................................. 9
    2.2.2 “Talk Story” Sessions ...................................................................................................................... 9
    2.2.3 Interview Completion ...................................................................................................................... 10

Section 3 Ka‘ao and Mo‘olelo ..................................................................................................................... 11
  3.1 Traditional Legends .................................................................................................................................. 11
    3.1.1 Kapālama and Lepeamoa, the Bird Maiden of Pālama ................................................................ 11
    3.1.2 Legend of Palila ............................................................................................................................... 12
    3.1.3 Keanakamanō, the Cave of the Shark ............................................................................................ 13
  3.2 Wahi Pana (Legendary Places) ............................................................................................................. 13
    3.2.1 Pōhaku in Kapālama ....................................................................................................................... 14
    3.2.2 Fishponds of Kapālama and Iwilei ............................................................................................... 16
  3.3 ‘Ōlelo No‘eau (Proverbs) ....................................................................................................................... 16
    3.3.1 ‘Ōlelo No‘eau #1732 ...................................................................................................................... 16
    3.3.2 ‘Ōlelo No‘eau #2918 ...................................................................................................................... 17
  3.4 Oli (Chants) ........................................................................................................................................... 17
    3.4.1 The Epic Tale of Hi‘iakaikapoi opele ............................................................................................... 17
  3.5 Mele (Song) ............................................................................................................................................ 18
    3.5.1 Pu‘u honua Nani Beautiful Refuge ............................................................................................... 18
    3.5.2 Moanalua Moanalua ......................................................................................................................... 19
    3.5.3 Pua Hē‘ī Papaya Flower ................................................................................................................ 20

Section 4 Traditional and Historical Accounts ............................................................................................ 21
  4.1 Traditional Accounts of Battles at Niuhelewai Stream in Kapālama ................................................... 21
    4.1.1 Kahahawaʻi’s Defeat of Kahāhana (AD 1780-1783) ..................................................................... 21
    4.1.2 The Rebellions of the ‘Ewa and Kona Chiefs (post-1783) ............................................................ 21
  4.2 Early Historic Period ............................................................................................................................... 22
  4.3 The Māhele and the Kuleana Act ......................................................................................................... 26
  4.4 Mid- to Late 1800s .................................................................................................................................. 32
  4.5 1900s ..................................................................................................................................................... 37
    4.5.1 Residential and Commercial Development ............................................................................... 37
  4.6 Previous Archaeological Research ......................................................................................................... 47
    4.6.1 Palama Fire Station (Neller 1980) ................................................................................................. 47
    4.6.2 Dunn et al. 1991 ............................................................................................................................. 54

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)
### Section 5 Community Consultation

5.1 Introduction........................................................................................................ 58
5.2 Community Contact Letter .................................................................................. 58
5.3 Community Contact Table ................................................................................... 61
5.4 Kama‘aina Interviews ...
  5.4.1 Melvin Ishihara ................................................................................................. 64
  5.4.2 Jan Becket ........................................................................................................ 67
  5.5 Summary of Kama‘aina Interviews ..................................................................... 67

### Section 6 Traditional Cultural Practices

6.1 Gathering of Plant Resources .............................................................................. 69
6.2 Burials.................................................................................................................. 69
6.3 Wahi Pana .......................................................................................................... 69
6.4 Trails .................................................................................................................... 70

### Section 7 Summary and Recommendations

7.1 Results of Background Research ....................................................................... 71
7.2 Results of Community Consultations .................................................................. 72
7.3 Impacts and Recommendations .......................................................................... 72

### Section 8 References Cited

- 4.6.3 Bishop Museum (Dixon 1993) ........................................................................... 54
- 4.6.4 Austin Lane, Kapālama (Jourdane 1994; Hammatt 1995) ................................ 54
- 4.6.5 Corner of North King and Houghtailing Streets (Nakamura et al. 1994) ....... 54
- 4.6.6 Kamehameha Homes Project, Kapālama (Borthwick et al. 1995) .................. 54
- 4.6.7 Kamehameha Heights, Puea and Ka‘ahumanu Cemeteries (McIntosh and Cleghorn 2006) ................................................................. 55
- 4.6.8 Kalihi/Nu‘uanu Sewer Rehabilitation Project (Hunkin et al. 2012) ............... 55
- 4.6.9 Walgreens Development Project, North School Street (Dey and Hammatt 2008) ......................................................................................... 55
- 4.6.10 Traffic Management System Project, Houghtailing Street by the H-1 (Burke et al. 2010) ................................................................. 55
- 4.6.11 Kalihi Beretania 24-Inch Water Main Project (Hammatt and Chiogioji 2008) 55
- 4.6.12 Kalihi/Nu‘uanu Sewer Rehabilitation Project (Hunkin et al. 2012) ............. 55
- 4.6.13 Honolulu High-Capacity Transit Corridor Project (Hammatt 2013) ............. 56
- 4.6.14 Kalihi Valley Sewer System Improvements, Kapālama (Hunkin and Hammatt 2013) ................................................................. 56
- 4.6.15 Medina and Hammatt 2013 ........................................................................... 56
- 4.6.16 Traffic Control Signal Improvements along Dillingham Boulevard (Medina et al. 2013) ................................................................. 56
- 4.6.17 Honolulu Community College (Panmer and McDermott 2014) ................. 56
- 4.6.18 Farrington High School (Stine et al. 2014) ..................................................... 57

### Appendix A Land Commission Awards

- A.1 LCA 732 (to Kuinui) ......................................................................................... 81
- A.2 LCA 918 (to Upai) .......................................................................................... 83
- A.3 LCA 1746 (to Nakaiikuana) ............................................................................. 84
- A.4 LCA 2266 (to Kuhiana) .................................................................................. 85
- A.5 LCA 2268 (to Kapahu) .................................................................................. 86
- A.6 LCA 2937 (to Wm. Harbottle) ........................................................................ 87

### Appendix B OHA Response Letter

### Appendix C Melvin Ishihara Transcription

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O'ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)

vi
List of Figures

Figure 1. Portion of the 1998 USGS 7.5-minute topographic Honolulu quadrangle showing the location of the study area .................................................................1
Figure 2. Tax Map Key (TMK) 1-6-002, showing study area at the H-1 Interstate Highway crossing at Kapālama Canal (Hawai‘i TMK Service) .................................................................2
Figure 3. TMK: 1-6-006, showing study area at the H-1 Interstate Highway crossing at Kapālama Canal (Hawai‘i TMK Service) .................................................................3
Figure 4. Aerial photograph (Google Earth 2013), showing study area at the H-1 Interstate Highway crossing at Kapālama Canal .................................................................4
Figure 5. 2013 aerial photograph (Google Earth 2013) with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972).........6
Figure 6. Paka‘alana Heiau in Kapālama Ahupua‘a (courtesy of Pacific Worlds) .................................................................15
Figure 7. 1817 map of south coast of O‘ahu by Otto von Kotzebue (1817) of the Russian ship Rurik, showing density of habitations and agriculture around Kapālama (The study area and map have been geo-referenced; the study area is located on a ridge, and it should be noted that this early map should be understood as a “sketch”).........23
Figure 8. 1855 map of Honolulu by Lt. Joseph de LaPasse of the French vessel, L’Eurydice (reprinted in Fitzpatrick 1986:82–83), showing lo‘i, habitations, and fishponds in Kapālama .......................................................................................................................24
Figure 9. Image by Robert Dampier, Fishponds of Honolulu, Oahu, ca. 1825 .................................................................27
Figure 10. 1885 Brown map of Kapālama depicting LCA parcels in the vicinity of the study area and the planned extension of the Vineyard Street right-of-way .................................................................29
Figure 11. 2013 aerial photograph with an overlay of land commissions awards in the vicinity of the study area (Google Earth 2013) .................................................................31
Figure 12. 1893 Wall map of Honolulu showing study area surrounded by rice fields .................................................................33
Figure 13. 1897 Monsarrat map of the Honolulu District showing the study area in a rice plantation .......................................................................................................................34
Figure 14. Photo of Kamehameha School for Boys, ca. 1933 .........................................................................................................................35
Figure 15. Photo of the Bishop Museum ca. 1889 .........................................................................................................................36
Figure 16. Photo of the Houghtailing sisters’ plantation home, now the location of Damien Memorial School., ca. 1912-1913 .................................................................................36
Figure 17. 1919 U.S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the study area .................................................................38
Figure 18. 1927 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the study area .................................................................39
Figure 19. 1933 U. S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the study area .................................................................40
Figure 20. 1943 U.S. Army War Department map, Honolulu Quadrangle showing commercial and residential development in Kapālama, near the study area .................................................................41
Figure 21. 1950 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the study area .........................................................................................42
Figure 22. 1952 aerial photograph showing study area .........................................................................................................................43
Figure 23. Portion of 1953 Honolulu USGS Topographic Quadrangle, showing commercial and residential development in Kapālama, near the study area .................................................................................44
Figure 24. 1978 USGS aerial photograph, Honolulu Quadrangle, showing commercial and residential development in Kapālama near the study area ............................................45
Figure 25. Previous archaeological studies within a 0.8-km (0.5-mile) radius of the study area ................................................................................................................................48
Figure 26. Previously identified historic properties within a 0.8-km (0.5-mile) radius of the study area .......................................................................................................................52
Figure 27. Community consultation letter, page one ..................................................................................................................................59
Figure 28. Community consultation letter, page two .................................................................................................................................60

List of Tables

Table 1. LCAs within the Project Area .................................................................................................................................30
Table 2. Construction Timeline of Hawaii 72, Later Renumbered as H-1 Interstate Highway ..........................................................46
Table 3. Previous Archaeological Studies within a 0.8-km (0.5-mile) Radius of the Study Area (arranged chronologically) ........................................................................................................49
Table 4. Previously Identified Historic Properties within a 0.8-km (0.5-mile) Radius of the Study Area ..................................................................................................................................53
Table 5. Results of Community Consultation ..........................................................................................................................61
Section 1  Introduction

1.1 Project Background

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) has completed this cultural impact assessment report for the Halona Street Bridge replacement project, Kapālama Ahupua‘a, Honolulu (Kona) District, O‘ahu, FHWA/CFLHD Contract DTFH68-13-R-00027, TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and [1] 1-6-006 (Kapālama Canal). The study area is located within Kapālama Ahupua‘a at the location of the Halona Street Bridge and the Kapālama Canal and includes portions of the H-1 Interstate Highway and Halona Street from the intersection of Kuipaka Lane to just beyond Kohou Street. The study area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), tax map plats (Figure 2 and Figure 3), and a 2013 aerial photograph (Figure 4).

The purpose of the project is to replace the existing bridge to meet current design standards for roadway width, load capacity, pedestrian traffic, bridge railing and transitions, and bridge approaches. The existing bridge was built in 1938. It was determined that this bridge shall be replaced due to the existing superstructure conditions. A single span bridge is preferred, but if additional vertical clearance is needed, a reduced structure depth could be accommodated by using a multiple-span bridge with pier locations matching H-1’s pier locations in the channel. New abutments are proposed to be located behind existing abutments to match the H-1 abutment locations and minimize impacts to the masonry walls along the channel. The proposed bridge width is approximately 46 feet (ft). A bridge barrier study will be performed as part of the project development to consider a variety of types and shapes to meet TL-3 requirements. The bridge railing height will be a minimum of 3 ft 6 inches. Additional bridge width and features will be explored to restrict access to the underside of the bridge. Foundations for the new bridge are expected to consist of deep foundations.

The study area includes approximately 4.9 acres (1.9 ha). For the purposes of this archaeological reconnaissance, the area of potential effect includes the entire 4.9-acre project area.

1.2 Document Purpose

The purpose of this CIA is to comply with the State of Hawai‘i’s environmental review process under Hawai‘i Revised Statutes (HRS) §343, which requires consideration of the 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 on 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
CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)

Figure 1. Portion of the 1998 USGS 7.5-minute topographic Honolulu quadrangle showing the location of the study area
Cultural Surveys Hawai‘i Job Code: KAPALAMA 25

Introduction

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

Figure 2. Tax Map Key (TMK) 1-6-002, showing study area at the H-1 Interstate Highway crossing at Kapālama Canal (Hawai‘i T MK Service)

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)
CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)
Figure 4. Aerial photograph (Google Earth 2013), showing study area at the H-1 Interstate Highway crossing at Kapālama Canal

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)
§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.

Due to federal funding, this project is a federal undertaking, requiring compliance with Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. The proposed project is also subject to Hawai‘i State environmental and historic preservation review legislation (HRS §343 and HRS §6E-8/HAR §13-275, respectively).

1.3 Scope of Work

The scope of work for this CIA includes the following:

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

Kapālama is a small valley which was once watered by two small streams, the Kapālama and Niuhelewai streams. The ahupuaʻa (land division) of Kapālama is pie-shaped with its apex at approximately 609 m (2,000 ft) AMSL (above mean sea level) on the ridge that separates Nuʻuanu and Kalihi valleys. The shore frontage (presently “Kapālama Basin”) is part of the Honolulu Harbor protected shoreline. In 1961, the development of the Kapālama Canal, which follows the lower course of Niuhelewai Stream, channelized the lower streams. Temperatures in the study area range from 60–90° F, while rainfall varies from 50–127 cm (20–50 inches) per year (Juvik and Juvik 1998:62–64).

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), soils within the study area include Kawaihapai stony clay loam, 2 to 6% slopes (KlaB), Hanalei silty clay loam, 0 to 2% slopes (HnA), and Ewa silty clay loam, moderately shallow, 0 to 2% slopes (EmA) (Figure 5).

Soils of the Kawaihapai Series are described as follows:

This series consists of well-drained soils in drainage-ways and on alluvial fans on coastal plains on the islands of Oahu and Molokai. These soils formed in alluvium
Figure 5. 2013 aerial photograph (Google Earth 2013) with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972)
derived from basic igneous rock in humid uplands. They are nearly level to moderately sloping. Elevations range from nearly sea level to 300 feet. The annual rainfall amounts to 30 to 50 inches. [Foote et al. 1972:63–64]

Soils of the Hanalei Series are described as follows:

This series consists of somewhat poorly drained to poorly drained soils on bottom lands on the islands of Kauai and Oahu. These soils developed in alluvium derived from basic igneous rock. They are level to gently sloping. Elevations range from sea level to 800 feet. The annually rainfall amounts to 20 to 120 inches. [Foote et al. 1972:38]

Soils of the Ewa Series are 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. 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. [Foote et al. 1972:29]

Vegetation observed within the study area includes California grass (*Urochloa mutica*), sensitive plant (*Mimosa pudica*), and Java plum (*Syzygium cumini*).

### 1.4.2 Winds, Rains, and Seas of Kapālama

Each small geographic area on O‘ahu had a Hawaiian name for its own wind, rain, and seas. The name of the winds of O‘ahu are listed in a chant concerning a powerful gourd called the wind gourd of La‘amaomao. When the gourd was opened, a specific wind could be called to fill the sails of a canoe and take the person in the desired direction. The chant lists the winds of the Honolulu area from east to west.

- Kukalahale is of Honolulu,
- ‘Ao‘oa is of Māmala,
- ‘Ōluniu is of Kapālama,
- Haupe‘epe‘e is of Kalihi,
- Ko-momona is of Kahauiki.

[Nakuina 1990:43]

The names of the seas of southeastern O‘ahu are listed in a chant for the high chief Kūali‘i, paramount chief of the Hawaiian Islands from 1720 to 1740 (Cordy 2002:19). From the east end of Waikīkī to the west boundary of the Kona district at Moanalua Ahupua‘a, the seas were as follows:

- A sea for surf swimming is Kahaloa [*sic*] [in Waikīkī]
- A sea for net fishing is Kalia [in Waikīkī]
- A sea for going naked is Mamala [mouth of Honolulu Harbor]
- A sea for swimming is Kapuuone [in Kapālama/Kalihi]
A sea for surf-swimming sideways is Makaiwa [in Kapālama/Kalihi]
A sea for catching ‘anae [mullet] is Keeia [in Moanalua]
A sea for crabs is Leleiwi [in Moanalua].
[Fornander 1980:390]

1.4.3 Built Environment

The study area is located within urban Honolulu. The study area’s built environment includes a portion of Halona Street, the Halona Street Bridge, and the Kapālama Canal. Halona Street is the former extension of Vineyard Boulevard, which was replaced by a portion of the H-1 Interstate Highway in the 1960s. The Halona Street Bridge is a continuous concrete cast-in-place bridge constructed in 1938. The Kapālama Canal is a channelized drainage that extends through urban Honolulu and is used to control the runoff from both Niuhelewai and Kapālama streams.
Section 2  Methods

2.1 Archival Research

Research centers on Hawaiian activities including ka‘ao (legends), wahi pana (storied places), ʻōlelo noʻeau (proverbs), oli (chants), mele (songs), traditional moʻolelo (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. Other archives and libraries including the Hawaiʻi State Archives, the Bishop Museum Archives, the University of Hawaiʻi at Mānoa’s Hamilton Library, Ulukau, The Hawaiian Electronic Library (Ulukau.org 2004), the State Historic Preservation Division (SHPD) Library, the State of Hawaiʻi Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives are also repositories where CSH cultural researchers gather information. Information on Land Commission Awards (LCAs) were accessed via Waiona ʻAina Corporation’s Māhele database (Waiona ʻAina 2000), the Office of Hawaiian Affairs (OHA) Papakilo Database (Office of Hawaiian Affairs 2015), and the Ava Konohiki Ancestral Visions of ʻĀina 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), kamaʻāina (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 State Historic Preservation Division (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 (thought, opinion) 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 extending from the mountain to the sea); 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  
** Kaʻao and Moʻolelo (Legends and Stories) **

3.1  Traditional Legends

3.1.1  Kapālama and Lepeamoa, the Bird Maiden of Pālama

The place name Kapālama is often understood to refer to an enclosure (pā) of lama wood that surrounded the place of residence of high ranking aliʻi (chiefs) (Pukui et al. 1974:87). McAllister (1933:88) relates: “Kapalama is said to have obtained its name from an establishment in which the young aliʻi were kept just before pairing off for offspring.” This information probably came from Nathaniel Emerson, who translated David Malo’s “Ka Moʻolelo Hawaiʻi.” Emerson added many notes to his English translation, including the following:

> Hoonoho ia means put in an establishment, placed under the care of a guardian or duenna [chaperone]. Such an establishment was surrounded by an enclosure, pa, made of the sacred lama . . . Hence this special care or guardianship was called palama. It is said that an establishment of this kind was anciently placed at that suburb of Honolulu which to this day bears the name of Ka-pa-lama. [Malo 1951:139; note by N. B. Emerson]

Westervelt (1923:165) attributes the Oʻahu place name to a chiefess of Oʻahu who lived in that area. This chiefess was Kapālama, the grandmother of Lepeamoa (Hawaiian for “cockscomb”). There are several retellings of this story (Knudsen and Noble 1945:63-69; Pukui and Curtis 1949:118–126; Westervelt 1963a:204–245), but all seem to use Westervelt (1923) as their source. A chief of Kauaʻi, named Keāhua, traveled to Oʻahu to take Kauhao, the daughter of Kapālama, as his wife. He angered the kupua (supernatural being that can change form) called Akuapehuale (god of swollen billows), who forced the couple to hide in the uplands of the Wailua River valley of Kauaʻi.

Keāhua’s daughter was born as an egg, and was adopted by the chiefess Kapālama to raise on Oʻahu at her home, also named Kapālama. When the egg hatched, Lepeamoa was a bird with feathers all the colors of the rainbow. She became able to turn herself into a beautiful young woman wearing a feather lei. The girl was so beautiful that a rainbow was always present above her. The girl was guarded by her ancestress, Keaolewa (“the moving cloud”), who could also change forms between human and bird. The lower ridge separating Kapālama and Nuʻuanu (ʻĀlewa Heights) may have been named for this ancestress.

The parents of Lepeamoa had another child, a son called Kauʻilani, who was so strong he was able to defeat the kupua who had threatened his parents. On Kauaʻi, there are several place names associated with this story. Kauhao (meaning “the scooping”), is the name of a deep valley in the ahupua’a of Miloliʻi in the Waimea District. Lepeamoa is a point at the mouth of Kaʻahau Valley in the same ahupua’a. The valley in Wailua Ahupua’a in the Puna District where Kauʻilani defeated Akuapehuale was named Keāhua (meaning “hillock”) after the chief, his father (Wichman 1998:81, 158).

After Kauʻilani’s victory over the kupua, he went to Oʻahu to find his sister, searching for the rainbow sign of her presence. In her compound, he found Kapālama, who advised him to hide in Lepeamoa’s house, wait until she was asleep in her bird form, and catch and hold her until she
acknowledged him as her brother. Her advice worked, and Lepeamoa lived with her brother thereafter (Westervelt 1923:164-184).

Additional stories are told of Kau‘ilani and his magical sister Lepeamoa. In one story, the Maui chief, Mauinui, had a fighting rooster. This rooster was also a *kupua* that could change forms; by the use of its magic it always defeated any challenger. The O‘ahu chief Kakuhihewa was hosting the Maui chief at his residence in Waikīkī and was losing many goods while betting on the cock-fighting, which the Maui chief’s rooster always won. Kakuhihewa had heard about the hero Kau‘ilani and asked him if he could find some way to defeat the Maui rooster. When Kau‘ilani agreed, Kakuhihewa gave him his daughter in marriage. Kau‘ilani asked for the help of his sister, who turned into a beautiful hen to fight the rooster. The two combatants both changed forms several times during the battle, but eventually Lepeamoa won. The daughter of the king had a child, called Kamano, who Lepeamoa took back to Kapālama to care for (Westervelt 1923:227-245).

### 3.1.2 Legend of Palila

In the legend of Palila, the hero’s war club could magically carry him far distances in a single flight. Palila came to the plain of Keahumoa in ‘Ewa to participate in the athletic games given by the O‘ahu king, Ahuapau. The residence of this chief was said to be at Kalapōhaku, near Wailukuako in Kapālama (Fornander 1917:5(1):142). Kalapōhaku Peak (meaning “the stone promontory”) is near the intersection of School and Alaneo streets in Kapālama.

A place named Niuhelewai (*lit.* “coconut going in water”) in lower Kapālama, located *makai* (seaward) of King Street (Fornander 1917:4(3):530–531; Fornander 1919:5(2):368) was associated with the deity Haumea and the hero, Kaulu, who was known for his great strength.

Kaulu was born in Kailua on the windward side of O‘ahu. His older brother Kaeha was taken by the spirits to a realm of gods in the sky. For love of his brother, Kaulu followed him to this realm, playing a number of tricks on the gods including Makali‘i, the god of plenty, who had a magic fish net that would fill with fish whenever used. After playing the tricks, Kaulu then had to rescue his brother from the wrath of the various spirits. The brothers finally returned to the land of men on O‘ahu, setting down at Moanalua (*ahupua‘a* [land division] west of Kapālama).

* A hiki laua ma Moanalua, i Papakolea, hoonoho o Kaulu ia Kaeha ilaila; hele mai la o Kaulu a loaa o Haumea i Kapālama. He ‘kua o Haumea no Oahu nei, e noho ana ia i Niuhelewai, he wahine of Haumea.

When they arrived at Papakolea, Moanalua, Kaulu left Kaeha at this place while he continued on his way to Kapālama in search of Haumea. Haumea was a spirit that lived at Niuhelewai, Oahu. It was a female spirit.

* [Fornander 1917:4(3):530–531]

Haumea, the goddess of childbirth, had a home at Niuhelewai in Kapālama; she challenged anyone who passed by, often killing them. Kaulu challenged Haumea to a fight on the following day. That night he flew back up to the spirit land in the clouds and borrowed the magic nets of Makali‘i, and then threw them over Haumea’s house. When Haumea could not break through these nets, she fell asleep in exhaustion, tangled in the nets. While asleep, Kaulu burned down her house, killing her.
3.1.3 Keanakamanō, the Cave of the Shark

Near the Kamehameha Schools campus there was once a cave called Keanakamanō, which means “cave of the shark” (Sterling and Summers 1978:323). The Hawaiians have many stories concerning legendary caves that connected inland springs to the sea or extended below the Koʻolau Mountains, connecting the leeward and windward sides of the island.

On the Kama'anaiki side of the Kalihi Valley there was once a shallow cave called Keana Kamano. It was called the cave of the sharks because the big shark gods from Pearl Harbor often went there to rest.

Keana Kamano led into the fabulous underground cave believed in olden times to occupy the center of the island of Oahu.

One branch of the cave led around and under the mountains to Pearl Harbor. Another branch of the cave led to the center of the Island where there was a sacred pool for swimming.

Hawaiians living today can tell of elders who once traveled these caves and who once swam in the sacred pool. An earthquake about 1900 closed up the caves and no one has been known to travel them since.

It may be that the cave-in of the Wilson Tunnel occurred over the old lava tube leading to Pearl Harbor. [Taylor 1954]

His [Kamohoaliʻi] favorite pastime was to swim through the extensive water-filled lava tubes or tunnels that extended from Pearl Harbor to areas under Kalihi Valley.

