DAVID Y. IGE GOVERNOR OF HAWAII





APR 2 3 2017 BOARD OF LAND AND NATURAL RESOURCES

KEKOA KALUHIWA FIRST DEPUTY

JEFFREY T. PEARSON, P.E. DEPUTY DIRECTOR - WATER AQUATIC RESOURCES

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STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES

> POST OFFICE BOX 621 HONOLULU, HAWAII 96809

> > March 29, 2017

MEMORANDUM

Mr. Scott Glenn, Director Office of Environmental Quality Control

FROM:

TO:

Suzanne D. Case, Chairperson 4/4 Board of Land and Natural Resources

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT AND ANTICIPATED FINDING OF NO SIGNIFICANT IMPACT FOR THE PROPOSED BEACHENHANCEMENTS AT THE KĀHALA HOTEL & RESORT (TMK 3-5-023: 039 104 and 41)

With this letter, the Department of Land and Natural Resources (DLNR) hereby transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the proposed Beach Enhancements at The Kāhala Hotel & Resort situated on TMK parcels 3-5-023: 039 por. and 041, on the island of O'ahu, for publication in the next available edition of the Environmental Notice on behalf of our permittee and applicant, Resorttrust Hawaii, LLC (Resorttrust).

Attached is a completed OEQC Publication Form, one (1) copy of the DEA/AFONSI, an Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, Resorttrust's consultant, PBR HAWAII, will submit the summary of the action in a text file by electronic mail to your office.

If you have any questions, please feel free to contact Oahu District Land Agent Barry Cheung at (808) 587-0430, or our Resorttrust's authorized agent for this project, Greg Nakai, of PBR HAWAII at (808) 521-5631.

C: Central File Tim Lui-Kwan, Esq. Greg Nakai, PBR HAWAII

APPLICANT PUBLICATION FORM

Project Name:	The Kahala Hotel & Resort Beach Enhancements
Project Short Name:	The Kahala Hotel & Resort DEA
HRS §343-5 Trigger(s):	1. Propose the use of State or County lands or the use of State or County funds
	2. Propose the use within any land classified as a conservation district
	3. Propose any use within a shoreline area
Island(s):	Oʻahu
Judicial District(s):	Honolulu
TMK(s):	135023041, 135023039 por.
Permit(s)/Approval(s):	Conservation District Use Permit (CDUP), Non-exclusive easement, SMA Use Permit (minor), Grading/Building Permits
Approving Agency:	State of Hawai'i Department of Land and Natural Resources
Contact Name, Email, Telephone, Address	Barry Cheung, Oʻahu District Land Agent (808) 587-0430 1151 Punchbowl Street Honolulu, HI 96809 <u>barry.w.cheung@hawaii.gov</u>
Applicant:	Resorttrust Hawaii, LLC
Contact Name, Email, Telephone, Address	Gerald Glennon, General Manager The Kāhala Hotel & Resort 5000 Kāhala Avenue Honolulu, HI 96816 (808) 739-8888
Concultant	PRP HAMAIL& Associates Inc
Contact Name Email	ATTN: Greg Nakai
Telephone, Address	kahalahotel@pbrhawaii.com (808) 521-5631 1001 Bishop Street, Suite 650 Honolulu, HI 96813
Status (select one)	Submittal Requirements
	this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
FEA-FONSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
FEA-EISPN	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
Act 172-12 EISPN ("Direct to EIS")	Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
DEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
FEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a

searchable PDF of the distribution list; no comment period follows from publication in the Notice.

- FEIS Acceptance
 The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination

 Determination
 determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.

 ______FEIS Statutory
 The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it
- Acceptance did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.
- _____Supplemental EIS The approving agency simultaneously transmits its notice to both the applicant 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 or is not required; no EA is required and no comment period ensues upon publication in the Notice.
- WithdrawalIdentify the specific document(s) to withdraw and explain in the project summary section.OtherContact the OEQC if your action is not one of the above items.

Project Summary

Provide a description of the proposed action and purpose and need in 200 words or less.

The Kāhala Hotel & Resort is located entirely within Tax Map Key (TMK) 3-5-023: 039 and mauka of the current certified shoreline. Between the hotel and the certified shoreline is TMK 3-5-023: 041 which is owned by the State of Hawai'i ("State Parcel"). A Revocable Permit for Recreational and Maintenance Purposes over the State Parcel was approved by the Land Board in favor of Resorttrust Hawai'i, LLC ("the Applicant") on October 21, 2014. The Applicant is currently requesting a non-exclusive easement from the State of Hawai'i for further enhancement of the State Parcel and the public shoreline including approval for certain ongoing activities.

The Applicant is proposing the following possible beach enhancements: rejuvenating the landscape architectural design of the areas currently maintained by the hotel; improving the lateral access along the shoreline; non-permanent improvements and continuing operations for outdoor wedding ceremonies on the State Parcel; and sand replenishment of the beach area, *mauka* of the Mean Higher High Water (MHHW) mark or high tide line.

The Kāhala Hotel & Resort Beach Enhancements

Draft Environmental Assessment Anticipated Finding of No Significant Impacts (HRS 343)

Prepared for:

Resorttrust Hawai'i, LLC

Prepared by:



April 2017

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LIST OF ACRONYMS AND ABBREVIATIONS

The following	g is a list of terms, abbreviations, and acronyms used in this document.
AA	Archaeological Assessment
ACOE	U.S. Army Corps of Engineers
AIS	Archaeological Inventory Survey
ALISH	Agricultural Lands of Importance to the State of Hawai'i
AMSL	Above mean sea level
BMPs	Best Management Practices
CWB	State of Hawai'i, Department of Health, Clean Water Branch
CZM	Coastal Zone Management
dBA	A-weighted decibels
DBEDT	State of Hawai'i, Department of Business, Economic Development, and Tourism
DoD	Department of Defense
DLNR	Department of Land and Natural Resources
DOE	State of Hawai'i, Department of Education
DOH	State of Hawai'i, Department of Health
DPP	City and County of Honolulu, Department of Planning and Permitting
EA	Environmental Assessment
EHSCP	East Honolulu Sustainable Communities Plan
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HAR	Hawai'i Administrative Rules
HRS	Hawai'i Revised Statutes
LID	Low Impact Development
LSB	Land Study Bureau
LUC	State of Hawai'i, Land Use Commission
LUO	Land Use Ordinance
MHHW	Mean Higher High Water
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
OCCL	Department of Land and Natural Resources, Office of Conservation and
	Coastal Lands
OEQC	Office of Environmental Quality Control
ORMA	Ocean Recreation Management Area
SF	square feet

Draft Environmental Assessment/Anticipated Finding of No Significant Impacts		
SHPD	State of Hawai'i, Department of Land and Natural Resources State	
	Historic Preservation Division	
SMA	Special Management Area	
SO2	Sulfur Dioxide	
SSV	Shoreline Setback Variance	
TMDL	Total Maximum Daily Load	
TMK	Тах Мар Кеу	
TPD	Tons Per Day	
USFWS	U.S. Fish and Wildlife Service	

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1 INTRODUCTION

This environmental assessment is prepared in accordance with Chapter 25, *Revised Ordinances of Honolulu* for a Special Management Area Use Permit and *Hawai'i Revised Statutes* (HRS) Chapter 343. Per HRS Chapter 343-5, an environmental assessment shall be required for actions that:

- (1) Propose the use of state or county lands or the use of state or county funds;
- (2) Propose any use within any land classified as a conservation district by the state land use commission under chapter 205;
- (3) Propose any use within a shoreline area as defined in section 205A-41...

This Environmental Assessment was prepared with guidance from the State Office of Environmental Quality Control (OEQC) Guidebook, as well as *Hawai'i Administrative Rules* (HAR) § 11-200-10.

1.1 PROJECT SUMMARY

Project Name:	The Kāhala Hotel & Resort Beach Enhancements	
Applicant:	Resorttrust Hawai'i, LLC	
Landowners:	State of Hawai'i (TMK: 3-5-023: 041), Kamehameha Schools (TMK: 3-5-023: 039 por.)	
Location:	5000 Kāhala Avenue, Kāhala, Oʻahu, Hawaiʻi (Figure 1)	
Tax Map Key:	TMK: 3-5-023: 039 por. and 041 (Figure 2)	
Existing Use:	Hotel/Resort (TMK: 3-5-023: 039 por.); and Beachfront Recreation and Appropriate Resort Activities, Landscaping and Amenities maintained or operated by Applicant (TMK: 3-5-023: 041)	
Proposed Use:	Hotel/Resort (TMK: 3-5-023: 039 por.); and Beachfront Recreation and Appropriate Resort Activities, Landscaping and Amenities maintained or operated by Applicant (TMK: 3-5-023: 041)	

THE KĀHALA HOTEL & RESORT BEACH ENHANCEMENTS Draft Environmental Assessment/Anticipated Finding of No Significant Impacts