As the tunnels rose above sea level, he assumed his human form and walked to his cave, Keanakamanō, on Kapālama Heights. [Mitchell 1993:146]

3.2 Wahi Pana (Legendary Places)

Kapālama Ahupua’a extends from the seacoast to the head of Kapālama (“the lama wood enclosure”) Gulch at approximately 4 km from the coast. In the upper section of Kapālama, the high point of the ridge surrounding Kapālama Gulch defines the eastern and western boundary. Unlike most O‘ahu leeward ahupua’a, it does not extend all the way to the Koʻolau Mountains; instead it is “cut off” by Kalihi (“the edge”) Ahupua’a on the western boundary and Nuʻuanu (“cool height”) Ahupua’a on the eastern boundary.

The highest peak in Kapālama is Nāpuʻumai’a (“the banana hills”), at the head of Waolani (“heavenly mountain area”) Valley, the western section of Nuʻuanu. An alternate name for this high peak may be Pākaʻaluna (meaning unknown). Waolani is also the name of a peak on the ridge separating Kapālama from Nuʻuanu’s Waolani Valley. The boundary with Nuʻuanu then extends along the western boundary of ʻĀlewa (“suspended on a height”) Heights and then down to the coast on the east side of a high, rocky area called Kalaepōhaku (“the stone promontory”). The
lower eastern boundary of Kapālama is ambiguous, as the early development of Honolulu town obscured boundary lines in the Honolulu coastal plain. On one early map, the eastern boundary of the ahupua'a extends all the way to Nu'uanu Stream, and includes within the ahupua'a the large 'ili (smaller land division) of Kūwili (“stand swirling”) and Iwilei (“collarbone” or “a unit of measurement”), and the ponds (loko) Kūwili I and Kawa (possibly “precipice or leaping place”; Pukui and Elbert 1986:139). During the Māhele, Iwilei was considered an 'ili of Honolulu, rather than Kapālama, and thus the eastern boundary of Kapālama extended only to the western point of Kūwili I Pond, generally following the modern alignment of Pālama and Alaneo streets, west of Liliha Street.

Keanakamanō (“the cave of the shark”) is the name of a peak at the head of a narrow valley, on the western side of Kapālama. Tradition also talks of a cave called Keanakamanō, but its exact location is unknown. At the level coastal flats, the western boundary extends from the mouth of Keanakamanō Valley along a low pali (cliff) that separates Kapālama from the 'ili of Mokauaea (possibly “broken turtle place”; Thrum 1922:660) in Kalihi. This division line is generally the same as the present alignment of Waia kamilo Street and Houghtailing Street. The boundary point at the coast is the eastern edge of Ananoho Pond (possibly “dweller’s cave”; Thrum 1922:627) in Kalihi.

The ahupua’a has two streams, the Kapālama and the Niuhelewai (“coconut going [in] water”; Pukui et al. 1974:166). They merge and extend through the central fertile former taro and rice fields, an area also called Niuhelewai. This area drains into a pond called Kūwili II. There were two other named ponds, Kealia (possibly, “salt bed”) and Kapukui (meaning unknown), to the east of Kūwili II, shown as part of Kapālama or as part of Iwilei, depending on the map. The offshore waters were divided into the Iwilei, Kūwili, Kapālama, and Mokauaea Fisheries, between the shore and a high reef called Koholaloa (“long reef”; Pukui et al. 1974:115). At low tide, several islands were clearly visible above this reef, Mokauaea Island off Kalihi, and Koholaloa off Kapālama. In the early historic period, the island off Kapālama had several other names, including Mauliola (named for “a god of health”), Kamoku‘ākulikuli, (‘Ākulikuli plant island) and Akulikuli Island. Beginning in the 1840s, the reef area was dredged and the resulting material was used to connect and expand some of the small islands off the coast, to form Quarantine Island and ultimately Sand Island.

Early historians have reported there were at least four ceremonial structures in Kapālama, a shrine called Puea, and three heiau called Pāka‘aluna (or Pāka‘alanaluna), Oomaunahele, and Paepaenuileimoku. Pāka‘aluna Heiau may have been located on or near Pāka‘aluna Peak, but the locations of the other three features are unknown (Figure 6). The meanings for these heiau names are also unknown.

3.2.1 Pōhaku in Kapālama

A stone measuring 5 ft 8 inches long and 5 ft in height in the shape of a crouching animal when viewed from the west stands on the west side of a ridge in Kapālama Valley (Sterling and Summers 1979:321). The pōhaku is located in a direct line between Violet Street and a building at the Kamehameha Schools.

According to an informant, it was revered by Native Hawaiians. The informant, William J. Vierra, resided below the pōhaku in Kapālama. Mr. Vierra first saw the pōhaku in 1911 when his older brother pointed it out to him. He also learned of its importance from Native Hawaiians in the
Figure 6. Pakaʻalana Heiau in Kapālama Ahupuaʻa (courtesy of Pacific Worlds)
area (Sterling and Summers 1979:321). He recalls Hawaiians laying out mats on the ridge between Kapālama and Kamanaiki valleys, spending their entire day worshipping the pōhaku from a distance. Worshippers would chew on kō (sugarcane) and leave the stalks. It was not indicated whether the chewed kō stalks were part of a ritual or not. Mr. Vierra also shared that the pōhaku was visited by the “bell stone” located in Kalihi Ahupua‘a in the form of a mist (Sterling and Summers 1979:321).

Kenneth P. Emory, an American anthropologist, visited the pōhaku in January 1954 and believed it was a phallic rock.

3.2.2 Fishponds of Kapālama and Iwilei

According to Māhele documents, Kūwili Pond (Kūwili I), Kawa Pond, and the land surrounding them in the ‘ili of Kūwili were considered part of the ahupua‘a of Honolulu, not Kapālama. However, these ponds are surrounded by Kapālama lands and were an important resource for the inhabitants of the area.

Kūwili [Kūwili I] Pond is mentioned in the legend of Kū‘ula, the fish god of Hawai‘i. ‘Ai‘ai, son of Kū‘ula, gave the sacred pā (fishhook), called Kahuai, to his son, Puniaiki, who used it to summon a school of aku (Ocean bonito; Katsuwonus pelamys) in Honolulu Harbor. The aku “unprecedented in number, fairly leaped into the canoes . . . and the shore people shouted as the akus which filled the harbor swam toward the fishpond of Kuwili and on to the mouth of Leleo stream” (Manu 1898:247–248). No oral traditions, legends, or other ethnographic information have been found regarding Kawa Fishpond. The Hawaiian word “kawa” literally translates as a precipice or leaping place, or the pool below a precipice into which swimmers leap (Pukui and Elbert 1986:139).

Three other ponds are labeled on historic maps, Loko Kūwili II and Loko Kapukui in Kapālama and Loko Kealia in Iwilei. Pukui et al. (1974) do not give meanings for Loko Kapukui or Loko Kealia, but keālia is the Hawaiian word for salt bed, which may indicate at least one of these ponds was used for salt collection.

3.3 ‘Ōlelo No‘eau (Proverbs)

Hawaiian knowledge was shared by way of oral histories. The following section draws from author and historian Mary Kawena Pukui and her knowledge of Hawaiian proverbs describing ‘āina (land), weather, and places.

3.3.1 ‘Ōlelo No‘eau #1732

The following proverb talks about the sea of Pu‘uhale, which falls into the ahupua‘a of Honolulu and not Kapālama. As previously mentioned, the ponds and ocean resources that surrounded Kapālama were utilized by those who inhabited the area.

Ke kai nehe o Pu‘uhale

The murmuring sea of Pu‘uhale.

The sea at Pu‘uhale in Kalihi, O‘ahu, was said to murmur softly as it washed ashore. There were once many fishponds there. [Pukui 1983:186]
3.3.2 ‘Ōlelo No’eau #2918

The following ‘ōlelo no’eau is actually centered around Waipi‘o on O‘ahu, however, it relates to a mo‘olelo that glosses wahi pana in Kapālama Ahupua‘a. For an expanded mo‘olelo, see Section 4.1.

Waipi‘o kīmopō.

Waipi‘o of the secret rebellion.

An epithet for the people of Waipi‘o, O‘ahu. After the death of Kahāhana, the chiefs of Waipi‘o plotted to murder the chiefs of Maui, who were then in ‘Ewa. Someone warned the Maui chiefs and all but one escaped. To throw off suspicion, the Waipi‘o chiefs claimed that the one was killed by someone from Kaua‘i. Later Kahekili learned that Elani, chief of ‘Ewa, was in the plot, so he launched a massacre that choked the streams of Niuhelewai and Makāho in Palama with the bodies of the dead [Pukui 1983:319].

3.4 Oli (Chants)

3.4.1 The Epic Tale of Hi‘iakaikapoliopele

The Epic Tale of Hi‘iakaikapoliopele takes the reader on a literary adventure throughout the Hawaiian Islands. The saga begins with the fire goddess, Pele, in pursuit of a lover. Hi‘iakaikapoliopele, Pele’s younger sister, is tasked with bringing back the handsome ali‘i of Kaua‘i, Lohi‘au.

Hi‘iakaikapoliopele, her aikāne (friend) Wahine‘ōma‘o, and Lohi‘au board a canoe at Pu‘uloa (now known as Pearl Harbor) and sail off. When the party of three reach the outskirts of Pu‘uloa, Hi‘iaka looks mauka (toward the mountain) and sees Kinimakalehua, Leinono, and Keālia (Kamehameha Heights). Hi‘iaka says, “I must not forget you, and have it said that I did not offer greeting chants to all of you,” and then offers an oli:

Polenaehu i ka ua Kinimakalehua.
Ka waha i ka la luna o Leinono (Leinono)
Hoahoa Leinono, kiekie Puuloa makai.
Ke hele i ke one kui lima laula o Eewa.
Ma Ewa hoi au.
E uwe hoi au ia oe e Leinono-e
Hoa aloha wale kakou-e [Ka Na‘i Aupuni, Buke II, Helu 10, 13 Iune 1906]

Translated:

Kinimakalehua is misty gold in the rain
A cleft in Leinono’s brow
Leinono appears harsh, Pu‘uloa stands tall toward the sea
When on the broad sands of ‘Ewa traveled arm in arm
Here I am in ‘Ewa
I cry out to you, Leinono
Dear friends, one and all. [Ho’oulumāhiehie 2006:278]

Upon finishing her chant, the three sailed to Kalihi where Hi’iaka turned and looked at the mountains. Hi’iaka could still see Leinono as well as Keālia and called out in oli once again:

Aloha oe, e Leinono, e Kinimakalehua,
E Keālia ilalo-e-Aloha,
Eia ke kanaenae, ka mohair
A ka mea hele-la, he leo-e
He leo wale nohoi-e [Ka Na‘i Aupuni, Buke II, Helu 10, 13 June 1906]

Translated:

Greetings to you, O Leinono, O Kinimakalehua
O Keālia there below, aloha
Here is a greeting chant, an offering
From the traveler, a voice
Only a voice. [Ho’oulumāhiehie 2006:278]

3.5 **Mele (Song)**

There are a number of late nineteenth century and twentieth century mele (songs) which concern or mention Kapālama, presented below.

### 3.5.1 Pu‘uhonua Nani

**Beautiful Refuge**

- Pō nei iā ’u e ho’ola‘i mālie ana
- I ka nani o ka mahina
- Lana ka mana‘o i kau kauoha
- I pu‘uhonua wahi e maha ai
- No na mu‘o kama aloha au
- Nou ka welina e Lili‘uokalani.

- Kaulana i‘o nō ‘o Mu‘olaulani
- Malama ola nō nā lei
- ‘Imi ana i kau ‘i‘ini ai
- Ke aloha ka na‘auao ka no‘eau
- Keia no na pono no mākou
- Mahalo iā ‘oe e Lili‘uokalani.

- Hanohano ‘oe e Kapālama
- Ka ‘ōpua ha’aheo o ka lewa lani
- I laila no i ‘ike maka ‘ia
- Kou lokomaika‘i no na kama
- Ua piha lākou me ka hau ‘oli
- Aloha no e Lili‘uokalani.

Last night, as I sat quietly in the calm
Observing the beauty of the moon
A thought came to me of your will
To have a refuge, a place of peace
For your beloved young people
For you, our fond affection, o Lili‘uokalani.
Famed indeed is Mu‘olaulani,
A preserver of life for youth
Now come seeking what you had desired
Love, education, and wisdom too
These are the benefits bestowed to us
Thank you, o Lili‘uokalani.
Honored indeed are you, of Kapālama
Like a cloud proudly reposing in the sky
There, all can see for themselves
Your generosity to your children,
They are filled with happiness
And love for you, o Lili‘uokalani.
This mele was written by Malia Craver, a social worker with the Liliu‘okalani Trust, which is the “Beautiful Refuge” of the song. Mu‘olaulani was the name of Queen Liliu‘okalani’s home in Kapalama (Grant 499 to Liliuokalani in the ʻili of Kamookahi), which became the Queen Liliu‘okalani Children’s Center (now at 1300-A Halona Street). In a 1911 document, Liliu‘okalani entrusted her estate to provide for orphan and destitute children, with preference to those of Hawaiian descent; her home in Kapalama became the Kapalama branch of the Queen Liliu‘okalani Children’s Center. The mele is part of the Kimo Alama Keaulana Collection at the Bishop Museum Archives and was translated by Mary Kawena Pukui.

3.5.2 Moana-lua

I Moana-lua ha‘i ke ‘au,
I Ka-hau-iki hemo ka ‘umoki.
‘O ke kula loa ho‘i o Ka-lihi,
‘O Ka‘iwi‘ula kīki‘i i pau.
‘O Ka-pā-lama lo‘i laiki,
I Ke-one-‘ula malu ke kiawe.
‘O Leleo, a he loko wai,
Ha‘alili-a-manu honi kāua.
‘O Ka-pu‘u-kolo, i Ka-nēkina
Holo lio lā‘au me ka ulua.
‘O Ka-manu-wai moa liʻiliʻi,
Hauna ke kai ‘eua ‘oe ia ‘u.
He aha ‘e ke kumu o ka ‘eua ‘ana?
ʻŌno‘onou ‘ia i ka hua noni.
Auwē ‘e ha‘ino i ku‘u kīkala,
Pehea la ia e lewa hou ai?

At Moana-lua the shaft breaks,
At Ka-hau-iki take out the cork.
The long plain of Ka-lihi,
At Ka-iwi-ʻula tilt back.
At Ka-pā-lama rice patches,
At Ke-one-ʻula, kiawe shade.
At Leleo, a pond,
At Haʻaliliʻa-manu, we kiss.
At Ka-puʻu-kolo and Ka-nēkina
Ride a merry-go-round with an ulua fish.
At Ka-manu-wai, little chicks,
Strong-smelling soup and I hurt you.
What’s the reason for the pain?
A noni fruit forced in.
Auwē, how my hips hurt,
How then to wander anew?

This mele was arranged by David Nape and collected by Samuel H. Elbert and Noehani Mahoe. In their interpretation (Elbert and Mahoe 1970:77–78), this is a traveling song about a girl taking a trip from west to east, from Moanalua Ahupuaʻa, through Kahauiki, Kalihi, Kapalama, Nu‘uanu, and to Honolulu. In Moanalua, her carriage breaks down; in Kahauiki she uncorks a liquor bottle, then passes through Kalihi; in Kaiwi‘ula (site of the Bishop Museum in western Kapalama) she staggers from the drink, she then crosses the rice patches of Kapalama; in Keoneʻula (site of Kaʻiulani School and Kauamakapili Church in eastern Kapalama) she seeks the shade of the kiawe trees. At Leleō she notes a pond (probably Kūwili II Pond); she crosses Nuʻuanu Stream to Haʻaliliʻa-manu; at Ka-puʻu-kolo and Ka-nēkina (near Hotel Street and Nuʻuanu Stream) she rides...
a merry-go-round with her sweetheart (called an *ulua* fish); and, at Ka-manu-wai (an *ʻili* of Nuʻuanu near the lower part of the stream) she woos youngsters who she plans to hurt. The *noni* (*Morinda citrofila*) is a bitter fruit.

### 3.5.3 Pua Hēʻī

**Papaya Flower**

Aloha no paha ‘oe

E ka pua o ka hēʻī

Ke ʻi aʻe nei nō wau

O ka ʻoi o Kapālama

Mālama ʻia ko kino

ʻO lilo mai ia nei

Ia nei nō māua

I ka malu o ke kukui.

Chorus: Sweet rosebud of the perfumed island

Drenched in watery spray

Just to abide with to be familiar with

The ʻŌlauniu wind.

**Aloha no paha ‘oe**

Perhaps you’re dearly loved

Oh papaya flower,

I hold in the highest esteem

The greatness of Kapālama,

Your person is protected

To be won over by me,

Just you and I

In the shade of the kukui.

**Hui: Sweet rosebud o ka uka onaona**

Pulupē i ka hunahuna wai

I noho a kamaʻāina

Ka makani ʻŌlauniu.

**Chorus: Sweet rosebud of the perfumed island**

**Drenched in watery spray**

**Just to abide with to be familiar with**

**The ʻŌlauniu wind.**

**Aloha no paha ‘oe**

Perhaps you’re dearly adored

Oh chill of Waimea

Oh, the Kīpuʻupuʻu rain

That lays a bright low-lying rainbow upon the grass

Spread out in the heights

To the peaks of the mountains,

Mountains that stand so regal

Where sweet fragrance drifts in the air.

This song, copyrighted in 1928 by Johnny Noble (1929:98–99), uses the winds of the islands to stand for actions or emotions. The ʻŌlauniu wind, which means “thrusting coconut fronds” suggests sexual play, while the Kīpuʻupuʻu wind of Waimea on Hawaiʻi suggests chilliness.
Section 4  Traditional and Historical Accounts

The project is located within the ahupua‘a of Kapālama in the O‘ahu moku of Kona, now called the District of Honolulu. The ahupua‘a of Kalihi lies to the west and the ahupua‘a of Nu‘uanu lies to the east.

4.1 Traditional Accounts of Battles at Niuhelewai Stream in Kapālama

Two accounts of traditional Hawaiian warfare suggest mass killings in the vicinity of “Niuhelewai” which is the stream generally now known as Kapālama Canal.

4.1.1 Kahahawa‘i’s Defeat of Kahāhana (AD 1780-1783)

Niuhelewai Stream was the location for a famous battle between Kahahawa‘i, the war chief of Kahekili, king of Maui, and the O‘ahu ruling chief Kahāhana. Fornander (1919:498) states in a footnote to a story that Niuhelewai was the name of the locality of the Pālama cane field between the fire and pumping stations. Ross Cordy (2002:19) places Kahāhana’s reign on O‘ahu around the year 1780 to his death in 1783 after this battle.

I ka wa e noho ana o Kahekili he ‘lii no Maui, a o Kahahana he li‘i no Oahu nei iloko oia kau i holo mai ai o Kahahawaii me na koa e kaua ia Oahu. Ma keia kaua ana ua hee a ua luku ia na kanaka Oahu, ma Niuhelewai, a ua hoi ka wai i uka o ka muliwai, no ka piha i na kanaka.

When Kahekili was reigning as king of Maui, and Kahahana was king of O‘ahu, it was during this period that Kahahawai with a number of warriors came to make war on O‘ahu. In this battle the people of O‘ahu were defeated and slaughtered at Niuhelewai, and the waters of the stream were turned back, the stream being dammed by the corpses of the men. [Fornander 1919:498–499]

4.1.2 The Rebellions of the ‘Ewa and Kona Chiefs (post-1783)

After Kahāhana’s death, the chiefs of Maui took over O‘ahu. Some of the chiefs from the O‘ahu districts of ‘Ewa and Kona conceived a plot to murder their new overlords but the Maui chiefs were warned. Although the main backers of the plot were the chiefs of Waipi‘o, ‘Ewa, they were temporarily able to convince Kahekili that the conspiracy originated on Kaua‘i, thus the phrase, Waipi‘o kīmopō, “Waipi‘o of the secret rebellion” (Pukui 1983:319). Eventually the truth was revealed and:

A no kēia mea, ulu maila ke kaua kūloko o Kona me ‘Ewa, nā moku o O‘ahu i luku nui ‘ia; ua luku ‘ia nā moku o O‘ahu i luku nui ‘ia; ua luku ‘ia nā kāne, nā wāhine a me nā keiki, a ua pani kūmano ‘ia nā kahawai a me nā muliwai i nā heana o nā kānaka o Kona a me ‘Ewa. ‘O nā kahawai i ‘oi aku ka nui o nā heana, a ho‘i hou ka wai i uka, ‘o ia nō ‘o Makaho a me Niuhelewai ma Kona, a ‘o Kaho‘a‘i ‘ia‘i ho‘i ko ‘Ewa. He kūmukena ka nui o nā mea he make, ke lilo ka wai i mea ‘awa–‘awa ke inu aku. Ua ‘ōlelo mai ho‘i ka po‘e ‘ike maka ‘O ka lolo ka mea i ‘awa–‘awa ai ‘o ka wai.’ [Kamakau 1996:91, Ka Nūpepa Kū‘oko‘a, 39 March 1867]

... the districts of Kona and ‘Ewa were attacked, and men, women, and children were massacred, until the streams of Makaho and Niuhelewai in Kona [in Kapālama] and of Kaho‘a‘ai‘ai in ‘Ewa were choked with the bodies of the dead,
and their waters became bitter to the taste, as eyewitnesses say, from the brains that turned the water bitter. All the O’ahu chiefs were killed and the chiefesses tortured. [Kamakau 1992:138]

4.2 Early Historic Period

The ahupua’a of Kapālama is between the ahupua’a of Nu’uanu to the east and Kalihi to the west. Although Kapālama is not a major river valley like Nu’uanu or Kalihi, it is watered by two smaller streams, the Kapālama and Niuhelewai. The shore frontage (presently “Kapālama Basin”) is part of the Honolulu Harbor protected shoreline. Kapālama Ahupua’a offered desirable environmental conditions for traditional Hawaiian subsistence practices. The well-watered flood plain would have allowed for the development of an extensive lo’i (taro pond field) system, and the protected shoreline and fringing reef would have allowed for ease of ocean access to the productive nearshore fisheries. E.S. Craighill Handy, who gathered information on former planting areas from local informants in the 1930s and 1940s, reported the following: “Kapālama had two streamswatering its terrace area [for taro], which was almost continuous from Iwilei up to the foothills above School Street, an area measuring about three quarters of a mile both in depth inland and in breadth” (Handy 1940:79).

The lower lands were used for taro cultivation; the uplands also had considerable resources. In the early nineteenth century, sandalwood trees were still present in the forests. These trees were extensively harvested between 1810 and 1830 as the fragrant wood could be sold to ship captains sailing to China to trade for exotic Asian goods.

Otto von Kotzebue’s journal and map of Honolulu provide one of our earliest accounts of the environs of Kapālama ca. 1817 (Kotzebue 1967:339–341). Kotzebue’s 1817 map of Honolulu (Figure 7), shows large taro fields (and trees) on both sides of the mouth of Kalihi and Nu’uanu streams extending to the coast. The path shown was probably the main trail and the route traveled by Kotzebue himself. The 1817 map does not show any taro fields in Kapālama, but a later 1855 map by LaPasse (Figure 8) does show extensive taro lo’i in the makai (seaward) section of Kapālama. La Passe’s map also shows two fishponds, Kūwili I and Kawa. These ponds are on the eastern side of Kapālama, but the land around them was considered part of Kūwili, an ‘ili of Honolulu rather than Kapālama.

Kūwili [Kūwili I] Pond is classified as a Type II pond (Kikuchi 1973), a loko pu’one or loko hakuone, an isolated shore fishpond usually formed by the development of a barrier beach building a single elongated sand ridge (pu’one or hakuone) parallel to the coast. It was adjacent to Kawa Fishpond, a Type I pond, a loko kuapā, a fishpond of littoral water whose side or sides facing the sea consist of a stone or coral wall containing one or more sluice grates (Kikuchi 1973:227–228).

Fishponds of Types I and II had the largest variety of fish as food resources. The most common ones were the fish called āholehole (Kuhlia taeniura, Kuhlia sandwichensis, etc.); mullet; tenpounder; milkfish, ‘awa’aua; barracuda (Sphrynaena barracuda), kākū, anchovy (Anchoviella purpurea), nehu, the fish identified by the Hawaiians as ‘o’opu; and the eel, puhi. The uncommon fish were: amber fish (Caranx mate), kahala; goatfish (Upeneus prophyreus), kāmū, three surgeonfish called manini, palani, and puwalu; bonefish; parrot fish, and crevally. [Kikuchi 1973:93]
Figure 7. 1817 map of south coast of O‘ahu by Otto von Kotzebue (1817) of the Russian ship *Rurik*, showing density of habitations and agriculture around Kapālama (The study area and map have been geo-referenced; the study area is located on a ridge, and it should be noted that this early map should be understood as a “sketch”)

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)
Figure 8. 1855 map of Honolulu by Lt. Joseph de LaPasse of the French vessel, L’Eurydice (reprinted in Fitzpatrick 1986:82–83), showing lo‘i, habitations, and fishponds in Kapālama
In 1869, Samuel Kamakau described the *loko pu’one*:

The *pu’one* ponds near the sea (*loko kai pu’one*) were much desired by farmers, and these ponds they stocked (*ho’oholo*) with fish. *Pu’one* ponds were close to shore ponds, *loko kuapa*, or to the seashore, and next to the mouths (*nuku*) of streams. The farmers cleared away the *mokae* sedges, *’aka’akai* bulrushes, and the weeds, and deepened the pond, piling up the muck on the sides, until he had a clean pond. Then he stocked it with *awa* fish. After two or three years the fish from the first gourd would have grown to a *ha’ilima* (18 inches) in length. [Kamakau 1976:49]

Kamakau noted there were often structures on or near the ponds, *hale kia’i*, or guard houses, where the fishpond keepers would stay on certain nights to deter poachers.

On the nights when the tide was high every *kia’i* (keeper) slept by the *mākaha* (sluice gate) of which he had charge, and it was the *kia’i loko* (keeper of the pond) custom to build small *hale kia’i* from which to guard the fish from being stolen or from being killed by pigs and dogs. [Kamakau 1976:48]

Kamehameha I, after the devastations to the population caused by the wars of conquest and a ca. 1804 epidemic, encouraged people to replant the land and he set aside several large tracts, including tracts in Kapālama, for them to grow crops for their own use and for trade with visiting ships. The Hawaiian historian Samuel Kamakau noted, “After the pestilence had subsided the chiefs again took up farming, and Kamehameha cultivated land at Waikiki, Honolulu, and Kapālama, and fed the people” (Kamakau 1992:190).

Another early Hawaiian historian, John Papa ‘Ī‘ī, knew personally that, “He [Kamehameha] also lived in Honolulu, where his farms at Kapālama, Keoneula, and other places became famous. These tasks Kamehameha tended to personally, and he participated in all the projects” (‘Ī‘ī 1959:69).

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a predominantly Native Hawaiian environment—still a “village”—on the brink of western-induced transformation:

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 south-easterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the north-east part of the village or town . . .

Below us, on the south and west, spread the plain of Honolulu, having its fish-ponds and salt making pools along the sea-shore, 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 1981:92–93]
Robert Dampier’s ca. 1825 wash drawing “Fishponds of Honoruru, Oahu” (Figure 9) documents a rather idyllic collection of grass huts scattered along the lower portions of Nu‘uanu Stream and along Honolulu Harbor. The fishponds depicted in the center foreground of the painting are in the right geographical position to be Kawa and Kūwili I Fishponds. In 1828, the fishponds were described by a Dutch merchant:

...we arrived at the beach and came upon a small hamlet of several scattered fishermen’s huts. The whole arrangement of the place seemed pleasant and cozy.

Now we had to wade through the water and our horses along the banks of the fish ponds of the king of these islands, situated north of the port of Honoruru. These ponds are irregularly shaped basins enclosed by walls of stone from the coral banks. These walls have openings through which the fish can enter the pond, but not, I was assured, leave it again to seek their freedom in the sea. When we approached this part of our trip, it happened to be at low tide so it was very easy to step through the water with the horse. [Broeze 1988:69]

In his history of Hawai‘i written in the 1860s, John Papa ‘Ī‘ī describes the appearance of the trail (around the year 1810) from Nu‘uanu to Moanalua through Kapālama:

When the trail reached a certain bridge, it began going along the banks of taro patches, up to the other side of Kapalama, to the plain of Kāwiku; on to the taro patches of Kālihi; down to the other stream and up the other side; turned right to the houses of the Portuguese people . . . [‘Ī‘ī 1959: 95]

While somewhat general, the ‘Ī‘ī account supports that of von Kotzebue in relating an abundance of lo‘i where the main trail crossed Nu‘uanu and Niuhelewai streams, and Kapālama Stream, a relatively uncultivated plain as the trail traversed the western section of Kapālama in the ‘ili of Kāwiku‘ula (area now occupied by the Farrington High School), and then to more lo‘i on Kālihi Stream.

4.3 The Māhele and the Kuleana Act

In 1845, the Hawaii 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 Hawaiian government, the King, the ali‘i (royalty), and the common people as codified in the Māhele Book (1848), which introduced the concept of private property into Hawaiian society.

In 1848, the crown (Hawaiian government), Kamehameha III, and other ali‘i such as Victoria Kamāmalu received their land titles, called Konohiki Awards. The Konohiki award claimant had to pay a commutation fee of one-third of the value of their unimproved lands. Usually this fee was settled when the ali‘i “returned” some of his awarded lands, and “retained” others. The returned lands usually then became Government Lands, which were set aside to generate revenue for the government, or Crown Lands, which were lands reserved for the monarchy (Chinen 1958:8). In the petitioning for Land Commission Awards (LCAs) for their kuleana (lands), the commoners had to provide testimony from witnesses, including statements regarding the boundaries of the land and its use. In the 1790s, after Kamehameha had conquered Oʻahu, Kapālama is specifically...
Figure 9. Image by Robert Dampier, *Fishponds of Honoruru, Oahu*, ca. 1825

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapalama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapalama Canal)
mentioned along with Nu‘uanu, Mānoa, and Waikīkī as having been “farmed” by Kamehameha. The desirability of Kapālama Ahupua‘a is supported by the fact that Kamehameha “kept of himself” the ahupua‘a during the post-1795 division of O‘ahu lands (Kame‘elehiwa 1992:59). The ahupua‘a of Kapālama was awarded to Moses Kekūāiwa, son of Kekūanao‘a and Kīna‘u (who had earlier been married to Kamehameha I). The lands passed down in turn to his sister Victoria Kamāmalu, to her brother Lot Kamehameha, to his half-sister Ruth Ke‘elikōlani, and then to her first cousin, Bernice Pauahi Bishop. The will of Mrs. Bishop set many of her lands as a trust to provide financial aid to educational and charitable institutions, including the schools she founded to educate Hawaiian children (Mitchell 1993:9).

Subsequent to the Māhele award for the bulk of the ahupua‘a, individual kuleana (commoner) lots were awarded pursuant to the 1850s Kuleana Act. The first detailed map of Kapālama, made by J.F. Brown in 1885 (Figure 10), shows a traditional Hawaiian landscape of small kuleana LCA parcels extending across the Kapālama plain. Mid-nineteenth century Māhele documents identify these kuleana parcels as comprising house sites and irrigated taro fields. The map also indicates large areas set aside for rice fields near the central ‘auwai (irrigated ditch) in land managed by the konohiki (land agent for the ali‘i; in this case Moses Kekūāiwa). The LCA testimony for Kapālama indicates there was intensive cultivation of taro in the area, maintenance of fishponds, habitation, and some indication of the use of the kula (pasture or waste land). The kuleana to Hawaiian maka‘āinana were located on the flood plain to the east of Waiakamilo/Houghtailing Street and included houses and lo‘i for the cultivation of kalo (taro). The taro patches in the vicinity were just downstream of Niuhalewai (Kapālama) Stream. Roughly 100 kuleana lots were awarded in Kapālama; Figure 11. The claimants were generally awarded one to six separate ‘āpana (lots), sometimes contiguous or in the same ‘ili, but also sometimes scattered through several ‘ili. LCA documentation notes the presence of house sites, irrigated taro fields (lo‘i), and aquaculture fishponds in the immediate vicinity. The pattern of land-award distribution shown in the LCAs suggests the traditional Hawaiian practice of maintaining residences dispersed within and throughout their agricultural fields continued in Kapālama at least until the mid-nineteenth century.

The study area is located within portions of LCA 732:2 (to Kuinui), 918:2 (to Upai), 1746 (to Nakaikuaana), 2266:3 (to Kuhiana), 2268:1 (to Kapahu), and 2937 Part 2:2 (to Wm. Harbottle) (Figure 11, Table 1 and Appendix A ). The claims include house lots and associated taro patches and pastureland.
Figure 10. 1885 Brown map of Kapālama depicting LCA parcels in the vicinity of the study area and the planned extension of the Vineyard Street right-of-way.
Table 1. LCAs within the Project Area

<table>
<thead>
<tr>
<th>LCA Number</th>
<th>Claimant</th>
<th>‘Ili</th>
<th>Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>732</td>
<td>Kuinui</td>
<td>Leleo</td>
<td>‘Āpana 1: House lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 2: Four lo‘i kalo</td>
</tr>
<tr>
<td>918</td>
<td>Upai (w)</td>
<td>Iwilei, Kumuulu</td>
<td>‘Āpana 1: Three lo‘i kalo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 2: House lot</td>
</tr>
<tr>
<td>1746</td>
<td>Nakaikuaana</td>
<td>Kalaepohaku</td>
<td>‘Āpana 1: 21 lo‘i kalo</td>
</tr>
<tr>
<td>2266</td>
<td>Kuhiana</td>
<td>Kalaepohaku, Kainapuaa</td>
<td>‘Āpana 1: House lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 2: Nine lo‘i kalo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 3: Six lo‘i kalo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 4: 11 lo‘i kalo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 5: Kula ‘āina (plain)</td>
</tr>
<tr>
<td>2268</td>
<td>Kapahu</td>
<td>Kalaepohaku</td>
<td>‘Āpana 1: House lot and kula ‘āina</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 2: Ten lo‘i kalo</td>
</tr>
<tr>
<td>2937</td>
<td>Harbottle</td>
<td>Various</td>
<td>‘Āpana 1: Kula ‘āina and lo‘i kalo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Āpana 2: Kula ‘āina and lo‘i kalo</td>
</tr>
</tbody>
</table>
Figure 11. 2013 aerial photograph with an overlay of land commissions awards in the vicinity of the study area (Google Earth 2013)
4.4 Mid- to Late 1800s

The study area vicinity is shown on the 1893 Wall map of Honolulu (Figure 12) as surrounded by rice cultivation but with a north/south trending railroad spur crossing the east portion of the study area. The purpose of the railroad spur is unclear and may have been to facilitate the loading of rice.

The Kapālama area on the 1897 Monsarrat map (Figure 13) is dominated by the Kamehameha Schools complex with only a few scattered houses such as the Houghtailing home. The main street is King Street, which extends through Kapālama, including a mule-drawn tramway, which had its stables southwest of the Kapālama Canal project block. The O'ahu Insane Asylum was mauka (inland, toward the mountains) of the future H-1 Interstate Highway corridor. The study area is shown in the middle of a rice plantation.

A site in Kapālama called Kaiwi‘ula (“the red bone”) was chosen for the first Kamehameha School for Boys, which opened in 1887 (Figure 14). The construction of many wood frame buildings followed including a principal’s house, dormitories, faculty cottages, a preparatory school, a dining hall and kitchen, gymnasiums, and manual school shops. Two stone buildings were constructed first. Bishop Hall, the main administration building for the school, was completed in 1891 and the Bishop Memorial Chapel was completed in 1897. In 1938, the grounds, the chapel, and the preparatory buildings were sold to the territorial government in order to build an auditorium for the Wallace R. Farrington High School. The chapel was demolished in 1954 (Mitchell 1993:1-42). The first buildings of Farrington High School were constructed in 1940, designed by the noted Hawaiian architect Charles W. Dickey (Farrington High School 2014).

Mr. Charles Bishop was interested in preserving the many artifacts in the possession of his late wife and those of the late Queen Emma, who in 1884 willed her “native curiosities” to him “on the condition that at some future day then, together with all similar articles belonging to the late Bernice Pauahi Bishop . . . be presented to him as trustees of an institution to be called the Kamehameha Museum . . .” (Rose 1980:10). The trustees of Bishop Estate chose a site near the Kamehameha School for Boys and the museum, housed in Bishop Hall, opened to the public in 1891 (Figure 15). The official name of the institution was the Bernice Pauahi Bishop Museum but it was also called Hale Hō‘ike‘ike o Kamehameha, or Museum of Kamehameha, the name Queen Emma preferred (Rose 1980:21). In 1894, a new Polynesian Hall was added, in 1903 a Hawaiian Hall, in 1911 the Pākī Hall, and in 1925 the Konia Hall. In 1947, the Kamehameha Schools moved their campus to Kapālama Heights and the former school grounds were transferred to the Bishop Museum Trust. Bishop Hall was formally transferred to the Bishop Museum in 1980 (Rose 1980:18–62).

The Oahu Insane Asylum was established by the Hawai‘i Legislature in 1862, proposing that “A building is to be erected for the reception of insane persons. This facility will furnish restraint till the person becomes of sane mind or is discharged” (Kimmich 1956:345). The hospital was completed in 1866 and the first six patients were transferred to the hospital from the jails where the mentally ill had previously been kept. In 1930, all 549 patients in the then-named Territorial Hospital were transferred to the new Territorial Hospital in Kāne‘ohe, O‘ahu.

Mr. George Houghtailing’s grandfather came to Hawai‘i around 1845, married a Hawaiian woman in 1850 and ran the Bay Horse Saloon at Bethel and Hotel streets in Honolulu. During the
Figure 12. 1893 Wall map of Honolulu showing study area surrounded by rice fields

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)
Figure 13. 1897 Monsarrat map of the Honolulu District showing the study area in a rice plantation
Figure 14. Photo of Kamehameha School for Boys, ca. 1933
Figure 15. Photo of the Bishop Museum ca. 1889

Figure 16. Photo of the Houghtailing sisters’ plantation home, now the location of Damien Memorial School., ca. 1912-1913
Māhele, he was given several *kuleana*, later consolidated into a 15-acre tract along a road later named after him, Houghtailing Road. The family home was between School and Vineyard streets, now the location of Damien High School, as described by Mr. Houghtailing (see Figure 16):

On the premises there was a large pond which had a natural spring and which also fed the lower land where we had taro patches and cultivated the other truck gardening on the land. The land was quite open. We had a couple of bay horses and raised chickens and pigs for family consumption. There was a large open area fronting Houghtailing Road which was used as a park for the neighborhood kids. [UH 1984:1099]

Mr. Houghtailing located the ponds, taro fields, and rice patches from School Street to Liliha Street; other taro patches were in the area “between Palama Street and Liliha Street, below School Street down to what in now Vineyard Street” (UH 1984:1100). These rice ponds and taro patches, usually operated by Chinese, were cultivated up to the 1920s when many were filled in for the development of residential subdivisions. Japanese took over some of the land as truck farms, and Japanese also gradually took over the small stores once operated by Chinese.

Portions of the H-1 Interstate Highway corridor extend through these rice fields and near the pineapple plantations, which are generally *makai* of King Street, although there was a rice mill *mauka* of the study area near the Insane Asylum. Again, there is an established bridge on King Street at the Kapālama Stream crossing. There are no specific structures within or adjacent to the Kapālama study area block.

4.5 1900s

4.5.1 Residential and Commercial Development

A series of USGS maps, U.S. Army War Department maps, and aerial photographs (Figure 17 through Figure 24) depict the accelerated development of residential neighborhoods and commercial centers in the first half of the twentieth century.

A 1919 map (see Figure 17) depicts the establishment of grid-like residential neighborhoods surrounding the Kamehameha School Complex in Kalihi-Pālama. The rice paddies and pineapple plantations are no longer shown, although some of the open areas on the map *mauka* of King Street may still have been cultivated for these crops, or turned into truck farms. There are no open spaces shown in the Nu‘uanu area at this time. On the 1897 Monsarrat map, (see Figure 13) houses were spaced only along the main roads. By 1919, homes are packed in small residential blocks.

A 1933 U.S. Army War Department map (see Figure 19) continues the trend to greater density in grid-like residential blocks. On this map dashed lines, representing planned roads, are shown in the once empty space east of the Kamehameha Schools campus. The area around Pālama Settlement east of Niuhelewai Stream is also a densely packed neighborhood. This is in contrast to the Nu‘uanu area which still has large houses separated by large yards.

A 1943 U.S. Army War Department map (see Figure 20) illustrates the density of homes along the street grids in lower and upper Kalihi-Kapālama. In upper Kalihi, Farrington High School has now taken the place of the Kamehameha Schools. The street grid east of the high school is still in the planning stages. Palama has now become not only a residential area, but has commercial
Figure 17. 1919 U.S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the study area.
Figure 18. 1927 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the study area
Figure 19. 1933 U. S. Army War Department map, Honolulu Quadrangle, showing commercial and residential development in Kapālama, near the study area.
Figure 20. 1943 U.S. Army War Department map, Honolulu Quadrangle showing commercial and residential development in Kapālama, near the study area.
Figure 21. 1950 Sanborn Company Fire Insurance map showing a relative lack of development in the vicinity of the study area
Figure 22. 1952 aerial photograph showing study area

CIA for the Halona Street Bridge (H-1 on-ramp at Vineyard Street), Kapālama, Honolulu, O‘ahu

TMKs: [1] 1-6-002 (Halona Street Right-of-Way) and 1-6-006 (Kapālama Canal)
Figure 23. Portion of 1953 Honolulu USGS Topographic Quadrangle, showing commercial and residential development in Kapālama, near the study area
Figure 24. 1978 USGS aerial photograph, Honolulu Quadrangle, showing commercial and residential development in Kapālama near the study area.
warehouses and stores, mainly lined along King Street. In Nu‘uanu many of the large houses and wide spaces between houses have been lost.

The 1950 Sanborn Fire Insurance map depicts the density of houses and house lots located in the general vicinity of the study area (see Figure 21). There are also large areas of vacant land within the current study area.

A 1952 aerial photograph (see Figure 22) shows substantial housing development but the north and south portions of the study area are still in areas of vacant land.

The 1953 USGS map (see Figure 23) illustrates the large number of schools and churches near the H-1 Interstate Highway corridor. Labeled are Fern School, Kalihi Waena School, Kalākaua School, St. Anthony’s School, and Pu‘uhale School. Lower Kalihi holds Farrington High School, Likelite, St. Theresa School, and the Kaúlani School in Kapālama. The Nu‘uanu survey area is near Kaúluwala School, Kuakini Hospital, Liliuokalani Gardens, and Foster Park (Foster Botanical Garden).

4.5.1.1 H-1 Interstate Highway

As the study area lies directly adjacent to the H-1 right-of-way, it is appropriate to give a little background on the history of H-1. It appears construction for the H-1 in the area of Kalihi- Kapālama started in 1960 from Fort Shafter to Houghtailing Street. Although this was not the place of origin for the H-1 system, it was the first time federal money was used in Hawai‘i for an Interstate system. Prior to 1960, the H-1 was called the Lunalilo Freeway. This early highway is shown on a 1978 aerial photograph (see Figure 24). The website AARoads has compiled a timeline for the H-1 construction (Table 2).

AARoads (2012) writes, “Portions of H1 predate statehood, as an upgrade of Lunalilo Street, the freeway’s namesake. The oldest section, from Punahou street east to King Street (Exits 23-25), was open before 1959. Originally signed as Hawaii 72.”

The Hawaiian Historical Society provides a timeline in a little more detail for the earliest stretch of H-1, the Mauka Arterial.

The pioneering highway in Hawai‘i was the Mauka Arterial (later christened Lunalilo Freeway). The three ‘Ewa-bound lanes, extending one mile between Old Wai‘alae Road and Alexander Street, were opened to traffic November 9, 1953. The Kaimuki-bound lanes along the same stretch were opened and the highway was formally dedicated on January 5, 1954. [Schmitt 2013]

Table 2. Construction Timeline of Hawaii 72, Later Renumbered as H-1 Interstate Highway

<table>
<thead>
<tr>
<th>Year</th>
<th>Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953</td>
<td>First section of the Mauka Arterial opened; Mauka Arterial was approximately a mile section around University Avenue, present-day Mile 24</td>
</tr>
<tr>
<td>1959</td>
<td>At statehood, first section of what is now called Lunalilo Freeway opened between Punahou St (Mile 23) and King St (Mile 25); maps show proposed route from Punahou St west to Middle St (present H-1/H-201 interchange)</td>
</tr>
</tbody>
</table>
4.6 Previous Archaeological Research

Development within a 0.8-km (0.5-mile) radius of the study area is primarily residential with some light industry. Most of the development in the area, including the H-1 Interstate Highway corridor itself, has occurred prior to the late 1970s when archaeological investigation became standard during project planning and construction activities. The locations of previous archaeological studies conducted within a 0.8-km (0.5-mile) radius of the study area are shown in Figure 25 and listed in Table 3. The findings of these archaeological studies are shown in Figure 26 and listed in Table 4. These studies and their findings are discussed in more detail in the following paragraphs.

4.6.1 Palama Fire Station (Neller 1980)

During excavations at the Palama Fire Station in September 1980, the SHPD made a site visit to the project. A large charcoal deposit was observed in an excavation sidewall which contained several basalt cobbles. No further information was obtained due to the backfilling of the excavation prior to the SHPD’s return to document the feature. It could not be determined whether the deposit
Figure 25. Previous archaeological studies within a 0.8-km (0.5-mile) radius of the study area
Table 3. Previous Archaeological Studies within a 0.8-km (0.5-mile) Radius of the Study Area (arranged chronologically)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Location</th>
<th>Results (SIHP # 50-80-14****)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neller 1980</td>
<td>Field reconnaissance</td>
<td>Kapālama Fire Station</td>
<td>Massive charcoal deposit observed in trench, but significance not determined</td>
</tr>
<tr>
<td>Dunn et al. 1991</td>
<td>Archaeological monitoring</td>
<td>Pālama Chevron Station, Kapālama</td>
<td>Nine test trenches for pipelines excavated; burials, human skeletal remains, and historic artifacts (SIHP # -3373) recorded; burials were victims of nineteenth-century epidemics</td>
</tr>
<tr>
<td>Dixon 1993</td>
<td>Archaeological monitoring</td>
<td>Bishop Museum grounds near Violet St, Kapālama</td>
<td>No evidence of pre-Contact cultural deposits found; however, historic artifacts found in backfill; Bishop Museum designated SIHP # -1353 as an historic property</td>
</tr>
<tr>
<td>Jourdan 1994</td>
<td>Burial report</td>
<td>Austin Lane, Kapālama</td>
<td>Historic human coffin burial (SIHP # -4929) found during excavation on Austin Lane</td>
</tr>
<tr>
<td>Nakamura et al. 1994</td>
<td>Archaeological assessment</td>
<td>North King and Houghtailing, Kapālama</td>
<td>No archaeological historic properties found, however, some 50+ year-old buildings found during assessment</td>
</tr>
<tr>
<td>Borthwick et al. 1995</td>
<td>Archaeological inventory survey</td>
<td>Kamehameha Homes, Kapālama</td>
<td>No subsurface features found during excavation of 16 trenches on a 14-acre survey area</td>
</tr>
<tr>
<td>Hammatt 1995</td>
<td>Burial disinterment</td>
<td>Austin Lane, Kapālama</td>
<td>Historic coffin burial at Austin Lane (SIHP # -4929) disinterred; burial probably associated with Kaumakapili Church cemetery, used from 1870s to at least 1921</td>
</tr>
<tr>
<td>McIntosh and Cleghorn 2006</td>
<td>Archaeological monitoring</td>
<td>Kamehameha Heights Water System, Kapālama</td>
<td>Before sewer improvements, Pacific Legacy conducted testing and monitoring to determine if nearby historic graves from Kaʻahumanu and Maluhia Cemeteries extended under Kapālama Ave; ten trenches excavated but no cultural deposits or human bones found</td>
</tr>
<tr>
<td>Dey and Hammatt 2008</td>
<td>Archaeological monitoring</td>
<td>1520 North School St, Kapālama</td>
<td>No culturally significant material identified</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Location</td>
<td>Results (SIHP # 50-80-14****)</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hammatt and Chiogioji 2008</td>
<td>Archaeological inventory survey</td>
<td>BWS Kalihi-Beretania Water Main, Kapālama and Nu‘uanu</td>
<td>Survey confirmed areas affected by proposed water main work were along asphalt areas; two early twentieth century bridges on Judd and Nu‘uanu streets recommended for architectural evaluation</td>
</tr>
<tr>
<td>Burke et al. 2010</td>
<td>Archaeological monitoring</td>
<td>Houghtailing St, Kapālama</td>
<td>No archaeological material observed within sediments disturbed by project’s activities at Houghtailing St by H-1</td>
</tr>
<tr>
<td>Hunkin et al. 2012</td>
<td>Archaeological monitoring</td>
<td>Kalihi-Nu‘uanu Sewer Rehabilitation project</td>
<td>No cultural deposits identified; isolated human femur fragment found in fill material in one of western Punchbowl slope areas; no site number assigned to this fragment, which was handed over to SHPD for reburial</td>
</tr>
<tr>
<td>Hammatt 2013</td>
<td>Archaeological inventory survey</td>
<td>City Center portion of Honolulu High-Capacity Transit Corridor project</td>
<td>Two historic properties identified near current study area—SIHP #s -7426 (subsurface wetland deposit) and -7506 (subsurface incinerated trash deposit); wetland sediments identified along Dillingham Blvd; incinerated trash deposits encountered within HCC campus at corner of Dillingham Blvd and Kokea St</td>
</tr>
<tr>
<td>Hunkin and Hammatt 2013</td>
<td>Archaeological monitoring</td>
<td>Kalihi Valley sewer system, Kapālama</td>
<td>No cultural deposits noted</td>
</tr>
<tr>
<td>Medina and Hammatt 2013</td>
<td>Archaeological monitoring</td>
<td>Waiakamilo Rd and McNeill St intersection traffic signals</td>
<td>No historical properties or human remains encountered</td>
</tr>
<tr>
<td>Medina et al. 2013</td>
<td>Archaeological monitoring</td>
<td>Traffic control signal along Dillingham Blvd</td>
<td>Two historic properties observed during course of archaeological monitoring: SIHP #s -7426 (previously identified historic property consists of former wetland/agricultural sediments that may have been utilized during late pre- to early post-Contact period) and -7515 (newly identified historic property related to creation of Kapālama Canal during 1920s and in-filling of surrounding area for purposes of urban development)</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Location</td>
<td>Results (SIHP # 50-80-14****)</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------</td>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pammer and McDermott 2014</td>
<td>Archaeological inventory survey</td>
<td>Honolulu Community College</td>
<td>Two previously recorded historic properties identified within survey area: SIHP #s -7426 (wetland sediments) and -7506 (incinerated trash layer)</td>
</tr>
<tr>
<td>Stine et al. 2014</td>
<td>Archaeological monitoring</td>
<td>Farrington High School property</td>
<td>No cultural deposits identified during monitoring of three excavations</td>
</tr>
</tbody>
</table>
Figure 26. Previously identified historic properties within a 0.8-km (0.5-mile) radius of the study area
Table 4. Previously Identified Historic Properties within a 0.8-km (0.5-mile) Radius of the Study Area

<table>
<thead>
<tr>
<th>SIHP #</th>
<th>Site Type/ Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-80-14-1302</td>
<td>Palama Fire Station</td>
<td>Neller 1980</td>
</tr>
<tr>
<td>50-80-14-1353</td>
<td>Bishop Museum Complex</td>
<td>Dixon 1993</td>
</tr>
<tr>
<td>50-80-14-3373</td>
<td>Subsurface cultural deposit, burial</td>
<td>Dunn et al. 1991</td>
</tr>
<tr>
<td>50-80-14-4929</td>
<td>Burial (coffin)</td>
<td>Jourdane 1994; Hammatt 1995</td>
</tr>
<tr>
<td>50-80-14-5368</td>
<td>Kuwili Fishpond</td>
<td>McDermott and Mann 2001</td>
</tr>
<tr>
<td>50-80-14-7426</td>
<td>Subsurface wetland sediments</td>
<td>Hammatt 2013, Medina et al. 2013</td>
</tr>
<tr>
<td>50-80-14-7506</td>
<td>Subsurface incinerated trash deposit</td>
<td>Hammatt, 2013; Panner and McDermott 2014</td>
</tr>
<tr>
<td>50-80-14-7515</td>
<td>Subsurface dredge sediment</td>
<td>Medina et al. 2013</td>
</tr>
<tr>
<td>50-80-14-9768</td>
<td>Wallace Rider Farrington High School</td>
<td>Hawai‘i Register Nomination form</td>
</tr>
<tr>
<td>50-80-14-9851</td>
<td>Kaumakapili Church</td>
<td>Hawai‘i Register Nomination form</td>
</tr>
</tbody>
</table>
represented a historic feature or a traditional *imu* (earth oven) pit; however, no historic artifacts were observed in association with the feature.