Project Area:	2.65 acres (TMK: 3-5-023: 039 por./1.72 a.) (TMK: 3-5-023: 041/0.93 a.)
Land Use Designations:	 <u>State Land Use</u> (Figure 3): Urban (TMK: 3-5-023: 039 por.) and Conservation (TMK: 3-5-023: 041), <u>Sustainable Communities Plan</u>: Resort (TMK: 3-5-023: 039 por.), <u>Zoning</u> (Figure 4): Resort (TMK: 3-5-023: 039 por.) P-1 Restricted Preservation (TMK: 3-5-023: 041)
Special Management	
Area (SMA):	<u>Inside SMA</u> (TMK: 3-5-023: 039 por. and TMK: 3-5-023: 041) (Figure 5)
Actions Requested:	Non-exclusive Easement for Applicant's Existing and Continuing Use of State Land for recreational and resort-related activities including the renovation and maintenance of landscaping, construction of access paths and pavement, conducting wedding and vow renewal ceremonies for hotel guests at up to three locations, maintaining an existing wedding gazebo, an outdoor seating area, and a open-air hut partially within the State Parcel, overnight storage of aquatic and beach equipment, placement of ten canopy tents, 40 to 50 cabana loungers, public showers on the State Parcel and presetting approximately 100 beach lounge chairs along the eastern side of the sandy beach for use by hotel guests and the general public on a non-discriminatory first come – first serve basis.
Approving Agency:	State of Hawai'i Department of Land and Natural Resources

1.2 LOCATION

The site of the Project is a portion of the beach reserve fronting The Kāhala Hotel & Resort, O'ahu, within the City and County of Honolulu East Honolulu District (Figure 1). The Project site is located just *mauka* of the sand beach along Maunalua Bay and *makai* of Wai'alae Avenue/Kalaniana'ole Highway and is accessed from Kāhala Avenue, either through Wai'alae Beach Park or through The Kāhala Hotel & Resort.

1.3 LAND OWNERSHIP

As shown in Figure 6, the proposed beach enhancements involve two different tax map key (TMK) parcels owned by others: TMK: 3-5-023: 041 (State of Hawai'i); and TMK: 3-5-023: 039 por. (Kamehameha Schools).

1.4 IDENTIFICATION OF THE APPLICANT

The Applicant is Resorttrust Hawai'i, LLC, which acquired the hotel on October 14, 2014 and holds a long-term lease from Kamehameha Schools, the fee owner of TMK: 3-5-023: 039 on which the hotel is located. Resorttrust, Inc., the sole member of the Applicant, operates resorts and medical diagnostic treatment centers in Japan.

1.4.1 The Kāhala Hotel & Resort

The following summarizes the history of the property as provided by <u>http://www.Kahala50th.com/</u>

Paul Isenberg of the Kaua'i Island Sugar-planting family leased 3,000 acres at an annual rent of \$12,000 for about 40 years that included the lands now occupied by The Kāhala Hotel & Resort, the golf course, and thousands of handsome homes in the Kāhala area.

In 1947, "City Planner David Wolbrink of Harlan Bartholomew Associates devised a plan for the best use of Bishop Estate lands in Wai'alae-Kāhala area, including the golf club whose lease was about to expire. He suggested they keep the golf and suggested a world-class hotel on a 12.5 acre beach site to enhance and maintain the exclusive character and ambience of the neighborhood..."

In 1959, "Real estate investor Charlie Pietsch obtains a lease on the site from Bishop Estate. The lease included the golf course with an extension of 15 acres on the opposite end. The golf lease had 10 years to maturity, but Pietsch negotiated with them to extend the lease to 65 years, if a hotel were to be built. With lease in hand, Pietsch flew to Los Angeles and put together a 50/50 deal with friend Conrad Hilton."

In 1961, "Charlie Pietsch signs contract with Hilton International and architects Killingsworth, Brady, and Smith of Long Beach. Later this year the groundbreaking occurs."

In August 1962, "Construction begins with Hawaiian blessing ceremonies. Interior designers David Williams of New York assisted by Roland Terry of Seattle were selected. Honolulu Structural Engineer Alfred Yee is also named to the Project along

with fellow Oahuan Wilbert Choi as Landscape Architect. Haas and Haynie of San Francisco are named as Contractor.

Charlie Pietsch suggested the name The Kāhala Hilton because Wai'alae was too hard to spell..."

On January 22, 1964, "Reverend Abraham Akaka officiated at the blessing ceremony that also included pastors of many faiths. Inaugural luncheon is held with a menu that reflects a taste of the islands..."

1.5 IDENTIFICATION OF APPROVING AGENCY

The State of Hawai'i Department of Land and Natural Resources is the approving agency.

1.6 IDENTIFICATION OF AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONSULTED

In the course of planning for this Project, the following agencies (or agency documents), community individuals and organizations were consulted and/or provided information for the preparation of this environmental assessment.