4.6.2 Dunn et al. 1991

During archaeological monitoring at the Pālama Chevron Station, highly fragmented human skeletal remains were observed (Dunn et al. 1991). The minimum number of individuals (MNI) appeared to be five—but this was not altogether clear. Of interest was the following comment:

> A parishioner of Kaumakapili Church mentioned to PHRI field personnel that the survey area was once a cemetery. Mr. Tom Dye of the DLNR said that older residents of the area had once mentioned that when they were younger they regarded the area as ‘spooky,’ and that this may be attributable to the fact that they had heard there were burials in the area. [Dunn et al. 1991:10]

Fragmentary human skeletal remains were reported at 80 cm below surface, 105 cm below surface, and 120 cm below surface (Dunn et al. 1991:1, 4).

4.6.3 Bishop Museum (Dixon 1993)

This archaeological monitoring project at the Bishop Museum took place during installation of electrical service for the Space Exhibit in August 1992. Museum staff recognized the potential for subsurface pre- and post-Contact Hawaiian cultural material and human remains as well as the possibility of early historic material on museum property. Stratigraphy and backdirt was observed during mechanical trenching conducted on the Great Lawn. Dixon found no evidence of pre-Contact deposits; however, some historic artifacts were found in a fill layer possibly dating back to the Kamehameha Schools period. This fill layer and artifacts were given SHPD site number 50-Oa-A6-26.

4.6.4 Austin Lane, Kapālama (Jourdane 1994; Hammatt 1995)

A burial in a coffin was found during construction of a water line on Austin Lane and reported to the SHPD (Jourdane 1994). CSH (Hammatt 1995) conducted background on the property and disinterred the burial. The human remains, designated SIHP # -4929, were turned over to the SHPD for reburial.

4.6.5 Corner of North King and Houghtailing Streets (Nakamura et al. 1994)

The Bernice Pauahi Bishop Museum (Nakamura, Pantaleo, and Sinoto 1994) carried out an archaeological assessment of land in Kapālama on the corner of North King and Houghtailing streets. Background research identified no historic sites within the survey area. Research also showed pre- and early post-Contact use of the area for agriculture but suggested that disturbance in the area from urbanization in the 1900s had reduced the possibility of finding intact deposits from an earlier time.

4.6.6 Kamehameha Homes Project, Kapālama (Borthwick et al. 1995)

CSH (Borthwick et al. 1995) carried out an archaeological subsurface inventory survey of the Kamehameha Homes project in Kapālama. The crew excavated 16 trenches spaced to cover the entire 13.96-acre survey area. All of the trenches had a landscape layer associated with mechanical terracing of the area by bulldozers. No significant finds were reported.
4.6.7 Kamehameha Heights, Puea and Kaʻahumanu Cemeteries (McIntosh and Cleghorn 2006)

In 2006, Pacific Legacy (McIntosh and Cleghorn 2006) conducted pre-construction testing along the Puea and Kaʻahumanu Cemeteries before improvements were made to the Kamehameha Heights water system, due to concerns that unmarked graves could lie outside the modern boundary of the cemeteries. No cultural deposits or human remains were found in the ten test trenches along the north and east streets bounding the cemeteries.

4.6.8 Kalihi/Nu‘uanu Sewer Rehabilitation Project (Hunkin et al. 2012)

In 2012, CSH conducted monitoring for the Kalihi-Nu‘uanu Sewer project. No cultural deposits were identified in any of the monitored excavation trenches. One isolated human femur fragment was found in fill material in one of the western Punchbowl slope areas. No site number was assigned to this fragment, which was handed over to the SHPD for reburial.

4.6.9 Walgreens Development Project, North School Street (Dey and Hammatt 2008)

In 2008, CSH completed an archaeological monitoring program for a Walgreens development project. Background research identified no historic sites, a low potential for pre-Contact or early post-Contact Hawaiian cultural remains, and a low to moderate potential for early historic remains. Subsequent fieldwork confirmed a lack of pre-Contact or early post-Contact cultural material within that survey area.

4.6.10 Traffic Management System Project, Houghtailing Street by the H-1 (Burke et al. 2010)

In 2010, CSH (Burke et al. 2010) completed an archaeological monitoring program for a Traffic Management System PH 1 project. Background research identified no sites but suggested a potential for early historic remains. Subsequent field monitoring produced no significant finds within the survey area.

4.6.11 Kalihi Beretania 24-Inch Water Main Project (Hammatt and Chiogioji 2008)

CSH carried out an archaeological inventory survey of the proposed Board of Water Supply Kalihi Beretania 24-Inch Water Main project in Nu‘uanu and Kapālama (Hammatt and Chiogioji 2008). No prehistoric properties were identified within the survey area but the study emphasized the need to consider the Judd Street and Nu‘uanu Avenue bridges as historic properties. Background research showed the survey area to be part of an expansive agricultural system during the pre- and early post-Contact period. As the survey area was confined to roadway corridors, subsequent testing revealed mostly grading and fill disturbance from roadway construction and utility trenching. No pre- or early post-Contact cultural material was observed during archaeological testing within the survey area.

4.6.12 Kalihi/Nu‘uanu Sewer Rehabilitation Project (Hunkin et al. 2012)

Archaeological monitoring for Phase 1 of the Kalihi/Nu'uanu Sewer Rehabilitation project included limited work just east of the present survey area in their “Area 4-Lanakila” area. The nearest results reported were from along Alaneo Street more than 400 m (1312.3 ft) east of the present study area. There were no historic properties identified near the present survey area.
4.6.13 Honolulu High-Capacity Transit Corridor Project (Hammatt 2013)

CSH performed AIS testing for the Honolulu High-Capacity Transit Corridor project (City Center) within numerous locations between Middle Street and Ala Moana Center (Hammatt 2013). Testing identified multiple sites, two of which were identified near the current study area—SIHP #s -7426 (subsurface wetland deposit) and -7506 (subsurface incinerated trash deposit). The wetland sediments were identified within 28 AIS test excavations along Dillingham Boulevard, makai of the current project (T-054 through T-082). The incinerated trash deposits were encountered within three test excavations (T-064, T-066, and T-067) within the HCC campus at the corner of Dillingham Boulevard and Kokea Street.

4.6.14 Kalihi Valley Sewer System Improvements, Kapālama (Hunkin and Hammatt 2013)

In 2013, CSH monitored a portion of the Kalihi Valley Sewer System Improvement project near the junction of Houghtailing Street and North School Street in Kalihi (Hunkin and Hammatt 2013). Due to the survey area’s close proximity to Ka‘ahumanu, Puea, and Maluhia Cemeteries, project proponents decided to enact a monitoring project for the installation of two water lines to mitigate any adverse effect to historic properties or burials in the survey area. No cultural deposits or historic properties were observed during excavations. The stratigraphy consisted of various layers of imported fill associated with historic and modern development overlying naturally deposited sediment and bedrock.

4.6.15 Medina and Hammatt 2013

In 2013, CSH (Medina and Hammatt 2013) reported on the results of archaeological monitoring for traffic control signal improvements for the Waiakamilo Road and McNeill Street intersection. No historical properties or human remains were encountered as a result of construction activities.

4.6.16 Traffic Control Signal Improvements along Dillingham Boulevard (Medina et al. 2013)

In 2013, CSH (Medina et al. 2013) reported on the results of archaeological monitoring for traffic control signal improvements along Dillingham Boulevard between Kokea and Kohou streets, involving excavations within city streets and sidewalks for subsurface electrical lines, conduits, and boxes. Two historic properties were observed during the course of archaeological monitoring consisting of SHP #s -7426, a previously identified historic property consisting of former wetland/agricultural sediments that may have been utilized during the late pre-to early post-Contact period, and -7515, a newly identified historic property related to the creation of Kapālama Canal during the 1920s and the in-filling of the surrounding area for the purposes of urban development.

4.6.17 Honolulu Community College (Pammer and McDermott 2014)

In 2013, CSH conducted an archaeological inventory survey on the campus of Honolulu Community College (Pammer and McDermott 2014). A total of eight backhoe-assisted excavations were excavated to assess the stratigraphy and determine the potential for buried archaeological deposits. Two previously recorded historic properties were identified with the survey area, SHP #s -7526 (wetland sediments) and -7506 (incinerated trash deposit). Both sites were assessed as significant under criterion “d,” but no further work was recommended.
4.6.18 Farrington High School (Stine et al. 2014)

In 2013, CSH conducted archaeological monitoring for renovations and replacements of electrical vaults and lines at Farrington High School (Stine et al. 2014). Fieldwork was conducted from 27–29 June 2012. No new historic properties were identified. One previously identified property, Wallace Rider Farrington High School (SIHP # -9768) had been placed on the State Register of Historic Places in 1993. No significant cultural material or human remains were observed during monitoring.

4.7 Background Summary and Predictive Model

Based on background research, the primary area of traditional Hawaiian settlement and intensive agriculture within Kapālama seems to have been in the upper valleys, as well as near streams and springs. The project sits within the central area of Kapālama along the drainage of Kapālama and Niuhelewai streams. Historically, agriculture and habitation were intensive in this area. The area encompassed by the survey area was used for rice cultivation, but immediate habitation within the survey area does not seem to have been prevalent.

Traditional Hawaiian land use indicated in the adjacent land commission awards (LCAs) documentation consisted of habitation, irrigated taro fields (lo’i), kula (dryland plots used for cultivation and/or pasture), and aquaculture via fishponds. The majority of kuleana land claims located near the study area were located near the freshwater sources of Kalāhi and Niuhelewai streams as they were the most arable sources of land. This is the area described as an uncultivated plain in John Papa ʻĪʻī’s (1959) account of the area in 1810, until you reached “the taro patches of Kalihi.” Major strife is indicated ca. 1782 in the defeat of the Oʻahu ruling chief Kahāhana when the dead backed up the lagoonal backwaters (muliwai) of Niuhelewai Stream—but this may have been well seaward of the current study area. Another uncertainty pertains to the indicated ca. 1855 burial ground on the plains of Kaiwiʻula which may have been near the current study area.

By the twentieth century, the coastal and central sections of Kapālama had become suburbs of Honolulu. Much development in Kapālama primarily occurred prior to the late 1970s when archaeological investigation became standard during construction activities. As a result, few archaeological studies have been conducted in this area. The only previous projects located within the current study area consist of projects dealing with the H-1 Interstate Highway. No previously recorded archaeological sites are located within or directly adjacent to the current study area. Historic infrastructure relating to the Halona Street Bridge and the Kapālama Canal are anticipated within the study area.
Section 5  Community Consultation

5.1 Introduction

Throughout the course of this assessment, an effort was made to contact and consult with Native Hawaiian Organizations (NHO), agencies, and community members including descendants of the area, in order to identify individuals with cultural expertise and/or knowledge of the ahupua’a of Honolulu. CSH initiated its outreach effort in August 2015 through letters, email, telephone calls, and in-person contact. CSH completed the community consultation in December 2015.

5.2 Community Contact Letter

In the majority of cases, letters (Figure 27 and Figure 28) along with a map and an aerial photograph of the project were mailed with the following text:

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai‘i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Halona Street Bridge replacement project, Kapālama Ahupua‘a, Honolulu (Kona) District, O‘ahu, FHWA/CFLHD Contract DTFH68-13-R-00027, TMKs: [1] 1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, Kapālama Canal) and [1] 1-6-006 (Halona Street, Kokea Street, Kohou Street). The project area is located within Kapālama Ahupua‘a at the location of the Halona Street Bridge and the Kapālama Canal and includes portions of the H-1 Interstate Highway, and Halona Street from the intersection of Kuipaakea Lane to just beyond Kohou Street. 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 (see attachments), and covers approximately 1.5 acres.

The purpose of the project is to replace the existing bridge to meet current design standards for roadway width, load capacity, pedestrian traffic, bridge railing and transitions, and bridge approaches. This existing bridge was built in 1938 and is structurally deficient and functionally obsolete. The replacement bridge would be a three-span, concrete structure. It would be supported on two piers similar to, and aligned with, the existing H-1 Bridge piers. New abutments would be set back from and behind the existing abutments which would be left in place, thereby minimizing impacts to the masonry walls along the canal. For safety reasons, another consideration is to develop provisions to discourage individuals from accessing the area under the bridge.

The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interview assists us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your kōkua (assistance) and guidance regarding the following aspects of our study:

• General history and present and past land use of the project area.
Aloha,

At the request of CH2M HILL and on behalf of the Federal Highway Administration (FHWA) Central Federal Lands Highway Division (CFLHD), Cultural Surveys Hawai'i, Inc. (CSH) is conducting a cultural impact assessment (CIA) for the Halona Street Bridge replacement project, Kapālama Ahupua'a, Honolulu (Kona) District, O'ahu, FHWA/CFLHD Contract DTFH68-13-R-00027, TMKs: [1] 1-6-002 (Olomea Street and H-1 Interstate Highway Rights-of-Way, Kapālama Canal) and [1] 1-6-006 (Halona Street, Kokea Street, Kohou Street). The project area is located within Kapālama Ahupua'a at the location of the Halona Street Bridge and the Kapālama Canal and includes portions of the H-1 Interstate Highway, and Halona Street from the intersection of Kuipaakea Lane to just beyond Kohou Street. 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 (see attachments), and covers approximately 1.5 acres.

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The purpose of the CIA is to gather information about the project area and its surroundings through research and interviews with individuals that are knowledgeable about this area. The research and interview assists us when assessing potential impacts to the cultural resources, cultural practices, and beliefs identified as a result of the planned project. We are seeking your kōkea (assistance) and guidance regarding the following aspects of our study:

- General history and present and past land use of the project area.
- Knowledge of cultural sites - for example, historic sites, archaeological sites, and burials.
- Knowledge of traditional gathering practices in the project area, both past and ongoing.
- Cultural associations of the project area, such as legends and traditional uses.
- 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 the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.

August 2015

Figure 27. Community consultation letter, page one
In advance, we appreciate your assistance in our research effort. Nicole Ishihara is available at your convenience by email at nishiha@culturalsurveys.com or by phone at (808) 262-9972.

Me ka ha'a'a'a,

[Signature]

Nicole Ishihara
CSH Cultural Researcher

Figure 28. Community consultation letter, page two
• Knowledge of cultural sites- for example, historic sites, archaeological sites, and burials.

• Knowledge of traditional gathering practices in the project area, both past and ongoing.

• Cultural associations of the project area, such as legends and traditional uses.

• Referrals of kūpuna or elders and kamaʻāina who might be willing to share their cultural knowledge of the project area and the surrounding ahupuaʻa lands.

• Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.

5.3 Community Contact Table

Below in Table 5 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 5. Results of Community Consultation

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Becket, Jan</td>
<td>Author, photographer, knowledgeable in cultural sites</td>
<td>Letter and figures sent via email 19 August 2015</td>
</tr>
<tr>
<td></td>
<td>Kona Moku Representative, Council of Hawaiian Civic Club’s Committee on the Preservation of Historic Sites and Cultural Properties</td>
<td>Mr. Becket responded via email 20 August 2015 stating that he would be interested in a possible site visit to Kamehameha Schools–Kapālama</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSH emailed Mr. Becket and gave dates of availability to huakaʻi (journey, field trip)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mr. Becket confirmed via email a date of 26 September 2015 to access sites in Kapālama Mauka</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSH and Mr. Becket attended a site visit on 26 September 2015 to sites in Kapālama Mauka</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSH interviewed Mr. Becket in his home on 29 September 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CSH sent Mr. Becket his draft transcription for approval via email on 8 December 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mr. Becket emailed CSH on 8 December 2015 stating he would review the transcription</td>
</tr>
<tr>
<td>Name</td>
<td>Affiliation</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mr. Becket</td>
<td></td>
<td>Mr. Becket emailed CSH on 9 December 2015 stating he has edits to his transcription and would email later.</td>
</tr>
</tbody>
</table>
| Brown, Desoto               | Historian, Bishop Museum                         | Letter and figures sent via email 13 August 2015  
Mr. Brown emailed CSH on 14 August 2015 stating he forwarded letter to Cultural Collections Department that can advise on specific traditional practices for the area and the Archives photo collection has pictures of Kapālama Stream in 1938 “after Hawaiian Dredging had completed the construction of the walls that line the stream. This was when the bridge was built as well.”  
CSH emailed Mr. Brown on 17 August 2015 thanking him for the referral |
| Carganilla, Alfredo “Al”    | Principal, Farrington High School                | Letter and figures sent via U.S. Postal Service (USPS) 11 August 2015                                                                                                                                     |
| Casey, Brother Daniel       | Principal, Damien High School                    | Letter and figures sent via email 13 August 2015  
Brother Daniel Casey responded to CSH via email 4 September 2015 stating that he can find someone at Damien High School or kamaʻāina who may be interested; he recently moved to the islands and has no background  
CSH emailed Brother Daniel Casey on 4 September 2015 thanking him for his assistance and would be open to communicating with any interested parties or referrals |
| Crabbe, Kamanaʻopono        | Ka Pouhana (Chief Executive Officer), Office of Hawaiian Affairs (OHA) | Letter and figures sent via USPS 11 August 2015  
CSH received a letter from Mr. Crabbe dated 3 September 2015; had no comments or information to provide to CSH  
See Appendix B for OHA response letter |
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farden, Hailama</td>
<td>Vice Principal, Kamehameha Schools</td>
<td>Letter and figures sent via email 13 August 2015</td>
</tr>
<tr>
<td>Hilo, Regina</td>
<td>O‘ahu Island Burial Sites Specialist, Department of Land and Natural Resources (DLNR)–State Historic Preservation Division (SHPD)</td>
<td>Letter and figures sent via email 13 August 2015</td>
</tr>
</tbody>
</table>
| Ishihara, Melvin      | Raised in Kapālama Ahupua‘a                                                                                                                                                                                                                                                                                                               | Letter and figures hand delivered 10 August 2015  
Interview scheduled for 24 August 2015  
Interview with Mr. Ishihara on 24 August 2015 at his home in Kāne‘ohe  
Hand delivered draft interview transcription to Mr. Ishihara on 16 September 2015  
Mr. Ishihara provided CSH edits to his draft interview transcription on 6 October 2015  
CSH provided Mr. Ishihara with a draft interview summary on 18 November 2015  
Mr. Ishihara provided CSH with edits to his draft interview summary on 19 November 2015; Mr. Ishihara reviewed and approved See Section 5.4.1 for his interview |
| Kalihi-Pālama Hawaiian Civic Club |                                                                                                                                                                                                                                                                                                                                     | Letter and figures sent via email 13 August 2015  
Ms. Khan forwarded to Kalihi-Pālama Hawaiian Civic Club members via email on 13 August 2015; CSH was cc’d; no responses  
Kalihi-Pālama Hawaiian Civic Club |                                                                                                                                                                                                                                                                                                                                     |
| Palama Settlement     |                                                                                                                                                                                                                                                                                                                                     | Letter and figures sent via USPS 11 August 2015                                                                                                                                                                             |
| Rodrigues, Hinano     | Branch Chief of History and Culture, DLNR–SHPD                                                                                                                                                                                                                                                                                    | Letter and figures sent via email 13 August 2015                                                                                                                                                                             |
| Wong, Hinaleimoana   | O‘ahu Island Burial Council (OIBC) Chair and Kona Moku Representative                                                                                                                                                                                                          | Letter and figures sent via email 13 August 2015                                                                                                                                                                             |
### 5.4 Kamaʻāina Interviews

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their manaʻo and ʻike 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.

#### 5.4.1 Melvin Ishihara

CSH interviewed Melvin Ishihara, former Executive Director of the Public Utilities Commission, on 24 August 2015 at his home in Kāneʻohe, Oʻahu. Melvin Shigeru Shimokawa was born on 24 July 1933 to Shigeru Shimokawa and Elsie Kochiyama. Shigeru Shimokawa was born on Kaauʻi. He worked for Theodore H. Richards, a contracting firm in Honolulu that built bridges. One bridge in particular that Shigeru Shimokawa worked on was a bridge that crosses Nuʻuanu Stream on Vineyard Street. He later died from contracting tetanus:

> . . . he didn’t die according to grandma from poisoning on the job . . . it was . . . he played a lot of sports. He played sports with Alan Nagata who was the Assistant Coach to Neil Blaisdell . . . and whenever he wasn’t feeling well with an injury—according to Alan Nagata, he went to get acupuncture treatment by this lady in Mōʻiliʻili . . . he died in 1938 . . . But if it was infected that way [the acupuncture needle]—that’s how you can get tetanus poisoning.

His mother, Elsie Kochiyama, was employed as a housekeeper to wealthy families and businessmen. She also raised her children—Melvin and Pat. She was pregnant with her son Roy when Shigeru passed away from tetanus. She raised her family at the Shimokawa Camp where the Hawaiian Humane Society is today. The Shimokawa family owned a large piece of property in Mōʻiliʻili. For the construction of the H-1 Freeway, the Shimokawa’s property was condemned and they were compensated. In turn, the Shimokawa’s purchased a large property on 12th Avenue in Kaimuki where approximately six homes were built. Elsie Kochiyama remarried in the early 1940s.

Robert Ishihara was born on Maui and later relocated to Honolulu where he worked at Pearl Harbor. He was injured from an explosion during the construction of Pearl Harbor. He joined the United States Army and was part of the 100th Battalion until he was discharged due to his previous injury. Elsie and Robert married and relocated to Kukui Street and lived with the Kochiyama family in Kapālama. During this time, Robert also adopted Melvin, Pat, and Roy.

Mr. Ishihara recalls living on King Street in Kapālama where the United States Post Office is today. He states that the family did not live in a house but a commercial complex. One end of the building consisted of a foundry while the other end had a furniture store. Mr. Ishihara’s grandfather also had a stall for his business as a vegetable peddler. He describes the layout of the complex:

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zisk, Janet</td>
<td>Archivist, Kamehameha Schools</td>
<td>Letter and figures sent via email 13 August 2015</td>
</tr>
</tbody>
</table>
What it is, is a building that had all of these segments. And the first one in this lane was Yamashita General Store where we used to buy shave ice. They lived upstairs in the back. Every house, every unit inside there other than the Chinese restaurant and the barber shop and the furniture and the foundry—we were the only ones with family that lived inside that complex.

Approximately 8-10 people in their family lived in the complex, which did not have a bedroom. Instead futons (Japanese mattress) were placed in an open area during the evening and stored in small cabinets during the day. Mr. Ishihara’s uncle slept on a deck in the hallway near the entrance to the complex, “Every night Uncle Jig used to have to climb up there to go to sleep. That’s where he slept.” Across from the kitchen was a toilet. In addition, there was a separate area for the furo (Japanese bath with water). The family would heat the furo with a fire on their own and would wash clothes in the bathroom as well.

As a child, Mr. Ishihara recalls peddling vegetables with his Grandpa Yamane from Waiakamilo Road to Libby Cannery. The area he peddled his vegetables in consisted of homes, dirt streets, and patches of pasture land. Leftover vegetables from Grandpa Yamane’s cart would be used for the family’s cooking, which was a traditional Japanese diet.

Mr. Ishihara describes the Kapālama area as a “mixture of nationalities.” Neighbors of different ethnic backgrounds including Hawaiian, Japanese, Chinese, and African-American lived in the area. Growing up, the neighborhood children often played in a large pasture land bounded by Dillingham Boulevard and adjacent to Kohou Street. The pasture contained horses, cows, and bushes such as koa haole (Leucaena leucocephala). While out playing with the neighborhood children, they often snacked on what was available in the fields. Mr. Ishihara shares his memory of catching doves and consuming them:

And then the stream ran in and then there was a big mango tree and we’d go up in the mango tree and Willie Keola [a neighbor] was a little bit older than us. He used to catch doves. The way he catch doves two ways: the old style and Indian way where you get the—you know the wire. You make the wire da kine and make the entrance and then they go in and cannot come out. And the other stuff, I really remember, clearly, clearly, clearly was an Indian type . . . He bends the haole koa branch down and makes it . . . ties a string on it. Make a loop. Make a platform and build a platform like that—put sticks on it. And then he puts his corn down and we sitting in the tree now! The dove pick it up, pick it up, pick it up. As soon as he stepped on that platform it unhooks the da kine the thing and the da kine snaps up and catches the thing by the leg and we run down from the tree, we pick it up, put it in the cage . . . And then we barbeque ‘um . . . Yeah, you gotta make hot water and make it like chicken.

He also utilized Kapālama Canal to catch mullet and Samoan crab. He adds that the canal was very clean and was made up of mostly rainwater. Because the canal was so clean, he would swim in the canal regularly and ride in homemade boats made of totong (Hawaiian Creole English for corrugated roofing):

We’d bend it and we’d nail it on both ends and it becomes a boat. We put outriggers on it . . . Cover it up with tar from the road. We chew the tar after we dig um out
from the road. Heat it up. I used to literally chew it . . . the canal was kind of deep. Maybe about seven, eight feet.

Another place he frequented was Kotohira Jinsha, a Japanese temple in the vicinity of the current project area. Growing up, the neighborhood kids would refer to the temple as Kompira because that’s what they thought they heard when it was pronounced. The temple often showcased sumo (Japanese competitive full-contact wrestling sport where a wrestler forces another wrestler out of a circular ring), kendo (Japanese martial arts), Japanese movies, and bon dances (Japanese Buddhist custom to honor the ancestors’ spirits).

Mr. Ishihara remembers several historic events that took place during his lifetime, including World War II and the Tsunami of 1946. On 7 December 1941, he recalls hearing an explosion. The explosion was the result of a bomb dropping in pasture land (Kohou Street, Dillingham Boulevard, and Waiakamilo Road). In addition, a home on Dillingham Boulevard and Mokuea Street was strafed with machine gun bullets. World War II changed the dynamics of the Kapālama area. Farrington High School was converted into a makeshift hospital from 1941 to 1945. Barracks and warehouses were set up next to the school for the war. And although his family was of Japanese descent, they had no fear of being transferred to a relocation camp because the women in his family volunteered at Kotohira Jinsha to make slippers for patients at Tripler Hospital.

Occasionally, between 1940-1943, when he was younger, Mr. Ishihara would swim in Honolulu Harbor at Pier 19. In 1946, Pier 19 is where he saw the tsunami (Japanese for tidal wave) recede and rise, specifically at Nu‘uanu Stream, which is parallel to River Street:

1946, I was going to school. Ok, we live right next to the canal so I was going to school about 7:30 in the morning. Everybody was yelling, ‘TIGER WAVE! TIGER WAVE!’ I was like, ‘What kind of wave? Tiger wave?!’ . . . They said tidal wave but I thought they said ‘tiger wave’ because we never used the term tsunami . . . Anyway, that’s what we saw. The thing would recede and all of the mullet—cause all the mullet inside that river—and pāpio [juvenile crevalle]—‘cause it was a mixture of salt water and fresh water coming from Waiakalulu Falls . . . Yeah and the guys go all run down and pick um up . . . all local guys. Young guys.

As the water began to rise, those who were gathering the fish below had to exit the streambed quickly. The water eventually reached the height of the concrete archway over the bridge that spans Nu‘uanu Stream at Beretania Street and ‘A‘ala Park. The archway does not exist today.

Farther up Nu‘uanu Stream near School Street is where cars would get washed in the streambed. Cars would drive to the Kawahara Nursery where there was a driveway. Cars would regularly park in the streambed and people would wash their cars. This is also where Mr. Ishihara caught 'o'opu (general name for fishes in the families Eleotridae, Gobiidae, and Blennidae), 'ōpae (general name for shrimp), and crab. In addition he discusses several waterways including Waikalulu Falls; a spring near Sacred Hearts Convent near Liliha Street; and another spring near Saint Francis Hospital. He recalls his Aunty Florence’s parents having a lo‘i on their property in Liliha during the 1940s where Saint Francis Hospital stands today.

Prior to the construction of the H-1 Freeway, the area between School and Kukui streets was a park. Several homes were located makai of the freeway, however, the majority of the area was a park. When the H-1 Freeway was being constructed, they needed to dig deep to create the roadway.
Cultural Surveys Hawai‘i Job Code: KAPALAMA 25

Community Consultation

below. He remembers Foster Botanical Gardens being a much larger property until parts of the garden were condemned for the major roadways that border the area (H-1 Freeway, North Vineyard Boulevard, and Nu‘uanu Avenue). The original entrance to Foster Botanical Gardens was on Nu‘uanu Avenue. Today, the main entrance is on North Vineyard Boulevard. Many other streets were altered or constructed for the freeway including Olomea Street. According to Mr. Ishihara, while growing up there was no Olomea Street—it was previously an open field.

Although the landscape of Kapālama has changed, Mr. Ishihara notes that some historic buildings still exist in the area. On the corner of Kamenani Street (near Waiakamilo Road and North King Street) is an old, two-story building and in the back of that is another old building that Mr. Ishihara remembers from when he was younger. Across from the Board of Water Supply Pumping Station are two old, wooden buildings as well. He remembers that while growing up the bottom portion of the building was a furniture store and the upstairs was where a family resided. Near Diners Drive Inn was a row of buildings. Coyne Mattress was in the first building and still continues to make mattresses today. Mr. Ishihara points out that these buildings that still exist in Kapālama were constructed before he was born.

5.4.2 Jan Becket

Approval of transcription and interview summary pending.

5.5 Summary of Kamaʻāina Interviews

Based on Mr. Ishihara’s reviewed and approved summary, the following is a synthesis of findings within Kapālama Ahupua‘a. Please note that CSH is still awaiting approval of additional interviews and the synthesis of findings will change.

Mr. Ishihara recalls living on King Street in Kapālama where the United States Post Office is located today. He did not live in a house, but rather a commercial complex that consisted of multiple businesses including a general store, Chinese restaurant, barber shop, furniture store, and foundry. Mr. Ishihara’s grandfather was a vegetable peddler who parked his cart in one of the stalls within the commercial complex daily.

Kāpalama consisted of mixed ethnic neighborhoods bound by pasture lands. Mr. Ishihara shares his memory of playing in a large pasture land bound by Dillingham Boulevard and adjacent to Kohou Street. The pasture contained horses, cows, and bushes such as koa haole. He recalls catching doves in the pasture land while out playing and cooking them “like chicken.” He would also catch mullet and Samoan crab in Kapālama Canal. The canal was very clean consisting of mostly rainwater, therefore he would often swim in the canal and ride in homemade boats made of corrugated roofing.

Several historic events occurred during Mr. Ishihara’s lifetime, some which directly impacted the ahupua‘a of Kapālama. During the Japanese attack on O‘ahu on 7 December 1941, Mr. Ishihara recalls hearing an explosion. The explosion was the result of a bomb dropping within the pasture lands that he played in bound by Dillingham Boulevard, Kohou Street, and Waiakamilo Road. A home on Dillingham Boulevard and Mokuea Street was strafed with machine gun bullets. Farrington High School was converted into a makeshift hospital from 1941 to 1945. Barracks and warehouses were set up next to the high school for military purposes. Although Mr. Ishihara and his family are of Japanese descent, they had no fear of being transferred to a relocation camp.
because the women in his family volunteered at nearby hongwanji, Kotohira Jinsha, to make slippers for patients at Tripler Hospital.

Another historic event that occurred was the tsunami of 1946. Walking to school one morning near Nu‘uanu Stream, Mr. Ishihara heard people yelling, “TIGER WAVE!” He misunderstood the screams “tidal wave” as “TIGER WAVE” because the word tsunami was not widely used at the time. He recalls seeing the water recede from Nu‘uanu Stream revealing mullet and pāpio. Young men jumped into the streambed gathering the fish. As the water began to rise, those who were in the streambed quickly exited. The water eventually reached the height of the concrete archway that was once over the bridge that spanned Nu‘uanu Stream at Beretania Street and ‘A‘ala Park. Farther up Nu‘uanu Stream is where Mr. Ishihara caught ’o‘opus, ’ōpae, and crab.

Prior to the construction of the H-1 Freeway, the area between School and Kukui streets was a park. The construction of major roadways in the area altered neighboring businesses. Foster Botanical Gardens was much larger than it is today. Parts of the garden property were condemned for the major roadways that border the area including H-1 Freeway, North Vineyard Boulevard, and Nu‘uanu Avenue. The original entrance to Foster Botanical Gardens was on Nu‘uanu Avenue. Today the main entrance is located on North Vineyard Bouelvard. Olomea Street, which is within the current project area, had not yet been constructed when Mr. Ishihara was younger. He recalls the area where Olomea Street is today an open field.

Although the cultural landscape of Kapālama has changed, he notes that some historic buildings still exist in the area. Historic buildings of Kapālama include a two-story building on Kamenani Street; two wooden buildings across from the Board of Water Supply Pumping Station; and a building near Diners Drive Inn where Coyne Mattress was located. The significance of these buildings was that they were constructed prior to Mr. Ishihara’s birth in 1933. The buildings are at least 83 years old.
Section 6  Traditional Cultural Practices

6.1 Gathering of Plant Resources

Kapālama Ahupua‘a was watered by two smaller streams: Kāpalama and Niuhelewai. Kapālama Ahupua‘a offered desirable conditions for traditional Hawaiian subsistence practices. The well irrigated plain also allowed for an extensive lo‘i system. The protected shoreline and reef allowed for easy access to the ocean. Sandalwood trees were found in the mauka sections of Kapālama Ahupua‘a. Early travelers such as Otto von Kotzebue detailed early Honolulu in a journal and map. An 1817 map drawn by Kotzebue indicates large taro fields and trees on both sides of Kalihi and Nu‘uanu Stream. An 1855 map by LaPasse indicates extensive lo‘i in the makai section of Kapālama. The map also depicts two fishponds: Kūwili I and Kawa. Kūwili was classified as a Type II pond (Kikuchi 1973), a loko pu‘uone or loko hakuone, an isolated shore fishpond formed by the development of a barrier beach building a single elongated sand ridge parallel to the coast. Kawa was classified as a Type I pond, a loko kuapā, a fishpond where one side or sides face the sea and consist of stone or coral walls with one or more sluice gates (Kikuchi 1973:227–228).

Māhele documents indicate Kapālama was in fact a very productive land. Land Commission Awards indicate ‘āpana (parcels) were used for house lots, lo‘i kalo, and kula ‘āina. The project area is surrounded by LCAs as well. Kapālama Stream was most likely tapped and used for ‘auwai to irrigate surrounding lo‘i kalo.

Interviewee Melvin Ishihara fished for mullet and caught Samoan crab from Kapālama Canal when he was younger. He adds that the canal was very clean and mostly comprised of rainwater. Although outside Kapālama Ahupua‘a, Mr. Ishihara caught ‘o‘opu, ‘ōpae, and crab in Nu‘uanu Stream. His Aunty Florence’s parents had a lo‘i on their property in Liliha during the 1940s where Saint Francis Hospital is today.

6.2 Burials

Previous archaeological studies indicate two burials were found south of the current project area. In 1991 during archaeological monitoring at the Pālama Chevron Station, burials, human skeletal remains, and historic artifacts were recovered (SIHP # -3373; Dunn et al. 1991). According to a parishioner of Kaumakapili Church, the area was part of a cemetery and burials were victims of nineteenth century epidemics. In 1994, a human coffin burial was found during excavation on Austin Lane (SIHP # -4929; Jourdane 1994).

6.3 Wahi Pana

Keanakamanō (“the cave of the shark”) is the name of a peak on the western side of Kapālama Ahupua‘a. There is also a cave called Keanakamanō, however, the exact location is unknown. Sterling and Summers (1978:323) place the cave near the Kamehameha Schools and relate mo‘olelo concerning the cave with springs to the ocean or that extended to the Koʻolau Mountain range that connected the leeward and windward sides of the island. According to one mo‘olelo, the cave was called the “cave of the sharks” because the shark gods of Pearl Harbor would rest at the cave (Taylor 1954). One branch of the cave led around and under the mountains to Pearl Harbor while another led to the center of Oʻahu (presumably Kūkaniloko) where there was a sacred pool.
An earthquake closed up the caves in the early 1900s cutting off access to the sacred pool. An access street called Kealamanō (“the way of the shark”) is located on the Kamehameha Schools campus in Kapālama Heights. The street is named after the cave. The shark referred to for the access street is Kamohoali‘ī, king of the sharks and elder brother of Pele.

At least four heiau have been reported in Kapālama including Puea, Pāka’aluna (also known as Pāka‘alunluna), Oomaunahele, and Paepaenuileimoku. Pāka’aluna Heiau may have been located on or near Pāka‘aluna Peak since the names are associated. The names for the heiau are unknown.

A large pōhaku measuring 5 ft 8 inches in length and 5 ft in height with a shape resembling a crouching animal when viewed from the west stands on the west side of a ridge in Kapālama Valley (Sterling and Summers 1978:321). The pōhaku is located in a direct line between Violet Street and a building at the Kamehameha Schools. An informant documented by Sterling and Summers (1978:321) stated he first saw the pōhaku in 1911 when his brother pointed it out to him. Native Hawaiians who resided in the area also indicated the importance of this rock. He recalled Hawaiians laying out on mats on the ridge between Kapālama Valley and Kamanaiki Valley, spending the entire day worshipping the rock from afar, while chewing on sugarcane and leaving the stalks behind. It was not indicated if the chewing sugarcane or leaving the stalks behind were part of a ritual or not.

### 6.4 Trails

An 1817 map drawn by Otton von Kotzebue indicated several trails traversing the plains of Kona Moku with some trails traveling mauka. Two trails can be found mauka and makai of the current project area.
Section 7 Summary and Recommendations

CSH undertook this CIA at the request of CH2M HILL and on behalf of the FHWA/CFLHD. The research broadly covered the entire ahupua‘a of Kapālama, including the current project area.

7.1 Results of Background Research

Background research for this study yielded the following results:

1. Kapālama is often understood to refer to an enclosure (pā) of lama wood that surrounded the residences of high ranking ali‘i (Pukui et al. 1974:87). McAllister (1933:88) relates that Kapālama is said to obtain its name from an establishment for young ali‘i who were paired off for offspring. Westervelt (1923:165) attributes the place name to a chiefess of O‘ahu named Kapālama, the grandmother of Lepeamoa.

2. Kapālama Ahupua‘a consists of two streams: Kapālama and Niuhelewai (“coconut going [in] water”). The two streams merge and extend through the central fertile former taro and rice fields draining into Kūwili II, a fishpond. Other fishponds within Kapālama include Loko Kapukai and Loko Kealia. Pukui et al. (1974) do not offer any translations, however, the word keālia is the word for “salt bed,” which may indicate that at least one of these ponds was used for salt collection.

3. Two accounts of warfare occurred in Kapālama: Kahahawa‘i defeated Kahāhana with Niuhelewai as the location of the battle; and the rebellion of the ‘Ewa and Kona chiefs, which occurred after Kahāhana’s death. The latter battle took place at Makaho and Niuhelewai streams as well as Kahoa‘ai‘ai Stream in ‘Ewa.

4. LCA testimonies for Kapālama Ahupua‘a indicate intense taro cultivation of the area, maintenance of fishpond, habitation, and some use of kula lands. Large areas were also set aside for the cultivation of rice.

5. An area known as Kaiwi‘ula within Kapālama Ahupua‘a was chosen for the first Kamehameha School for Boys, which opened in 1887. The construction of a principal’s house, dormitories, faculty housing, a preparatory school, dining hall, kitchen, school shops, and administrative buildings followed the opening of the school.

6. Charles Bishop was interested in preserving artifacts and personal treasures of his late wife, Bernice Pauahi Bishop, as well as the late Queen Emma who willed these possessions to him with the condition of curating these items and naming it the Kamehameha Museum. The trustees of the Bishop Estate chose a site near the Kamehameha School for Boys. The museum was housed in Bishop Hall and opened in 1891. In 1894, Polynesian Hall was added; in 1903, Hawaiian Hall opened; in 1911, Pākī Hall was added; and in 1925 the Konia Hall.

7. In 1947, the Kamehameha Schools moved their campus to Kapālama Heights and the former school grounds were transferred to the Bishop Museum Trust. In 1980, Bishop Hall was formally transferred to Bishop Museum.

8. The construction of the H-1 Interstate Highway began during the 1960s from Fort Shafter to Houghtailing Street. It was the first time federal monies were used in Hawai‘i to construct an interstate highway system.

9. There has been no previous archaeological studies or historic properties that have been reported within the current study area. However, several burial sites (SIHP # -3373,
subsurface cultural deposit and burial; and -4929, coffin burial) were found south of the project area.

10. Several historic properties found in the vicinity of the project area also reflect the diverse pre-Contact (SIHP # -5368, Kuwili Fishpond) and post-Contact (SIHP # -7506, subsurface incinerated trash deposit) history of the area and the shift in the cultural landscape of Kapālama.

### 7.2 Results of Community Consultations

CSH attempted to contact NHOs, agencies, and community members. Below is a list of individuals who shared their mana’o and ‘ike about the project area and Kapālama Ahupua’a:

1. Jan Becket, retired Kamehameha Schools teacher, author, photographer, knowledgeable in cultural sites, Kona Moku Representative for the Committee on the Preservation of Historic Sites and Cultural Properties
2. Melvin Ishihara, former Executive Director of the Public Utilities Commission and former resident of Kapālama Ahupua’a
3. DeSoto Brown, historian at Bishop Museum

### 7.3 Impacts and Recommendations

Based on information gathered from the cultural and historic background, the proposed project may potentially impact undetected *iwi kūpuna* (ancestral bones). CSH identifies potential impacts and makes the following preliminary recommendations. Please note that CSH is still awaiting approval of an interview transcription and summary that was conducted for this study and the impacts and recommendations may change pending approval of interview transcriptions and summary.

1. Māhele documents indicate the vicinity and a portion of the project area was once under intense habitation and cultivation by. Previous archaeology conducted south of the project area has yielded *iwi kūpuna* (SIHP # 50-80-14-3373 and -4929). However, no archaeology has been conducted within the project area. Based on these findings, there is a high possibility *iwi kūpuna* may be present within the project area and that land-disturbing activities during construction may uncover presently undetected burials or other cultural finds. Should burials (or other cultural finds) be encountered during ground disturbance or via construction activities, all work should cease immediately and the appropriate agencies should be notified pursuant to applicable law, HRS §6E.
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Appendix A  Land Commission Awards

A.1 LCA 732 (to Kuinui)

Greetings to the Land Commissioners: I hereby tell of my claim for my house lot at Leleo in Honolulu. The boundaries are: north, a hog enclosure; east, an irrigation channel; south, the irrigation channel; west, the house lot of Kuluahi. The interest in this place was from Kamehameha I. My interest is from my wahine, whose own kupunas and makuas lived here and are buried here. It was I who made the fence; one house stands here, which is mine. No one has objected until this time. I also have four taro patches which are adjacent to the po'alima patches and the stream. They were planted so the stream could irrigate the taro, from the side which adjoins my patches. When I got these taro patches, they were only weed grown, no food was planted and I myself made the patches. They are under the authority of the konohiki.

I am, with aloha,

KUINUI X

F.T. 200v2

Claim 732, Kuinui, February [1848]

Umi, sworn, this place is in Leleo, Honolulu aina, consisting of two pieces, a house lot and kalo ground bounded:

Waititi and Mauka by a water run called Kahala
Ewa by land of Kulamai
Makai by lot of Kulaaka.

It is fenced and and [sic] has 3 house on it; two belong to claimant and one to Kamakakoa, wahine. Claimant got it from Malaikoa in 1828 and has occupied it ever since. I know of no counter claimant.

Kalo land is in Palama, bounded:

Waititi by William Stevens's
Mauka and Ewa by land of Lauu and kalo patches
Makai by land of Puloa.

There are 4 patches. Claimant held it formerly under Keaniani, and since her death under rent to Kanau. He has held it since 1834 and pays his labour days for possession.

I do not know of any counter claimant.

F.T. 205-206v2

Page 2 of 4

https://www.waihona.com/purchase.asp 10/22/2014
Claim 732, Kuinui, February 23 [1848]
Umi, sworn, I know this land it is in Leleo, Honolulu aina. It consists of two parts, i.e. house lot & kalo land.
1. The house lot is bounded:
Mauka & Waititi by alaala water course
Ewa by Kukuwai
Makai by land of Kulauuka.
It is fenced & has 3 houses on it; two of which are claimants and one is Kamakakoa's. Claimant got his title in 1828 from Malaikoa and has occupied it in peace ever since.

N.T. 527-528v2
No. 732, Kuinui
Umi, sworn by the Bible and stated, "I have seen this place. It is at Leleo in Honolulu district.
Aala is on the Waikiki and toward the mountainside
Kuluahi's lot, Ewa and
Kulauka is toward the sea.
This place has been enclosed and there are three houses on the inside. Kuinui had received his interest from Malaekoa. Probably that was the year 1828 and he has lived there since that time to this day. I have also known that Kuinui also has taro land at Kapalama;
Kiwini's lot is Waikiki
Naluaii's lot, toward the mountain
He (Kuinui) is on the Ewa side and
Paoaaloa, toward the sea.
Kuinui's interest is from Keaniani and he had this land in the year 1834. Kanoa is the konohiki at this time and has four patches. I have not known that anyone has objected to Kuinui, altho' he is working for the konohikis at this time.
See page 536

N.T. 536v2
No. 732, Kuinui, From page 527, February 23 [1848]
Haikauai, sworn by the Bible and stated, "My testimony of the house lot and the taro land of Kuinui is the same as the statements of Umi which have been read here, and I
believe they are very authentic.

Page 527

[Award 732; R.P. 2465; Leleo Honolulu Kona; 1 ap.; .56 Ac.; R.P. 2465 & 6726; Kapalama Kona; 2 ap.; 1.55 Acs]

**A.2 LCA 918 (to Upai)**

To the Land Commissioners, Greetings: I hereby tell you of my house lot claim at Iwilei in Honolulu. The boundaries are: north, the lot of Kanakanui, east, the lot of Kalaeloa, South, the lot of Haaliku, west, a road. I have occupied this place from the time of Kamehameha 1. It was infertile kula with spiny nohu weed, but at this time it has been improved and completely fenced and a house stands in it which is mine. I held it peacefully and at this time Kelliahonui is objecting. There are also some taro patches; there are three together in one place at Kumuhau in Kapalama, which adjoin the patches of Kauoiaoa and Halulu which have been held peacefully under the konohiki.

I am, with thanks,

UPAI X

F.T. 263v2

Claim 918, Upai, 3 April [1848]

Kekai, sworn, This is a house lot in Honolulu aina, bounded:

Ewa by Kauahanui's place
Mauka by Kailailoa's
Waititi by Poaliku's
Makai by Kealiiahonu's waste land.

It is fenced and claimant has one house on it, who I know to have lived there without dispute ever since 1834. He [She] took it up as waste land.

Kalaeloa, sworn, confirmed the previous testimony and knew of no counter claim.

N.T. 605v2

No. 918, Upai, April 3 [1848]

Kekai, sworn and stated, "I have seen this place in Honolulu here adjoining to Kapalama and the boundaries are:

Kanakanui's land, Ewa
Kalaeloa's land, mountain-side
the konohiki's land, oceanside and
Koaliku's land, Waikiki.
This place has been enclosed, it is idle and Upai has lived here in peace to this time."
Kalaeloa, sworn and said, "I have seen this place and everything is just as Kekai has related here and no one has ever objected."
N.T. 19v10
No. 918, Upai, Land Office, 1 July 1851
Kekai, sworn, he has seen his [her] land at Kumuohau, Kapalama - 3 taro patches in 1 land section.
Mauka and Waikiki, Makai by the king's land
Ewa by a ditch.
Land from Upai's husband named Kealaiki. He had received it from Oliver Holmes at the time of Kamehameha I. No disputes to the present.
Kaiuiaao, sworn, both known in the same way.
[Award 918; R.P. 4428; Iwilei Honolulu Kona; 1 ap.; .2 Ac.; R.P., 691; Kumuulu Kapalama Kona; 1 ap.; .4 Ac.]

A.3 LCA 1746 (to Nakaikuaana)
To the Honorable Mr. Lee and the Land Commissioners, Greetings: I, Nakaikuaana, hereby state my claim for land at Kalaepohaku in Kapalama. The name of my moʻo is Kalauhulumoa. From the time of Kawailepolepo, through Keaniani, to Kanoa at this time, I have had three landlords on my moʻo.