State of Hawai'i Office of Environmental Quality Control
State of Hawai'i Department of Business, Economic Development & Tourism
State of Hawai'i Department of Defense
State of Hawai'i Department of Health
State of Hawai'i Department of Land and Natural Resources (DLNR)
State of Hawai'i Department of Transportation
State of Hawai'i Office of Planning
U.S. Army Corps of Engineers, Honolulu District
U.S. Federal Emergency Management Agency
U.S. Fish and Wildlife Service
City and County of Honolulu Board of Water Supply
City and County of Honolulu Department of Parks and Recreation
City and County of Honolulu Department of Planning and Permitting
City and County of Honolulu Fire Department
City and County of Honolulu Police Department

1.7 ENVIRONMENTAL ASSESSMENT PROCESSING BACKGROUND

The following agencies, organizations and individuals were mailed written requests on July 6, 2015 inviting their input on the Project and comments as to whether the proposed Project may have an impact on any of their existing or proposed projects, plans, policies, or programs, and if there are any specific issues that should be addressed in the Draft Environmental Assessment.

State of Hawai'i Office of Environmental Quality Control
State of Hawai'i Department of Accounting & General Services
State of Hawai'i Department of Business, Economic Development & Tourism
State of Hawai'i Department of Defense
State of Hawai'i Department of Health
State of Hawai'i Department of Labor and Industrial Relations
State of Hawai'i Department of Land and Natural Resources (DLNR)
State of Hawai'i DLNR - Historic Preservation Division
State of Hawai'i Department of Transportation
State of Hawai'i Hawai'i Tourism Authority
State of Hawai'i Office of Planning
U.S. Army Corps of Engineers, Honolulu District
U.S. Federal Emergency Management Agency
U.S. Fish and Wildlife Service
City and County of Honolulu Board of Water Supply
City and County of Honolulu Department of Environmental Services
City and County of Honolulu Department of Parks and Recreation
City and County of Honolulu Department of Planning and Permitting
City and County of Honolulu Department of Transportation Services
City and County of Honolulu Fire Department
City and County of Honolulu Police Department
State Senator Stanley Chang
State Representative Bertrand Kobayashi
City Councilmember Trevor Ozawa
City and County of Honolulu Neighborhood Board #3 Chair Richard Turbin
Hawaiian Electric Company, Inc.
Hawaiian Telcom
Kāhala Beach Condominium Apartments
Kamehameha Schools
Oceanic Time Warner Cable
Wai'alae Country Club

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2 PROJECT DESCRIPTION

The description of the proposed beach enhancements to The Kāhala Hotel & Resort, construction activities, and preliminary development timetable and approximate development costs are described in this section.

2.1 BACKGROUND INFORMATION

2.1.1 Description of the Property

As shown in Figure 6, the proposed beach enhancements may involve two different tax map key (TMK) parcels owned by others: --TMK: 3-5-023: 041 (State of Hawai'i, 40,460 s.f. or 0.93 a.); and TMK: 3-5-023: 039 por. (Kamehameha Schools, 74,923 s.f. or 1.72 a.), and if all of the possible improvements are implemented, will include a total Project area of approximately 2.65 acres. Public access to the beach fronting The Kāhala Hotel & Resort is from the end of Kāhala Avenue along the west side of the hotel parking structure or laterally along the public shoreline from Wai'alae Beach Park. The beach is generally flat and ranges from sea level to less than seven feet mean sea level (MSL) in elevation.

2.1.2 Existing Land Uses Along the Coast

Existing land uses along the coast and surrounding the site include hotel (The Kāhala Hotel & Resort), multi-family residential (Kāhala Beach Apartments), golf course (Wai'alae Country Club) and ocean-related outdoor recreation (sunbathing, swimming, snorkeling, stand-up paddling, kayaking, and fishing).

2.2 PROJECT DEVELOPMENT GOALS AND OBJECTIVES

The goal and objectives of the Project are to:

- Enhance the beach-going experience of hotel guests and the general public of the beach fronting The Kāhala Hotel & Resort, by making and maintaining landscape improvements, and also providing access to culturally appropriate activities and amenities.
- Incorporate appropriate elements of the host culture into improvements and activities that provide a Hawaiian sense-of-place to The Kāhala Hotel & Resort that enriches an appreciation of the history and culture of our unique island community for visitors and residents.