NAKAIKUAANA
Kalauhulumoa, Kapalama

N.T. 92v10
No. 1746, Nakaikuaana, 17 January 1852

Hueu, sworn, I have seen his land at Kalepohaku in Kapalama, Oahu - 21 patches, 1 ditch and pasture in 1 section.

Mauka, Nalauai's land
Honolulu, Moo's land
Makai, Kaupena's land
Ewa, Kupahu's land.
Land from Nakaikuaana's older brother Hao at the time of Kawailepolepo before 1831. Life has been peaceful.

Kupahu, sworn, every statement above is true, I have known in the same way.

[Award 1746; R.P. 2493; Kalaepohaku Kapalama Kona; 1 ap.; 2.4 Acs]

A.4 LCA 2266 (to Kuhiana)

To the Land Commissioners, Greetings: I, the one whose name is below, hereby state my claim for land in the `ili of Kalaepohaku, Ahupua'a of Kapalama, Island of Oahu. There are 10 lo‘i.

KUHIENA
December 25, 1847

N.T. 207-208v10
No. 2266, Kuhiana, 4 March 1853
Ualanai, sworn, I have seen his land sections in Kalaepohaku, Kapalama, Oahu of five land sections.
Section 1 - House lot at Kainapuaa.
Section 2 - 9 taro patches at Kalaepohaku.
Section 3 - 6 taro patches at Kalaepohaku.
Section 4 - 11 taro patches at Kalaepohaku.
Section 5 - pasture sections in Kalaepohaku.

Section 1:
Mauka and Waikiki by Hanoa's land
Makai to Ewa, a trail
Ewa, Peahi's house lot.

Section 2:
Mauka by Kanoa's land
Waikiki by Wm. Harbottle's land
Makai by Bil Haole's land
Ewa by Hauna, Keomuku, konohiki's land.

Section 3:
Mauka by Moo's land
Waikiki by Kaaoaoalahilahi's land, Palakiko's land
Makai by konohiki's land
Ewa by Nakaikuaana's land.
Section 4:
Mauka by konohiki's land
Waikiki by Kaia's land
Makai by Kaupena's land
Ewa by Kupahu's house lot.

Section 5:
Mauka, Waikiki, Makai by konohiki's land
Ewa by Kupahu's land.

Land sections from Ualanai in 1843 and Kuhiana's life has been peaceful to the present time. Ualanai is assistant konohiki.

[Award 2266; R.P. 2816; Kainapuaa Kapalama Kona; 1 ap.; .50 Ac.; Kalaepohaku Kapalama Kona; 1 ap.; 7.45 Acs]

A.5 LCA 2268 (to Kapahu)

To the Land Commissioners, Greetings: I, the one whose name is below, hereby state my claim for land in the `ili of Kalaepohaku, Ahupua`a of Kapalama, Island of Oahu. There are 11 lo`i, 1 kula.

KUPAHU

December 25, 1847

N.T. 193v10
No. 2268, Kupahu, 2 February 1853

Pahua, sworn, I have seen his land sections in the moo of Kumuhahane in the ili of Kalaepohaku, Kapalama, Oahu.

Section 1 - House lot and pasture at Puea.
Section 2 - 10 patches at Kumuhahane.

Section 1:
Mauka by Kanoa's land
Honolulu by Nalanai's land
Makai by Kaupena's land
Ewa by Kanoa's land.
Section 2:
Mauka by Kanoa's land
Honolulu by Nakaikuaana's land
Makai by Kaupena's land
Ewa by Kaia's land.

Land sections from Nalanai before 1839 and he has lived peacefully to the present day.
Nalanai (assistant konohiki), sworn, I am the assistant konohiki, no objections.
[Award 2268; R.P. 2521; Kalaepohaku Kapalama Kona; 2 ap.; 3.76 Acs]

A.6 LCA 2937 (to Wm. Harbottle)
No. 2937*O, William Harbottle, Honolulu, Oahu, January 10 1848
N.R. 701-702v3

To the Land Commissioners of the Hawaiian Islands, Greetings: I hereby state my claim, for my house lot in Honolulu, whose boundaries are: north, Nuuanu Street and Mr. Boyd's place, east, house lot of Keo Bu /George Booth/, south, lot of M. Peke /Beck?/, west, house lot of E. Dennis. Those are the boundaries - those of these house lots. The original right to this claim was from John Harbottle, who had it from Kamehameha I, and another claim from Paki which is combined with this house lot where I am living, without dissent from any one.

Also, there are the lands of Kuipaakea in Kapalama /Oahu/, and Iloli on Molokai which were left to us, the keikis of John Harbottle, who had these lands from Kamehameha I.

The lands which were taken by the Mo`i are: Ohikilolo, Waiape, on Oahu, Waipio District, Kumunui on Maui. These lands were for John Harbottle, who had them from Kamehameha I. Hanapouli on Oahu, is for Edward Harbottle, from the Mo`i, Kamehameha III. Keana, in Kaneohe, is mine, from Kamehameha III.

I am, with thanks,
WILLIAM HARBOTTLE
F.T. 501v3

No. 2937, Part 6, William Harbottle
Komo, sworn, says he knows the ili of "Hanapouli," Ewa, Oahu, claimed by W. Harbottle. The father of claimant received this ili from the King, in ancient times. Claimant and his father have held undisputed possession of this land since the gift of the King. I saw Mr. Bishop survey this
land from claimant, leaving out the part taken up in kuleanas. The survey made by Mr. Bishop of the kalo land is correct.

N.T. 1-4v10
No. 2937, William Harbottle, Honolulu, 18 April 18, 1851
Holowale, sworn, He has seen his house lot sections in Honolulu - 2 house lot sections, the boundaries:

Section 1:
Mauka by Boyd and J. Booth's house lots
Waikiki by Beck and Nicholson's house lots
Makai by Dennis's house lot
Ewa by Nuuanu street.
3 houses in this lot.

Section 2 - 2nd house lot.
Mauka by M. Kekuanaoa lot, Kuapanio lot
Waikiki by Kuapanio lot, J.Booth
Makai by J. Booth lot
Ewa by Nuuanu street.

Land to William Harbottle from his father, Jack Harbottle, father's land from Kamehameha I. William Harbottle inherited land in 1832, upon father's death, no objections.
Kauliokamoa, sworn, certifies above statements, he has known in the same way.
No. 2937, William Harbottle, (Section 2), 18 April 1851

Paele, sworn he has seen his land named Kuipaakea, an ili land in Kapalama, Kona, Oahu - 2 land sections.

Section 1 - Pasture land with taro.
Mauka by M. Kekuanaoa and R. G. Davis's land
Waikiki by Naopala and Mossom's land
Makai by Hakuohia and Pila's land
Ewa by a stream.

Section 2 - Pasture land with taro.
Mauka by George Holmes [LCA 8504] and Kekai's land [LCA 7681]
Waikiki by Kekai's land, ditch
Makai by M. Kekauonohi's land
Ewa by M. Kekuanaoa's land, Kekai and Zupplien's land [LCA 275B-1], Government land.

Land from father John Harbottle from Kamehameha I. John Harbottle died in 1832, land inherited by children, no disputes.
Kanamu, sworn, certifies all statements above.

No. 2927, William Harbottle, (Section 3), 18 April 1851
Mahi, sworn, he has seen his land named Ilohi, an ahupuaa in Molokai - 2 land sections.

Section 1 - A pond and pasture land.
Mauka M. Kekauonohi's land
Kaluaha by Hoolehua land
Makai by outer surf.
Malalo (below) "Punakou."

Section 2 - Pasture land of Kaahaloa: Surrounded by M. Kekauonohi's land.

Land from William Harbottle's father, who had received it from Kamehameha I, upon his death in 1832, the children inherited the land and they have it to the present time without disputes.

Oihi, sworn, they both have known in the same way, no objections.

No. 2937, William Harbottle, (section 4), 18 April 1851
Oili, sworn, he has seen his land named Ohikilolo, an ahupuaa in Waianae, Oahu. This is pasture land only. The boundaries are:
Mauka by Government land
Honolulu by M. Kekuanaoa's land
Makai by M. Kekuanaoa's land
Kaena by Government land.

The father had received this land from Kamehameha I, he had lived peacefully all his life and upon his death had bequested this land to his children. They have it now, no disputes.

No. 2937, William Harbottle, (section 5), 18 April 1851
Pahia, sworn, he has seen his ili land named Waiape, in Kaneohe, Koolaupoko, Oahu.

The boundaries are:
Mauka by Kuaana's land of "Kaluaahuawa"
Koolauloa by Kuaana's land of "Kaluaahuawa"
Makai by Paul F. Marin's land of Punaluu
Kailua by The King's land.

Land from Kamehameha I to John Harbottle, William Harbottle's father. John Harbottle had lived peacefully and upon his death had bequested this land to his children. They have it at the present time, no disputes.

No. 2937, William Harbottle, (section 7), 18 April 1851
Kanamu, sworn, he has seen his land named "Opana" in Hamakualoa, Maui, it is an ahupuaa.

Mauka by Lot Kamehameha's land
Wailuku by Haiku, Kaalaea, Ulumalu, Kaupakulua,
Makai by sea
Hana by Keaaula, Uaoa, Peahi ahupua`a

Land from Kamehameha I to John Harbottle, his (Wm. Harbottle) father where on he had lived peacefully until his death. The children have inherited the land and are there at the present time.

Mahi, sworn, Both have known in the same way, no one has objected.
No. 2937, William Harbottle (section 8)
Kanamu, sworn, he has seen his land named "Kamakialoa" in Waipio ahupuaa. The boundaries are:

Mauka, Lot Kamehameha's land
  Wailuku, Mokupapakua, Mokupapa-kanaka, Holowa ahupuaas
Makai, Sea
  Hana, Waipio 2, Puolua, Huelo

Land to John Harbottle from Kamehameha I, upon Harbottle's death, land was inherited by his children and they still have it today, no objections.
Mahi, sworn, both have known in the same way.
William Harbottle states, "There is in these lands mentioned above the interest of Kanaka, but it should be separated according to what is proper about their place."

No. 2937, William Harbottle (section 9)
William L. Lee has worked on this claim. No. 10893, William Harbottle: Work done by W. Lee (L.)

No. 2937, Section 10, William Harbottle
Paihaihowale, sworn, he has seen his ili land Keana, in Kaneohe, Koolaupoko of 5 land sections.

Section 1 - 5 sand dunes, sea and a pasture, the boundaries are:
  Mauka by Kalama's land
  Koolauloa by Ocean
  Makai by Kalama and the King's land
  Kailua by Kalama's land.

Section 2 - 4 patches, 3 sand dunes, the sea and a pasture.
  Mauka by the King's land
  Koolauloa by the King's land
  Makai by J. Pukoi's [Piikoi's] land
Kailua by a pali.

Section 3 - 20 patches and a pasture.
Mauka by Hoomapule, Ulupoulu's land
Koolauloa by stream
Makai by Pupule's land, the King's land
Kailua by pali.

Section 4 - 10 patches.
Mauka by "Waiakalua," Kawana's land
Koolauloa by Kekia's land
Makai by Kapu's land
Koolauloa by Paiku's land
Makai by Kauwana's land
Kailua by Keaukee's land.

Land from Kamehameha III in 1833. And he has lived there continuously to this time.

[Award 2937; R.P. 577; Nuuanu St. Honolulu Kona; 1 ap.; .11 Ac.; R.P. 3589; Nuuanu St. Honolulu Kona; 1 ap.; .11 Ac.; R.P. 3588; Kalaepohaku Kapalama Kona; 1 ap.; 8.32 Acs; R.P. 4539 & 705; Kuipakea Kapalama Kona; 1 ap.; 5.78 Acs; R.P. 5583; Keana Kaneohe Koolaupoko; 4 ap.; 141.20 Acs; R.P. 7391; Hanapouli Waipio Ewa; 1 ap.; 20 sq. chains; R.P. 8468, Kaneohe Koolaupoko (ap. 5); Ohikilolo Waianae; 1 ap.; 532.2 Acs]
September 3, 2015

Nicole Ishihara
Cultural Surveys Hawai‘i, Inc.
P. O. Box 1114
Kailua, Hawai‘i 96734

Re: Cultural Impact Assessment for Halona Street Bridge Replacement
Kapālama Ahupua’a, Kona Moku, O‘ahu Mokupuni

Aloha Ms. Ishihara:

The Office of Hawaiian Affairs (OHA) received your letter dated August 2015, requesting comments on the above-titled project. Given the project descriptions provided, our agency has no comments or information to provide at this time. Should you have any questions, please contact Everett Ota at 594-0231 or everett@oha.org.

‘O wau iho nō me ka ‘ōia ‘i’o,

Kamana‘opono M. Crabbe, Ph.D.
Ka Pualiana, Chief Executive Officer

KC: rg

*Please address replies and similar, future correspondence to our agency:
Dr. Kamana‘opono Crabbe
Attn: OHA Compliance Enforcement
560 N. Nimitz Hwy., Ste. 200
Honolulu, Hawai‘i 96817
Appendix C  Melvin Ishihara Transcription

Cultural Impact Assessment, Hālona Street Bridge: Cultural Surveys Hawai‘i (CSH) interview with Melvin Ishihara (MI), former resident of Kapālama, on August 24, 2015 at his home in Kāne‘ohe

CSH: Nicole Ishihara

MI2: Muriel Ishihara, wife of Melvin Ishihara

CSH: Ok, so I have to record this. Are you OK with that?
MI: Yeah.
CSH: Ok. Ok, so we can do that after at the end.
MI: No, this is important in the beginning.
CSH: Ok.
MI: So you have a pictorial picture of what I’m talking about.
CSH: Ok. Sure.
MI: Ok, you see that title on the top it says “Kapālama Canal Area”?
CSH: Ok.
MI: Ok. That’s the so-called project area.
CSH: Ok.
MI: But that’s before, that’s before, you see the period is from 1939 to 1945. So that’s a period of six years.
CSH: Ok.
MI: Well, when I was growing up because I stayed with grandma them.
CSH: Ok. Can we start from, like, your name and where you were born and all that?
MI: Ok.
CSH: Ok, let’s start with all that.
MI: Ok.
CSH: Ok, so you are obviously you are Melvin Ishihara.
MI: No.
CSH: Oh no?
MI: Initially I was Melvin Shigeru Shimokawa.
CSH: That’s right.
MI: I was adopted in the 1940s. Early…mid…1940s prior, Ishihara, before he went off with the 100th Battalion.

CSH: So who are your parents? Who’s your birth mother and….

MI: Well, grandma was a Kochiyama.


MI: Yeah.

CSH: Was she born here?

MI: Sheesh, not so sure she was born here. I think she was born in Japan, I think.

CSH: And then your father?

MI: My father was Shigeru Shimokawa. And he was…he died at such a young age. He must’ve been born on Kaua‘i.

CSH: Thank you [talking to MI2]

MI: Because he died when he was only 30-something years old.

CSH: Wow, so young. He was born on Kaua‘i?

MI: Yeah, that’s what my mom told me.

CSH: Was he was son of plantation workers or immigrants? I thought he was born here. Or no?

MI: Not in Honolulu. I think he was born on Kaua‘i. Because I always wanted to go back to Kaua‘i and grandma used to always tell me, “Oh how come? Because that’s where your father was born.”

CSH: Interesting. What did he do? Shigeru?

MI: Oh, he worked for Theodore H. Richards.

CSH: What is that?

MI: A contracting firm in Honolulu that built all the bridges.

CSH: Oh.

MI: You know like the bridge on Nu‘uanu Stream?

CSH: Ok.

MI: The one on Vineyard Street and all of those? But he worked for Theodore H. Richards as an operator…construction….construction job. And he died because of that job.

CSH: Which job?

MI: Working at…. 

CSH: The Nu‘uanu one?

MI: Yeah. He died from…tetanus poisoning. But he didn’t die according to grandma from poisoning on the job…it was…he played a lot of sports. He played sports with Alan Nagata who was the Assistant Coach to Neil Blaisdell. He used to like to sumo. I have pictures of him when he used to sumo with Alan Nagata and them. But he used to baseball for this Mō‘ili‘ili baseball team.
and whenever he wasn’t feeling well with an injury—according to Alan Nagata, he went to get acupuncture treatment by this lady in Mōʻiliʻili. By the way, we used to live right next to the—I was born next to that Honolulu Stadium on Algaroba Street. I mean, right next to it. On the side street that runs right parallel to the stadium. But anyway, when I was a…he died in 1930…’38. He died 1938. So…

CSH: Was it because of a...the needle was infected?
MI: Well, that’s what Alan Nagata thinks it was.
CSH: Oh, ok.
MI: But if it was infected that way—that’s how you can get tetanus poisoning.
CSH: Right.
MI: So grandma was really upset with the hospital at the time. I think that was Queen’s Hospital because when he died, he died at such a young age.

CSH: What did Baban do for a living? Was she a homemaker or did she work?
MI: She worked but I think she was more of a housekeeper for one of the high makamaka….you know the old, the old guard. When I say the old guard, I mean, the ones at like Punahou and all like that. And she was like a housemaid. Then she just raised children—me, Uncle Pat. Uncle Pat was two years after me—and Uncle Roy was born—well, she was pregnant with Uncle Roy when my father died. My father died in November of 1938. And Uncle Roy was born in January of 1939.
CSH: And then when ….what did… was his first name for Ishihara?
MI: Robert.
CSH: Robert. So when did he enter the picture?

MI: Ok, he died…dad died in 1938. At that time we lived at the Shimokawa Camp. The Shimokawa Camp was that area in which the H-1 freeway runs right by Humane Society. They owned all that property.

CSH: Wow.
MI: So in payment for that property they were compensated, they bought, Grandma and Grandpa Shimokawa bought this multiple, this good sized property up on 12th Avenue in Kaimuki with houses on it because in the Shimokawa Camp there was 1, 2, 3, 4, 5...about 6 houses. It was a big piece of property.
CSH: So when did she meet Robert Ishihara?
MI: Well, it was just after the war started in 1941….must’ve been in 1942 when they sent the 100th Battalion over to the mainland. You know? The 100th Battalion was the forerunner to the 442nd.
CSH: Which is like….Dan Inouye?
MI: Yeah, because them guys was only like 18 years old.
CSH: Ok. So somewhere around there?
MI: Yes. By the way, my stepdad was born on Maui and then he worked at Pearl Harbor. And then he had an injury from an explosion, not by the war, but by the construction when they were building Pearl Harbor. Water Town, what they call Water Town. Anyway, so he joined the Army and was sent to...the mainland. And then because of that injury I think he was discharged, he came home in 1943 or ’44 and that’s when they got married. And that’s when he married mom. But in the meantime, we were staying with the Shimokawa’s in Mō‘ili‘ili—you know the [inaudible]. And then she married him—must’ve been in the early 40s—I mean, ’43 or ’44 because in ’43—sometime in ’43—he moved us to Kapālama in that area.

CSH: Your stepdad?
MI: Yeah.
CSH: Why did he move you guys over there?
MI: Because that’s where Grandma Kochiyama-Yamane lived there. Grandma’s mother lived there.
CSH: Oh!
MI: She was married to—she came over with Grandma, Uncle Bob, Aunty Chieko, Uncle Jigs…
MI2: Are you talking about when she came from Japan?
CSH: No, we’re talking about when he lived in ....
MI2: Kalihi?
CSH: Yeah.
MI2: That’s right then.
CSH: Ok. So this is Baban’s....
MI: Family. Her name was Kochiyama but her mother married a Yamane.
MI2: Second marriage.
MI: Ok and that’s why we lived—and that’s why I showed this map...we lived...
CSH: Must be where this X is?
MI: No, that’s the temple.
CSH: OH!
MI: Right here. See this area right here? This is where the industrial is now but before that it was a pasture land. This street—this is King Street—’cause we lived right where the Post Office is now.
CSH: Ok.
MI: I mean, literally right where the Post Office is now.
CSH: What kind of house was it? Before you used to say you used to take a bath in a furo.
MI: Right, it was a furo. But we did not live in a house. It was a complex. It was a commercial complex where one end had a foundry and another one was a furniture store. Another one was a rental by Grandpa.

CSH: So you’re saying he lived at Gems? [laughing]

MI: Something like it.

CSH: Interesting.

MI: What it is, is a building that had all of these segments. And the first one in this lane was Yamashita General Store where we used to buy shave ice. They lived upstairs in the back. Every house, every unit inside there other than the Chinese restaurant and the barber shop and the furniture store and the foundry—we were the only ones with family that lived inside that complex.

CSH: You were the only ones?

MI: Uh huh. There was no bedroom you know? It was actually a storefront. We literally bordered King Street.

CSH: Why did you guys live in there?

MI: Don’t look at me!

CSH: Did you family own the building or some of the stores?

MI: No. Well, ok. Grandpa Yamane was a vegetable peddler.

CSH: Oh.

MI: He pushed this great big wagon around the—-you know Waiakamilo and Kalākaua and down by Libby Cannery?

CSH: Uh huh.

MI: He pushed that wagon all over that place with me inside.

CSH: Cute.

MI: But it wasn’t that cute when he ran over my toe.

CSH: [Laughing]

MI: Don’t laugh cause from that day on—I was just a young baby—I would run around and I didn’t go to school yet. From that day on, my toenail, my big toe—had a crack. And that crack existed until I retired 55 years later.

CSH: Oh my God! It never grew out and….

MI: It grew. But it was never infected—it just had a crack right in that big toe nail and it just kept—the new nail just kept growing.

CSH: So weird.

MI: Today there’s no line. But for many years it always had that crack. But anyway, he would push me around that neighborhood in what they call Waiakamilo Road behind Kalākaua School.
because all of that used to have houses and streets. Dirt streets. Ok, that area that I showed you
was pasture land, today is an industrial area where Sears Warehouse is and everything else. You
see that part that says “Pasture Land”? And a bomb dropped there on December 7th. Ok…

CSH: Can you describe what that was like?
MI: Well….

CSH: Did you guys know it was a bomb?
MI: Oh yeah, we heard the explosion and everything. ‘Cause I moved there right after the war had
started. Well, I was there in 1941 to 1945. In 1939 we stayed with Grandma them in that house.
Ok, this is…this is Kalihi Street right here. Ok, this Kalākaua School. Right down on Dillingham
Boulevard next to Mokauea and it’s almost by the prison, one house was strafed with machine gun
bullets.

CSH: Oh my God.
MI: On Dillingham Boulevard.

CSH: Was anybody in there?
MI: Yeah, they lived there. People lived there but nobody died that I know of [pause]. Ok so this
map is my recollection of what it was like in 1940—from the time I stayed with Grandma and
Grandpa Yamane in Kalihi-Kapālama.

CSH: I have a bigger map. If you want to mark it. I wanted to wait until the end but…
MI: What you mean a bigger map?

CSH: I mean, you can mark it up if you want. And then later on I’m going to give it to our map
people and they can put points on it.

MI: You can take this one here.

CSH: But this one is way better!

MI: Well, the only thing that’s not better is that this does not have the freeway.

CSH: Oh yeah, that’s true! That’s true cause never had the freeway.

MI: Right.

CSH: Ok. Well, maybe I’ll just save it for later?

MI: And never had the buildings. You see where I show the pasture land?

CSH: Yeah.

MI: That was literally a pasture land.

CSH: Was there cows on it?

MI: There was horses and cows. And just bushes. And the stream. You see that little stream I drew
inside there?

CSH: Uh huh.

MI: We used to catch crayfish inside there.
CSH: Is that Kapālama Canal today?
MI: No, this is Kapālama Canal. It’s always been Kapālama Canal. This the pasture land.
CSH: What is…where is the little stream you’re talking about?
MI: Right here, you see this blue line?
CSH: Oh, ok, ok. Where did it originate from—the water?
MI: That line went across the street and came up here and ran up on Houghtailing and eventually it became like a drainage canal. And the other part that you can see here is that you see—this canal—you see the canal?
CSH: Uh huh.
MI: You see this line here that I have going?
CSH: Uh huh.
MI: That was a feeder line that came up in Kalihi. All the way up in Kalihi. You see that blue line going up?
CSH: Uh huh.
MI: Went up into Kalihi Valley that fed that stream. That fed Kapālama Canal.
CSH: Is that the one that goes up to Ice Pond or all the way up?
MI: Yeah, just about.
CSH: Did you go to Ice Pond?
MI: Nope. We couldn’t go that far in.
CSH: Why?
MI: We too young! You see where Kapālama School is right here? Okay, that drainage canal literally had a wall and I walked on that wall and I was looking at the mango tree and I fell down eight feet. Into the ditch but it was all concrete. So I got up and went home but it hurt like hell. But that…the other thing that I have to point out. You see I drew this, this map because, this map doesn’t have the freeway! You see where this portion is?
CSH: Vineyard?
MI: Yeah. That’s where the freeway is now today! Because it kind of came this way and when make a big turn to go down along this way not along Vineyard. Came along this way—big turn. But Vineyard used to end right on where Halona Street is today. You know the street that runs parallel to the freeway?
CSH: Uh huh.
MI: That’s Halona Street. Never had that street before. It was Vineyard. Vineyard would come to Palama Settlement about here and then go under that bridge and that’s what your gonna be doing when you work on the bridge—go under the bridge, go alongside the H-1, and then there was a gate here. And that’s how you went into Bishop Museum. Right as you entered the gate, they had a gymnasium. Beyond the gymnasium they had elementary school for the boys and dormitories.
CSH: So that was the original location of Kamehameha Schools?
MI: Only the boy’s elementary portion. The school was already up on the heights. The girls were not located there now. Mom would tell you where they were located. You know where they were located?
CSH: No.
MI: On King Street. You know where the Kamehameha Schools Administrative building is now?
CSH: Kawaiha‘o Plaza? By the Missionary Homes….
MI: Yeah, right behind that. That’s where the girl’s dormitories were at.
CSH: And their school? Just the school or the dorms?
MI: The school would be up at the heights.
CSH: They really wanted them to be far apart.
MI: But later they moved the dorms even up to the heights. But that’s why this map is….for that period up until 1945 and before the freeway.
CSH: So you know how the freeway—obviously it’s down—right? There’s a big cut out.
MI: Right. It is really down.
CSH: Right. So how did they—did they dig that all out?
MI: They did. However, I was not there because I was away in school.
CSH: What was there….
MI: It was built in 1950 or so. About 1950-something.
CSH: What was there before? Was there homes before?
MI: Oh yeah. Oh yeah! You know where School Street is?
CSH: Yes.
MI: Where’s School Street? Here’s School Street. Well, once it went past…well, it never went—this map doesn’t show beyond Liliha Street. Anyway, once it passed Liliha and continued on to Nu‘uanu. Not Nu‘uanu, Fort Street. Actually it was Fort Street. It passed Nu‘uanu, where Kukui Plaza, where Foster Garden is.
CSH: Yes.
MI: Between Nu‘uanu and Fort Street. By the way, Fort Street went all the way to Pauoa Valley, you know? It was…there was no Pali Highway. Pali Highway—today, if you recall goes from Bishop Street right straight up. It never used to. It used to stop right at Beretania. And Pali Highway went from the fire station and Princess Theater straight up Fort Street. Up Fort Street. So Fort Street used to go up all the Pauoa Valley. Anyway, on School Street—let’s see—School Street—on School Street. This is School Street, between Foster Garden and Fort Street there used to be a theater called—where Kaneda’s—you know where Kaneda’s Catering—there’s a catering service right on the mauka side. On the makai side was a park!
CSH: You mean where Zippy’s would be today?
MI: No, no. This is up. Zippy’s is on Vineyard.

CSH: Oh, I see where you’re saying.

MI: This is above Kukui Gardens. You know Kukui Gardens? You know where they built Kukui Gardens? By the way, that’s where Grandma Ishihara them used to live. Was all Chinese families inside there. Used to walk from the Kukui Apartments go down on Vineyard Street, walk over to Nu‘uanu, walk over to Grandma Ishihara’s. Grandma Ishihara was blind from diabetes. Grandpa Ishihara was an amputee. Both legs. From diabetes.

CSH: Oh my gosh. That’s horrible.

MI: And that’s why, the Ishihara line and when I say the Ishihara line, Uncle Gary, Aunty Emi, and Wayne all have…all was diabetic. Type 1. Anyway, that’s basically the line that Vineyard took. It went right into Bishop Museum. Now there’s no freeway on this map. But the freeway was all dug down.

CSH: Uh huh, but you’re saying there was homes there, right? Where the freeway is today. Like sitting on top, right? There was homes?

MI: Yeah.

CSH: Was it pastureland?

MI: Not really, I’ll tell you why. You see where this Vineyard is?

CSH: Uh huh.

MI: Ok, that street where Vineyard Boulevard was there but there was a lot of pasture land there. Now, the ironic part of it is this. You see, Waia kamilo Road went to King Street. That’s King Street right there. It was called Waia kamilo. For some reason that portion that goes mauka all the way up to Kamehameha Heights is called Houghtailing. Named after George Houghtailing who was one of the political big wigs. So that’s strange—if you go past King Street, “Oh you talking about Waia kamilo on the mauka side of King?” But no, that’s Houghtailing. Ok, it went into, it went into. Ok—the interesting part I want to tell you is that on Houghtailing from Vineyard is School Street. On the side where Damien and the Carpenter’s Union and all those others it used to be nothing but bushes. And it was only a dirt road. There was—if you notice in this map here—there is no homes on Bishop Estate land. It was not built until sometime in the 1950s. That’s why I don’t have the streets and everything inside there.

CSH: Oh yeah, yeah. All the little side streets.

MI: You see, Tatsuku used to lived right down on this Kapālama Street that goes down here in Bishop Estate land. He lived right off of School Street but I didn’t drive any of those units inside there.

CSH: The what?! The suku?

MI: Tatsuku.

CSH: Who’s that?

MI: Tatsuku. You don’t know Tatsuku? He used to work for the court. He used come here all the time. He was a court clerk.
CSH: That’s your friend?
MI: Yeah, he belonged to the Y’s Men Club. He used to come here all the time. Nice guy. But then he got into trouble because he was gambling. And then he left the court system and then he worked for a travel agency. Nice guy, he didn’t do anything criminal! He didn’t go to jail for it but he had to leave the job. Anyway, that’s why I don’t have any buildings at Bishop Estate or this development because this development was not in existence in 1945. This area did have development because this where the Puerto Rican community is located.

CSH: Interesting. So where the freeway would be today?
MI: Huh?
CSH: Is that where the freeway would be today?
MI: No, this is School Street.
CSH: Ok, so makai of that.
MI: Yeah, makai of that. From here to here there was houses. This side had houses. This is…right here is ok, this is Pālama. You know Pālama Street? You see on this corner right here?
CSH: The church thing?
MI: Right here. No, right here. Right here.
CSH: Ok.
MI: Yeah, this yeah. You see this street right here?
CSH: Yeah.
MI: It’s Banyan. And it’s a dead end. And at the end of the dead end is where Grandma and Uncle Bob’s ashes are stored at that Japanese temple. So there is a Japanese temple there, a Japanese temple there, and a Japanese temple across the street on here someplace. Right here.

CSH: So, was this….was Kalihi-Kapālama a mixed community?
MI: Oh yeah…
CSH: Like how Kakaʻako was?
MI: Oh more so. Because we had Japanese, Chinese, Hawaiian, haole, pōpolo.
CSH: And they lived in like little areas together? Or was it all mixed up?
MI: Oh no, this whole area was all congested. All congested. All Japanese and everything inside there.
CSH: So all mixed up?
MI: All mixed up! The lane that I lived in—you see this little lane right here? Significant because that’s where Calvin McGregor lived.
CSH: Who’s that?
MI: Calvin McGregor is a judge. He’s also a major contributor to Kamehameha Schools. His wife—there’s one trophy named the McGregor trophy in the Kamehameha Song Contest.
CSH: OH! So it’s named after him!

MI: Yeah, Calvin McGregor. And his wife for many years used to make that presentation. McGregor.

CSH: So where….

MI: That’s McGregor Lane.

CSH: So where you lived…was it just stores?

MI: Yeah, you see that block right there?

CSH: Even around you? Besides what you lived in?

MI: What you mean stores?

CSH: Well, you lived in a store. But was there other stores around you or were there homes around you?

MI: Not on that side of the street. It was on this side of the street there was.

CSH: And how many people lived in your house or area?

MI: Well, it was the three of us—Uncle Roy, me, and Uncle Pat. Then there was Aunty Florence, Uncle Bob. Later Merle and Milton came but it was much later than 1945. Uncle Jigs. Aunty Violet, Uncle Reggie. Grandma and Grandpa. So there was about 8, 9, 10 people. And there was no bedroom.

CSH: So you guys all slept on futons or something?

MI: Futons on a big open area. It was like a….like a hall-like, you know. You know you see some of these Japanese movies where they have this kendo or sword da kine instruction place? Like that. And you lay your futon down and you store your futon in little cabinets. Oh, there was one area that Uncle Jigs slept on cause to go from the, from the main entrance in, Grandpa Yamane used to park his vegetable wagon in front of there. Then to get to the living area you had to go down this hallway. The hallway. And above the hallway there was this deck and every night Uncle Jig used to have to climb up there to go to sleep. That’s where he slept. Uncle Bob, Aunty Florence at that time they were just married. Aunty Chieko, Uncle Reggie—Uncle Reggie left and went right into the military right after high school. And then from there he went to England, Florida, and we never saw him after that.

CSH: Wow.

MI: Other than the pictures that he sent home. But he must’ve passed away and we never knew that.

CSH: So what would you guys eat? Would you guys eat the vegetables—the leftover the vegetables?

MI: Oh yeah, grandma would do the cooking. By the way, the kitchen was something else! You would not believe what the kitchen looked like. Right after she does the cooking, on the adjacent side of it was a toilet.

CSH: That’s clean [laughing].
MI: No, it’s separated but it’s a furo.
CSH: Ah so you guys had your own furo there!
MI: Yeah, we used to have to make the fire on our own and everything there. And then the bathroom. So she had to wash the clothes in there too.
CSH: Did you guys eat traditional Japanese food?
MI: Yeah, definitely. Everything was traditionally Japanese. I mean straight Japanese.
CSH: Did you ever eat local stuff? You were saying you caught crayfish. Did you ever eat that?
MI: Not at home. We ate it outside in the field.
CSH: Like as a snack?
MI: Like I told you, it was a mixture of nationalities, right? Ok, one of the guys was Willie Keola. Willie Keola played football for Farrington. His son got a scholarship to ‘Iolani. He made all-star but Willie Keola was about a 250 pound guy. Nice Hawaiian guy. He lived next to George Okanishi, one Japanese guy. And then had some Chinese guys. And then down the street was the Nicholas family which was a pōpolo guy.
CSH: So this was your childhood friends that you hung out with?
MI: They lived in the neighborhood. So the kitchen was one level, the same level as how the hallway and the wagon was parked. The living area was little bit raised.
CSH: The what?
MI: Living area. Where I told you. Where we slept. Was little bit up. But you gotta go up. It’s not that high a da kine.
CSH: A step?
MI: Not that high you gotta climb up. The eating area was like that, you gotta climb up into a little cubby hole like. And they had this—the table was like from here to there wide. And about that—not even that long so you gotta sit inside there to eat.
CSH: Wow.
MI: [laughing]
CSH: So when you would eat traditional Japanese food at home, but when you’re out playing you would eat crayfish?
MI: Crayfish. Pigeon.
CSH: Ew. So you’d catch it and then fire it up?
MI: Yeah, ok, like I said, you see this pasture land? By the way, you see this other lane here? Naipers Lane. Right between those two was O‘ahu Lumber and Hardware. In the back of O‘ahu Lumber and Hardware was a junkyard. When I say junkyard they had all these soda cans….not soda….soda water bottles, palettes, and left over stuff all stack up. And then they had a tree. You know Kohou Street where they just when move the guys?
CSH: Yes. Yes.
MI: It wasn’t a street. It was just a dirt road.

CSH: Yes, ok.

MI: That’s why I showed that as a dirt road. And then the stream ran in and then there was a big mango tree and we’d go up in the mango tree and Willie Keola was a little bit older than us. He used to go catch doves. The way he catch doves two ways: the old style and Indian way where you get the— you know the wire. You make the wire da kine and make the entrance and then they go in and cannot come out. And the other stuff, I really remember clearly, clearly, clearly was an Indian type. See all of that area had koa bushes. You know what koa bushes look like ah? You know the koa bean ah?

CSH: Yeah.

MI: They grow so high.

CSH: You’re talking about haole koa?

MI: Haole koa, yeah. So he goes and bends it down.

CSH: Hah yeah!

MI: He bends the haole koa branch down and makes it…ties a string on it. Make a loop. Make a platform and build a platform like that— put sticks on it. And then he put his corn down and we sitting in the tree now! The dove pick it up, pick it up, pick it up. As soon as he stepped on that platform it unhooks the da kine the thing and the da kine snaps up and catches the thing by the leg and we run down from the tree, we pick it up, put it in the cage. He had at one time six mountain doves. You know mountain doves? The big ones. You know the big ones we see out here.

CSH: Yeah.

MI: And then we barbeque ‘um.

CSH: And you’d just pick off all the feathers and boil it?

MI: Yeah, you gotta make hot water and make it like chicken. You only…

CSH: So that was like your outside play snack? Or you guys would camp in the pasture land?

MI: No, we wouldn’t camp in the pasture land. We were still only like…1946….I was about seventh, eighth grade. No, not even seventh grade about sixth grade. Fifth, sixth grade.

CSH: Ok, would you guys eat the mangoes too in the mango…

MI: Oh yeah, mango, guava, all kinds of stuff.

CSH: Would you guys go far mauka? Far up towards where Kamehameha Heights. No?

MI: No, the farthest we would go was on Houghtailing. On Houghtailing both sides of the streets, before Bishop Museum was developed, both side of the street was kuahiwi.

CSH: Kuahiwi?

MI: BUSHES!

CSH: OH, BUSHES!

MI: [laughing]
CSH: What kind of bush? Was it haole koa too?
MI: Oh all kinds, koa trees, kukus.
MI2: Kiawe?
MI: Yeah, kiawe, kiawe too.

CSH: It’s kind of hard to imagine Kapālama like that now.
MI: Ok, this thing says culturally etc. Now let me give you background. Now I said Chinese, Hawaiian, Japanese, and Filipino. And which reminds me, next to that McGregor Lane right there the Filipino guys had fighting chickens over there.

CSH: So regularly had gambling?
MI: Yeah. And they had Mao Lane and all that. Now Farrington High School was here but in 1941, 1942, 43, 44, 45—it was a hospital. Farrington High School was. Next to the high school they had these barracks-like. Warehouses.

CSH: Was that for the war?
MI: Yeah. They had barracks like. Ok. So there was a separation between Farrington and the Kamehameha property, you know Bishop Museum? But it was not anything that was barb wire or anything like that. You know? Just separated and we knew we couldn’t go over there and they couldn’t come over. Had a gymnasium right inside the gate—nice gymnasium—we used to use it. And then the museum. You know the big building that’s up there? The main one?

MI2: The museum?

CSH: Yeah.

MI: That’s the original one. No more the new ones on the side. But that’s how the Bishop Museum was. So they had all that property and this is all Bishop Estate from here. And then there’s a park across the street—the park is still there. Ok. But there’s a temple there. There’s a temple here. There’s a temple there—where I told you grandma and Uncle Bob is. And right on the corner there is Palama Settlement. See that Palama Settlement?

CSH: Were you just confined to this area? You just kind of stayed in this area during this time?
MI: Well, we used to go to Palama Settlement.

CSH: No, but from Liliha Street to Kalihi Street, you kind of just stayed in…
MI: Yeah, yeah, yeah, yeah, yeah. And by the way, you can go—see I told you this pasture land went to Dillingham Boulevard. Beyond Dillingham Boulevard was like had gardens and da kine—taro patches.

CSH: Ahhh.

MI: There was no Nimitz Highway.

CSH: So did anybody live there?

MI: Yeah, guys that would take care of the place.
CSH: So tell me about this rubbish incinerator.

MI: Ok, that was—that was a—see…they had it there kind of long because they used to burn the rubbish you know from the rubbish truck? And then they got rid of it because—the syndicate used to throw guys inside there [laughing].

CSH: So they would find bodies or they would….

MI: Riiiiight [laughing]. You know if you didn’t get along with the syndicate that’s where you’d end up. At one time the syndicate was really, really bad. Really bad. They would not hesitate to wipe guys out. They’d go to Maunalua Bay.

MI2: They’d leave bodies in cars.

MI: Maunalua Bay they kill the two Korean guys—the Hong Brothers. Or they go up to Camp Erdman side and bury them in the sand over there.

CSH: Right. So they were the gang of Honolulu?

MI: They called them the syndicate. And they—the guy who headed it ended up in jail. You know?

CSH: So those guys don’t exist out on the streets anymore?

MI2: No.

CSH: They’re grandpas? [laughing]

MI: Oh yeah, definitely. Now Grandpa Ishihara, after he got out of the Army and then we moved to airport side, by the way, we moved to John Rogers.

CSH: Right. By the airport.

MI: He went to work for the prison and two of the guys he had to watch all the time was Majors and Palakiko.

MI2: Oh.

MI: [laughing]

CSH: I don’t know who that is.

MI: Ok, James Major and the other guy Palakiko murdered—what the wahines name? Up in Nu’uanu. She was a rich wahine.

CSH: Massey?

MI2: I heard about that one. No, not Massey. No, Wilder.

MI: Anyways, they murdered her and she was an old lady. But they caught them because they were escapees at that time so they were looking for them. But Grandpa Ishihara was a guard and he became friends with them two guys. One guy could never get straightened out. The other guy served his time and he got out.

MI2: There was no death penalty?

MI: No, death penalty. There was, but they never got the death penalty—the time they came out never got the death penalty. Because he said they—he didn’t like the job because he didn’t want
to be the guy who had to pull the lever for hanging. It was hanging. The death penalty was hanging. And that was something he would not do.

CSH: So the rubbish incinerator—that would be where KCC is? HCC!
MI: No, it’s middle of the da kine….
MI2: It’s right across the canal from HCC side.
CSH: Yeah.
MI2: Middle of the block.
MI: Commercial stuff—bars and stuff like that.
MI2: It’s on the opposite side where HCC is? The incinerator was?
MI: Yeah, it’s on the mauka side.
MI2: Is it on the HCC side of the canal?
MI: Yeah, because ok—I never had this map drawn by scale because along here—
MI2: She has a big map over here!
MI: Pua Lane, ok, Palama Theater. Right? And then there’s Robello Lane. And Kai‘ulani School was about there. Kai‘ulani School is just before the incinerator because it’s what is by Austin Lane.
CSH: That’s kind of like by Kaumakapili, right?
MI: Yeah, right. You see this banyan? Between here and here—you see the church? There’s a church there? That’s Kaumakapili Church.
CSH: Uh huh.
MI: And on this corner is Tamashiro Market. Ok, there’s a park right in the—at the end of the lane because it was not too far from Palama Settlement. Which reminds me, you know Vineyard Boulevard?
CSH: Uh huh.
MI: It was not four lanes. It was only two lanes on the downside. The upside was part of Palama Settlement and the houses. Because they took some of the property of the Chinese church and everything. You know if you go down past Pua Lane there’s a Chinese church right before you get to Liliha, eh? So that mauka side lane on Vineyard didn’t exist. It was only a two lane road.
CSH: Ok. So going back to cultural stuff…you said this whole area was lo‘i. Was there anywhere else that was lo‘i in this area? Or even above.
MI: No, my recollection is only this area was.
CSH: And they were all Hawaiian families that took care of that area?
MI: Yeah, probably.
CSH: Do you remember any heiau or anything?
MI: No, that’s one thing…ok up here is a cemetery. You know going up Kamehameha?
CSH: Oh yeah, by the bus terminal.
MI: There’s a big cemetery there. Three. Three different cemeteries in the same area. Yeah, right over here.
CSH: And what about the cemetery?
MI: No, it’s just that it was an open area now they get fence up. But before it was just overgrown. CSH: Uh huh.
MI: They had to watch for…because opposite, right opposite that on Houghtailing—this side. Is a bus terminal, right? Because Tatsuku lives over here. On Kalihi Street going up was just bushes. Never had any development there.
CSH: So you would….so going back to when you catch stuff in the streams…you said you catch crayfish? Was there any other fish?
MI: ‘Ōpae. ‘Ōpae.
CSH: How would you make that? Would you use it part of your Japanese cooking too?
MI: ‘Ōpae, your Uncle Jay them would catch them out by Waikāne and eat them just like that.
CSH: Yeah, but how would you eat it?
MI: Oh, just boil it.
MI2: They not like the Hawaiians.
CSH: What kind of fish? That would be it? Just crayfish and ‘ōpae? Never had like…
MI: Well, inside there. Inside here had mullet.
CSH: So that’s the canal….
MI: No tilapias. The canal was clean. It has Samoan crab.
CSH: Ok.
MI: We used to catch crab inside there.
CSH: Samoan crab, mullet. Tilapia?
MI: No tilapia.
MI2: Oh, tilapia did not exist.
MI: Did not exist at that time [laughing].
MI2: About the 60s it came.
CSH: So what kind of fish? That was it?
MI: Basically it.
CSH: And it was clean the water?
MI: Clean. Yeah, cause it was just drainage canal that would take the rainwater and stuff like that.
CSH: Would you swim in it?
MI: Yeah, we used to ride in it and made tin boats. Do you know what tin boats are?
CSH: I have an idea.
MI: Totong. You know what totong is?
CSH: Uhhh no.
MI: Corrugated roofing?
CSH: Oh yeah. Corrugated roofing!
MI: We’d bend it and we’d nail it on both ends and it becomes a boat. We put outriggers on it.
CSH: Oh fancy.
MI: Cover it up with tar from the road. We chew the tar after we dig um out from the road. Heat it up. I used to literally chew it.
CSH: Like gum?
MI: Yeah, like gum. That was our past time.
CSH: How deep was the canal?
MI: Oh, the canal was kind of deep. Maybe about seven, eight feet.
CSH: But there would be no sharks that swam up?
MI: None. None. See actually it’s a fresh water stream to begin with so you cannot have anything like that. Only swim in salt water. Fishes cannot survive in that kind of water. Anyway, the area of that temple—that was our grounds, ok? We used to call it Kompira. For many years while we were growing up we called it Kompira. K-O-M-P-I-R-A. And that is the wrong name. It’s Koto Hira. K-O-T-O-H-I-R-A.
CSH: We have it over here. Jinsha. Kotohira Jinsha.
MI: Yeah, but we used to call it Kompira cause that’s what we thought we heard. That was one.
CSH: And you’d hang out there?
MI: Oh yeah, because you know why? They had sumo there. They had a martial arts training hall and they had kendo. Kendo and all that other kind stuff. And then they showed Japanese movies in the temple. And then during the war, in that hall, what Grandma them used to do—the old Japanese ladies was make slippers for Tripler Hospital. I mean, literally—slippers—you know how they cut it to pattern and sew it and everything? That’s what their volunteer was. Yeah, behind that da kine—where Vineyard is—you see that open area? That was quite a big area you know? It was just open field. Could play softball and what have you. But they had sumo too. They put up a sumo ring. So if you go to that temple at the end of that road before you enter that property—there is literally a gate way. I mean if it’s still is there but there used to be a gate way that they decorate because they had bon dances this time of the year. Today what they do is at the new year they bless the animals.
CSH: I didn’t know they did that.
MI2: Yeah!
MI: Oh yeah it’s a big deal!
MI2: I’ve seen it. I mean, it’s in the newspapers.
MI: In the old days they didn’t have that but in the new days they do.
MI2: Now a days they have that.
MI: They went so far as to really…. Promote and sell some of these things. Guys was stealing that. You supposed to make a donation.
MI2: Supposed to make a donation.
CSH: Did you ever go past Nimitz? Where the harbor is?
MI: No, that’s why I said…we never went below that. Because you were already at the harbor. We used to swim in that harbor. I used to swim down there when we were on Kukui. We used to go all the way down to Pier 19. That’s where we saw the…mom knows the….the so-called tsunami coming up.
CSH: Oh.
MI2: By River Street.
MI: Down by River Street.
CSH: What year was this? 1946?
MI: 1946, I was going to school. Ok, we live right next to the canal so I was going to school about 7:30 in the morning. Everybody was yelling, “TIGER WAVE! TIGER WAVE!” I was like, “What kind of wave? Tiger wave?!”
MI2: They were yelling tidal wave.
MI: They said tidal wave but I thought they said “Tiger Wave” because we never used the term tsunami until 1946. No, 19—the one that hit Hilo.
CSH: Was that ’48? Or 52?
MI: 60-something ah?
MI2: They still called it a tidal wave.
MI: Anyway, that’s what we saw. The thing would recede and all of the mullet—cause all the mullet inside that river—and papio—‘cause it was a mixture of salt water and fresh water coming from Waiakalulu Falls.
CSH: That was at River Street? Brackish.
MI: Yeah, it was brackish. Because used to wash cars further up on School Street you know? You drive down this parkway and mom’s classmate was there too. The Kawahara Nursery. You go down, park it down in the, in the stream and they wash their car. Had ‘o’opu.
MI2: I didn’t know they wash cars. In our neighborhood nobody wash cars like that.
MI: You know ‘o’opu?
CSH: Yeah.
MI: That was loaded with ‘o‘opu, ‘ōpae, crab.
CSH: At the River Street?
MI: At Nu‘uanu Stream, what they call Nu‘uanu Stream.
CSH: Nu‘uanu Stream?
MI2: Yeah, way up School Street.
MI: It runs from Kuakini actually. Cause there’s a waterfall up there. You go up inside there there’s a waterfall park.
MI2: It’s not that big is it the waterfall?
MI: It’s a big waterfall!
MI2: Oh yeah?
MI: Yeah because you gotta take all the water from Nu‘uanu.
CSH: Are you talking about…what’s that one?
MI: Waikalulu Falls, Waikalulu Falls, I think.
CSH: Oh, is that what it’s called? Not the kine ah…Kapena Falls? Not that one.
MI/MI2: Oh no. Nu‘uanu area.
MI: This one would come from….Nu‘uanu and….Sacred Hearts Convent.
MI2: What’s the place they call Lili‘uokalani or something?
MI: You know the rehab center? You know where the rehab center is?
CSH: You talking about Lana….no.
MI2: Talking about Kuakini Street just before…
CSH: Lanakila? Here, hold this for Papa. Anyways, ‘o‘opu and what else had?
MI: ‘O‘opu, ‘ōpae….
CSH: What kind of fish? No more fish. Besides the ‘o‘opu?
MI2: I don’t even know….I heard of ‘o‘opu fish but I never seen those things.
CSH: [laughing] So, so what happened? You saw the water recede and you saw all the fish in the wa—in the bottom of the river.
MI: Yeah and the guys go all run down and pick um up.
CSH: Chinese guys?
MI: No, all local guys. Young guys.
CSH: And then how long did it take until the water came back up?
MI: [laughing] Because you can see it coming---come down the ocean. You know on Beretania Street?
CSH: Yeah.
MI: Where Beretania Street and Aala Park is? Right over used to have an arch...over the bridge, over the bridge—one concrete arch. The water was that high.

CSH: [gasps]

MI: That’s when they know they had to get out of there quick [laughing].

MI2: You know the bridge has that wall-like, yeah?

CSH: Yeah.

MI2: The arch went over that way—like that. Yeah, like that.

CSH: So it wasn’t coming fast? It was coming kinda of slow…

MI: Oh it comes! Because it’s a surge, ah?

CSH: Yeah, yeah. So what? Chinatown was all inundated?

MI: No. It never went over the wall. It never went over the wall.

MI2: Over the sides, you mean.

MI: There’s a wall you know. If you look at that river today there’s a wall on both sides.

MI2: It never came that high.

MI: No more the name of the the spring.

MI2: What spring?

MI: The one in [inaudible].

CSH: I can go look it up at work.

MI2: What spring are you talking about?

MI: The one by the Sacred Hearts Convent.

MI2: Oh, there’s a river there.

MI: Yeah, you know Sacred Hearts Convent?

MI2: Yeah, there’s a river there. Right along the side of that street.

MI: Yeah, because that river runs, runs right into that stream.

MI2: What I find interesting there is the Kunawai Springs.

CSH: Oh, I’ve been there.

MI2: Oh yeah?

CSH: That’s really interesting.

MI2: Uncle Herbert’s them side—their grandpa—they lived on Kunawai Lane. That is Fatty and he had a lo‘i.

CSH: Well…

MI2: They had spring waters, yeah?
CSH: Actually…
MI2: So I heard about it. Fatty had their lo‘i.
CSH: Yeah, so Kunawai is…. [looking at map]…. MI2: I saw Pu‘u Nui is up here.
MI: Liliha Street. It’s off of Liliha Street.
CSH: So this is where the spring is, yeah? And then what’s really interesting is that there’s three or four springs over here. Jan took me over here.
MI: Oh?!
MI2: Oh yeah? Ok.
CSH: And right down, you know where Mistuken is?
MI/MI2: Yeah.
MI2: Because…
MI: That’s School Street.
CSH: There’s a park. There’s a park. By Mitsuken. And there’s still lo‘i there and they have a banana patch.
MI2: Oh yeah? Ok, because this is Kunawai. Kunawai Lane. And this is Kuakini Street. When I was very young, I lived in this area. I was only about two and I left there when I was four, but I do remember a stream way on one side. You know? But um, so, but I never knew where the stream went. Cause when we went outside to School Street—there was a road and the bus turn around across.
CSH: Yeah.
MI: Where the Liliha Theater used to be.
CSH: Cause what was happening, Jan was telling me that when we went to Kunawai. There’s a pool there and there’s ducks.
MI2: Oh so interesting!
CSH: And then on the right side of the pond, it drains down and there’s an apartment building there.
MI: Yeah.
CSH: Then it goes to the back of these homes and what was happening was…
MI: You know who lives there, ah? Bob Kuwahara….
MI2: Bob Kuwahara’s parents used to have a property back there—they sold it though.
CSH: What was happening was all those people who lived—what is that—Kunawai was draining out, the people were siphoning the water and using it for their gardens.
MI2: Fresh water.
CSH: It’s fresh water…not like…
MI: You know what the misnomer is? It didn’t start at Kunawai Lane. If you look at Kunawai Lane and go straight up Liliha to Saint Francis Hospital.
MI2: Is there a hospital you have marked?
MI: Further up. I mean, further up. That’s where the springs where. Cause you know why? Aunty Florence’s mother them used to live outside Saint Francis. They had a lo‘i there.
CSH: What year was this?
MI2: They had a lo‘i?
CSH: Who is this person? Aunty Florence?
MI2: Aunty Florence.
CSH: Aunty Flo? Shimokawa?
MI/MI2: Kochiyama.
MI2: Uncle Bob’s…she married ah….
CSH: Oh, what year was this?
MI: Sheesh. I was a little boy maybe.
MI2: In the 40s?
MI: Yeah. Must’ve been in the 40s.
MI2: Late 40s.
MI: I was there in about ‘47, ‘48. Because it was before I went to Farrington.
CSH: So she lived in….
MI: Liliha. Almost Pu‘u Nui. When you go that far up, it’s almost Puʻu Nui.
CSH: And she had a lo‘i?
MI: Yeah, because…
CSH: And would she use it though?
MI: Yeah, they were like farmers. Because where they used to live….you won’t believe where they used to live before that. The used to live at the quarry. You know University of Hawai‘i quarry?
MI2: In Moilili?
MI: Yeah, above looking down into the quarry.
MI2: When you take the old road…
CSH: I don’t even know where the quarry is.
MI2: Oh, ok.
MI: Stan Sheriff? Stan Sheriff Center?
MI2: That used to be a quarry before.
CSH: Quarry, like Kapa‘a Quarry—that kine?
MI: Yeah.
CSH: Like cement?
MI: Yeah, because they used to crush rocks inside there.
MI2: I always thought for some reason it was a vineyard.
MI: You know why?
MI2: They had these great round tanks there.
MI: They were gas tanks. Gas tanks.
MI2: Gas tanks.
MI: On the Diamond Head side of the quarry there was the Japanese tea house.
MI2: Oh, my friend’s tea house.
MI: Up on that plateau, on that side, the Shimokawa’s had their rose garden. They literally sold roses in Mō‘ili‘ili.
CSH: So did they live—their compound—the Shimokawa compound—was it by the haunted condo?
MI: What condo?
MI2: Oh, oh, oh! On King Street.
MI: No, it was across the street.
MI2: That’s the old Hawaiian church and graveyard.
MI: That was a graveyard.
MI2: That’s what happens when they dig up the iwi.
MI: You know who still have it and still there? Right next to it is the Furuya Lumber Company. Clarence Furuya.
MI2: By the river.
MI: Next to the river. See the river was right behind the Shimokawa property. You know, we used to go down into that river to catch ‘ōpae. But yeah, they had a big piece of property because Uncle Jimmy, Dado’s father—Takeshi, the family, the family’s big house had all the daughters living in the back. One of the bungalows on the side, we used to stay there.
MI2: I don’t know what it looked like way back then.
MI: They had bungalows adjacent to Uncle Jimmy’s house.
MI2: All I know is the bus used to pass.
MI: On old Waialae Road.
MI2: Once I went there with Verna. I told you Verna and her boyfriend were going to take me home. But Verna wanted to stop at the house. But by then we had the freeway so there wasn’t much property.

MI: Ok, you know Mom talking about the freeway and then the spring water?
CSH: Where? Over here?
MI: Yeah, in Liliha.
CSH: Yeah.
MI: If you go there today…
CSH: At Kunawai? Or Pu’u Nui?
MI/MI2: No, on School Street.
MI2: You looking at school Street.
MI: No, at School Street. You go over there and you see how deep they had to dig to get the freeway down below.
CSH: I know.
MI: Because where you standing is where the land used to go parallel across the street.
CSH: Yeah.
MI: Because across the street was Liliha Theater.
MI2: No, directly across from where we lived, yeah? Because we lived on School street side, there was the bus turnaround but the theater was on Liliha Street.
MI: Liliha Street.
CSH: I didn’t know you lived there too!
MI2: Only when I was two but I moved out when I was four.
MI: But that shows you the topography that freeway.
MI2: But I have a memory of that area.
MI: The question is where did all that dirt go?
MI2: I don’t know.
MI: Because you know remember where I told you where School street and Kukui Gardens is? They dug that land too.
CSH: I know, that’s why I asked if anyone lived there.
MI2: Kukui Street.
CSH: ‘Cause it’s supposed to go straight and now there’s this huge chunk missing—so did people live over there?
MI2: You have to remember….a lot of people must’ve lived in that area?
MI: Not really cause right where they dug—between that and Kukui—yeah, there was some houses on, on the makai side. But right across School Street from School Street to the width of the freeway down below was a park.

CSH: Ok.

MI: There was a park. Literally a park. Big park.

CSH: Seems there was plenty parks in that area.

MI: But you know what? They took a part…you keep going Nu‘uanu…

CSH: Uh huh.

MI: They took a part of Foster Gardens.

CSH: Oh really?

MI: Yeah.

CSH: So it used to be larger then?

MI2: Foster Garden is not what it was before. The entrance has changed.

MI2: [laughing]

MI: Entrance used to be on Nu‘uanu Avenue.

MI: That’s where the entrance was—Nu‘uanu Avenue. And next to that entrance was one church! [laughing]

CSH: Here it is right here. Looks like there’s a church there and a church there. So Nu‘uanu would be more down?

MI: Where’s School Street?

CSH: School Street is right here.

MI: Yeah, see that’s why they took that corner. See, this map….this map with all the buildings is from the United States Geographic Survey, yeah?

CSH: Yeah, this is USGS. But this is a 1998 map. If you want, I can get one from 1939? And where it doesn’t have the freeway and stuff so….

MI: Yeah!

CSH: So let me get another map then!

MI: That’s why, yeah.

CSH: Would you like it earlier than that? 1918? Or you think 1925?

MI: No, no, no.

CSH: Or is 1939 better?

MI: This map really shows you what it is because this is Vineyard right here. Right? But you see, you get down here just before that bridge? They made that curve. Oh no, this is Vineyard. This is Vineyard! So you see the line, the dotted red line. That’s Halona. That’s where Vineyard used to
be. So then they made this curve to come this way and on this side they call it Olomea. But never used to have an Olomea Street! Like I told you was all open grounds. Open fields. No such animal as Olomea.

MI2: All I remember is cause we lived on School Street—right off School Street, you know? So Saint Theresa’s was down the street from us.

CSH: Uh hm. Hmm. Let’s see. What else? I think that’s kind of it!

MI: Culturally, like I said, the general history and past and present land use—land use hasn’t been that much in Kalihi-Pālama. Never made any rezoning other than down by the waterfront, you know?

CSH: Right.

MI: Because there was no Nimitz Highway. Admiral Nimitz came during the war years.

CSH: Yeah.

MI: Knowledge of cultural sites?

CSH: Yeah, well we talked about lo‘i but you said you don’t remember heiau.

MI: I don’t think there’s any heiau there.

MI2: Who’s that? Uncle Kekoa used to live Makanani Drive. Makanani Drive used to go right into the back gate of Kamehameha, right?

CSH: Yeah. [Pause]. And what?

MI2: No, they lived there for a while.

CSH: [laughing] I thought you were going to tell me something show stopping here!

MI2: But I think our insurance man used to live on Makanani before, yeah? We had an insurance man and he lived on Makanani.

CSH: Trying to think of anything else that maybe….we talked about your family home. OH! I don’t have your birthdate. I know it’s July 24th—

MI: 1933.

CSH: 1933. Thought it was that!

MI: Ok, there’s some interesting facts that you should know.

CSH: Ok.

MI: Ok, you see right at this corner of Waiakamilo and King Street…

CSH: Uh hm.

MI: Right on the corner there is the pumping station.

CSH: Yeah, the Board of Water Supply.

MI: Yeah, that’s been like forever…in the back of that, however, used to be the royal Hawaiian band practice. That’s where they used to practice their music. Royal Hawaiian Band.
MI2: In back of the Board of Water Supply pumping station.
MI: Yeah.
MI2: That area has changed a lot because it’s a wide boulevard there now.
MI: Ok. The other thing is…at the same spot.
CSH: Uh hm.
MI: There’s a street. It’s an itty bitty little street. Kamakani Street, I think. Try look at it next to Waiakamailo and King Street. That goes to Au’s Garden.
CSH: I don’t think it’s labeled.
MI: Ok, it’s inside here. Anyway, that street is still there. But the point that I’m trying to make is on that corner, on that corner if you look at it closely you will see, you will see an old building right on the corner.
CSH: Ok.
MI: That building still exists there. It’s a two story building. In the back of that, on that corner is another old building that was also there from day one. From the time that I remember.
MI2: Ok, I found King and Waiakamilo but King according to this map is running back of Farrington High School. It runs in the front of Farrington High School.
CSH: That’s North King.
MI: It doesn’t matter it cannot run behind Farrington High School.
MI2: Yeah, North King runs actually in front of Farrington High School. They have it in the back here. So it would run actually, it would run here.
MI: Oh no, no, no, no.
MI2: This is Waiakamilo. This is Farrington.
CSH: No, no, no. No, that’s just the label.
MI: Often times you get the [inaudible].
CSH: You have to look at the buildings.
MI2: Ok, this is where the chop suey house is.
CSH: So what’s the significance of those buildings?
MI: It was before my time.
MI2: Oh yeah, across the pumping station…there is a tiny little side street, yeah? And on the—across the tiny street from the pumping station are these two very old buildings.
MI: Wooden buildings. Wooden buildings. One is if I can recall correctly…
MI2: I don’t know if people live in there…
MI: Well they did, because if I can recall correctly the bottom portion is a furniture store and the upper portion the family lived in it.
MI2: Really? Those were there when you lived there.
MI: Because I told you the next building, the next building before Diners…Diners Drive Inn…that building had a row of….well, not row, but a slight row and then the driveway went down. Then there was another…another bunch of buildings. The first building was Coin Mattress.
MI2: Oh.
MI: The guys who make mattresses?
MI2: Yeah.
MI: They still in business today. They still make mattresses. Chinese family. Anyway, you go down that alley way, you go down on that corner. King Street went like that but you kept going—but the funny part is that building that we lived in was off. You know when the bus used to come, he never stopped on the street you know? He would stop on this—like a parking area. Because the thing…because at the end of this building, it kind of jogged in. The sidewalk kind of jogged in and the sidewalk was right in the front of the stores all the way down into that alleyway. I told you that alley way we used to play with the tires, ah?
MI2: I knew you guys played with tires but I didn’t know you…
MI: But I didn’t tell you HOW we played with it?
MI2: You went inside the tire, right?
MI: But you know what, the guys on the bottom of the hill would try to knock us off.
CSH: That’s safe.
MI/CSH: [laughing]
MI2: Well, bottom line is I lived in Kaimuki. I never saw boys doing that.
MI: Cause there was a slight hill.
CSH: That’s kind of fun. But dangerous. I’m kind of curious—how was it during the war. After the war? Did you guys have to do the black out?
MI2: Yes.
MI: Oh yeah, yeah. Ok, now during the war. You see Kama Lane? You see that lane right there? Right on the corner there, there’s a delicatessen that’s where we used to eat lunch during my high school year. But before my high school year, they always was there. One old family. And it was a furniture store then it was another store then there was a big market. Where the corner was, there was a two story building.
CSH: Meems, can you check Kasen?
MI2: Yeah, he’s very quiet.
MI: It was a two story building. Upstairs was a house of prostitution. Why?! Because Farrington High School was a hospital.
CSH: That’s right. Yeah.
MI: And this part was a military supply area. See this area?
CSH: Yeah.
MI: It used to be barracks. But they used to store da kine—a lot of materials there.
CSH: Was it scary living at that time because you were Japanese? And….
MI: No. Because I told you grandma them and all the Japanese ladies used to work to….
CSH: So they knew you were not an enemy.
MI: ….do things for da kine. Because no one that I knew in that area was put in a….
CSH: A camp.
MI: Relocation camp. You know at Honouliuli?
CSH: Did you have to do the rations thing too? I know grandma talks about going to catch the bus.
MI: Oh yeah, that lasted a long time. Even when we went to Kukui Street. Even when you buy liquor you gotta have a ration card or they limit you to so much. Ok, when I moved to Kukui Street in 1946—‘45, ‘46—Mamie Stover was in operation.
CSH: What is that?
MI: [laughing]. Ok, you know where ‘A‘ala Park is?
CSH: Yes.
MI: Right across the street was all the food distribution—oh not food distribution. Used to the vegetable distributors and stuff like that. My friend’s mother had a barber shop on the corner of the Yamashiro Produce was. Yamashiro Produce. Upstairs was a house of prostitution. The biggest name was Mamie Stover.
CSH: So you have a house of prosecution down the street? And the house of prostitution there? Or you’re talking about….
MI: No, this is in Kalihi. The other was in ‘A‘ala Park.
CSH: So there’s two houses of prostitution?
MI: Oh yeah! More than that probably! That was the only two that I knew of. You know? It was legal. It was legal.
CSH: Oh this all for the Army. The military…. 
MI: Yeah, so the guys went upstairs. So every time I went to visit my friend’s mother—the mother run the barber shop, I go play with my friend downstairs. There’s a line, literally a line going down the block.
CSH: Was it all military guys?
MI: All military guys.
CSH: Mimi Stover….
MI: M-A-M-I-E.
CSH: MAMI.
MI: I call it Mamie. Mamie Stover.

CSH: She was…

MI: She was the biggest thing in Hawai‘i.

CSH: Was she like—the person or was she the madam?

MI: She was the person. She take ‘um all.

CSH: Geez.

MI: She take um all!

CSH: Ok.

MI: There’s always a joke I tell everybody: She had a room in the center, ok?

CSH: Uh hm.

MI: There was one room door that open, there was one room that goes out. The joke was—how do you—do you know what nationality the three guys are?

CSH: What?

MI: Him-a-laying. The guy that was inside. Him-a-coming. And the other was Him-finnish. [laughing]

CSH: Horrible.


CSH: Oh God. Ok.

MI: But yes, she was the biggest. The police would just let it go.

CSH: Well, they probably had other things.

MI: They probably had cumshaw on it. You know what cumshaw is?

CSH: No. They were probably the very ones?

MI: Cumshaw is payoff for looking the other way. And that’s what the guys at the hotels did. You know when the tourists come out? The guy would blow his whistle and he signal the taxi guy to come out. And that’s a cumshaw. Because the guy who comes up, gotta pay off the guy that’s getting the business.

CSH: Interesting. I don’t know all these terms.

MI: Cumshaw. [laughing]. Anyway, that’s basically the—da kine. Basically I did this to show what it looks like without the freeway.

CSH: Ok. You know what I didn’t get? I didn’t get your occupation and all that. So what happened after you moved out of this area?

CSH: Ok.
MI: I’m sorry, 1950. Because in 1950 when I joined the Marine Corps reserve I was only 16 years old and I lied, I told them I Was 17. So when I went to—the war broke out in June of 1950. So when I went to Camp Pendleton in June, one week later the Korean War broke out. The guys says, he gets up and said, “Ok, you guys are now in the Marine Corps. You will go back to Hawai’i and you will be reactivated and be back here in one month.” And sure to their word, flew back to California in 1950.

CSH: Ok. And then you served in the Korean War?
MI: From 1950 to 1952—September. I went to Korea in 19—51, September.

CSH: So you were there for a year?
MI: Yeah and that’s why the military says if you’re in the front line for one year, you must get out and go home. So they had to fly me home. Within that time otherwise they would be violating ah?

CSH: Ok.
MI: So I came home. But in the meantime, in 195—early 1951—I took the GED test. Which is a high school test.

CSH: Right.
MI: And I passed and they sent the results to Farrington High School says, “Oh, you passed. We’ll give you your diploma in 1951!” So I have my diploma from Farrington High School in 1951 by passing the one year test on my GED, which is a one day test.

CSH: And then…
MI: And it was so good—this is the proudest time of my life—I applied to San Jose State and they accepted me without any probation—just on my high school diploma. Which means I must’ve had better than a B+ average.

CSH: So you went to San Jose State?
MI: Yeah. For four years.

CSH: On the GI Bill?
MI: Four years, on the GI Bill. And the reason is, on the GI Bill you get every month, you know, every month and a half for every month of service. So I was in for 28 months. So that meant I would have 36—a little better than 36—38 months of school. I graduated in 36 months. Right? Nine months out of the year?

CSH: Uh hm.
MI: So I went four years, I had two more years. I was gonna go to Stanford. When I applied Stanford said, “You have to have a B average. I had a C+ average.” [laughing] So I said, THE HECK WITH IT! I DON’T NEED MY MASTERS! I wanted to go to Stanford for my Masters at least. At least for the two years.

CSH: Uh hm. And then you came home?
MI: Yep and I went to work for Castle and Cooke.
CSH: What did you do there?

MI: I was a freight cashier. And a rate analyst. Then the State says, “Come work for us under contact.” And I had a contract with the Attorney General’s office. The reason is because they wanted to send me to Washington to figure out what Aloha Airlines was doing with their service. And at the same time, keep an eye on Matson.

CSH: On who?

MI: MATSON. Because they were raising their rates. But they just wanted to know how they go about doing these things.

CSH: So you’re kind of like—investigating?

MI: Yeah. Well not really investigating but getting an update on them. You know? What they have to know. So in a way was good ‘cause the guy I was working with—he eventually became a circuit court judge.

CSH: Who was it?

MI: Arthur Fong.

CSH: Ok, then what happened after the AG’s office?

MI: Then Matson called me back.

CSH: And you worked there?

MI: Ohhhh—only little while. Then I went to the PUC.

CSH: What did you do at Matson?

MI: I was the rates and records handler.

CSH: Rates and rackets?

MI: Records.

CSH: And then you worked at the Public Utilities Commission?

MI: Yeah.

CSH: In what year?

MI: 1964.

CSH: To what?

MI: Only one year, I guess. Then I went back to Matson [laughing].

CSH: Oh.

MI: Then the State wanted me back [laughing]. But by that time, I decided to take the job as an Executive Director. Until 1988. But I had like almost 25 years of service because by the time I went to the State in 1962—all of that time counted.

CSH: Oh yeah. So what did you do at the PUC as the Executive Director?
MI: I was in charge of the division. Regulating the electric, gas, telephone, motor carriers, and the sewer companies [laughing].

CSH: Ok.

MI: Transportation too.

CSH: And then you got married to grandma.

MI: Oh yeah, I got married to grandma in 1957.

CSH: 1957. And then you guys had five kids?

MI: Yeah.

CSH: Debra, Lance, Vance, Jay, Chris. Ok!

MI: So I don’t know if that’s enough information on that Kapālama area?

CSH: Well, I’m going to transcribe all of this and then I’m going to have you look at the transcription, read it, if you don’t like it, you can make changes. And then from when you….OK it…then….

MI: The main thing is that there’s a change in the area.

CSH: I’ll make a summary.

MI: Actually for the purpose of your bridge work, it’s significant.

CSH: Yeah, that is!

MI: Because they realigned Vineyard Boulevard.

CSH: Uh hm.

MI: To put that freeway in. And that…see the question is….that canal is very small but yet did they do a good a job on structure support and design?

CSH: Is it because you have a personal investment in it because your dad you’re asking about that?

MI: Yeah! Because that bridge was always there!

CSH: I can see about Nu‘uanu Stream and bridge.

MI: By the way, T.H. Richards built that.

CSH: We have a catalog on it.

MI: 1930s. 1920s maybe.

CSH: We have a catalog of when the bridges were built and what kind of structure it is. And I think the State—they’re trying to figure out—obviously, what needs to get repaired. This one was built in 1938 and it’s structurally deficient. That’s why they’re gonna…

MI; 1938?

CSH: Uh hmm that’s when this bridge was built. Halona.

MI: NO, I don’t think so.
CSH: That’s what it says. We have a catalog, I’ll go look at it at work.
MI: Hmmm [thinking]. I can’t, I can’t visualize that bridge being built over the canal at that time. Other than having Vineyard Boulevard go over it. Not the freeway! The freeway wasn’t built till later!
CSH: Maybe they started construction at that time?
MI: 1938?
CSH: I don’t know. It says here it was built in 1938, but….
MI2: What was built?
CSH: That bridge.
MI: It could’ve been built in 1938. Just like that Theodore H Richards was built in 1920-something but it doesn’t mean it’s structurally sound for freeway use.
CSH: I know! That’s why they’re re-evaluation all these bridges because even—what is the one in Wahiawa—Karsten Thot?
MI2: Oh that one! Wahiawa….
CSH: Yeah.
MI: It’s only a two lane bridge!
CSH: Yeah, but if it’s built in whatever year and you never make repairs and you get one big rig go over it and it’s in bad shape it’s gonna go—BLOOP!
MI: Theodore H. Richards Bridge was only a two lane bridge, you know? Vineyard at that time in 1945—was only two lane. Now to put that into a four lane bridge for the H-1….you talking a big improvement.
CSH: Ok. So you have any other concerns about the bridge? I’ll check on the Nu‘uanu one for you.
MI: Yeah because the way it, the da kine is—the explanation that they have—inside there is that they gonna strengthen it from what it was when they first put it up. They put it up in 1938—it was only to take care of a two lane highway.
MI2: What areas did you want to know about?
CSH: Oh, are you pau then?
MI: Yeah.
CSH: I’m gonna stop this…um….
[END INTERVIEW 1:40:13.4]