- Formalize a non-exclusive easement over TMK 3-5-023: 041, as well as: 1) the (State of Hawai'i-owned) fast land *mauka* of the shoreline fronting the hotel including two groins that extend perpendicular from both ends of the beach fronting the hotel; 2) an existing raft in the channel between both groins that is secured to the ocean bottom; and 3) a small island off the western groin.
- Approve the use of TMK 3-5-023: 041 to continue providing certain recreational and resort amenities including weddings at up to three (3) locations, an existing gazebo, an existing open-air hut, outdoor tables and seating, portable canopy tents, cabana loungers, storage of beach or aquatic equipment, pathways, public showers and the pre-setting of approximately 100 beach lounge chairs on a portion of the public beach for use by hotel guests and members of the general public on a non-discriminatory first-come, first-serve basis.

2.3 PROJECT COMPONENTS

The Kāhala Hotel & Resort is located entirely within Tax Map Key (TMK) 3-5-023: 039 and is located just *mauka* of TMK 3-5-023: 041 which is a portion of the beach reserve owned by the State of Hawai'i ("State Parcel") above the current certified shoreline. The State Parcel was made from the fill dredged from the prior shoreline to create the swimming lagoon and the two peninsulas on either side of the sandy beach during the construction of the Kāhala Hilton Hotel between 1962 and 1964. A Revocable Permit for Recreational and Maintenance Purposes over the State Parcel was approved by the Land Board in favor of Resorttrust Hawai'i, LLC ("the Applicant") on October 21, 2014. The Applicant is currently requesting a non-exclusive easement from the State of Hawai'i for further enhancement of the State Parcel and approval for certain continuing recreational and resort-related activities.

The Applicant is proposing the following possible beach enhancements: rejuvenating the landscape architectural design of the areas currently maintained by the hotel including the small islet just offshore from the western groin forming the peninsula on the Diamond Head-side of the State Parcel; improving the lateral access within the State Parcel along the shoreline; maintaining certain existing structures including an existing gazebo used for wedding ceremonies and an existing open-air hut partially within the State Parcel; the placement of tiki torches and gas lines along the shorefront, continued placement of non-structural and non-permanent improvements including canopy tents, cabana loungers, tables and chairs, the continued storage of aquatic/beach equipment, pre-setting of beach lounge chairs for public use and guests along a section of the public beach and conducting outdoor wedding ceremonies at up to three locations on the State Parcel; and sand replenishment of the beach area, *mauka* of the Mean Higher High Water (MHHW) mark or high tide line. The foregoing components of the proposed action will be referred to collectively as the "Project". (See Figure 7 - Site Plan)

The Applicant plans to incorporate elements of the host culture into the design and composition of the landscaping by using appropriate native plants and materials that reflect both the unique and diverse qualities of our island environment while promoting the sustainable use of the State Parcel and the public shoreline fronting it. The use of native plants and interpretative signage in the Hawaiian language was included in the recommendations of the cultural impact survey for the Project as well as incorporating cultural and historical features such a historic-themed foot path and water features that made the district known for its hospitality and connection with the ocean. The cultural impact survey report is part of the Cultural Impact Assessment is included as Appendix C of this EA.

There are plans to also offer activities that impart a sense-of-place to hotel guests and the public such as a nightly torch-lighting ceremony along the shoreline and offering rides in traditional sailing outrigger canoes. Many years ago, the State of Hawaii established an Ocean Recreation Management Area ("ORMA") with a designated boat channel along the inside of western groin fronting The Kāhala Hotel & Resort as shown on the Site Plan (Figure 7). While the ORMA has been underutilized for many years, it can provide an opportunity to integrate the resort's land-based activities with culturally appropriate coastal activities - a traditional relationship between the *aina* and *ke kai* for native Hawaiians, one that extends back at least a thousand years before the arrival of first western visitors.

The Applicant and the State of Hawai'i Department of Land and Natural Resources have been in discussion to formalize a non-exclusive easement over TMK 3-5-023: 041, as well as: 1) the State of Hawai'i-owned fast land *mauka* of the shoreline fronting the hotel including two groins that extend perpendicular from the beach; 2) a raft in the channel between both groins that is secured to the bottom of the shallow swimming lagoon; 3) the use and placement of up to 100 beach lounge chairs for use by guests and the general public, without discrimination on a first-come, first-serve basis, along the eastern end of the sandy shoreline fronting the hotel; and 4) a small island off the western groin. Neither the groins nor the island (or the raft) are identified with or located within the State Parcel as shown on TMK 3-5-023: 041.

2.4 OPERATIONS OF THE APPLICANT'S USE OF THE BEACH AREA

2.4.1 Operating Hours

Normal operations on the beach and beach area, including the State Parcel, are daily from sunrise to sunset.

2.5 DEVELOPMENT TIMETABLE AND APPROXIMATE COSTS

Construction of the proposed beach enhancements will follow receipt of all required permits and approvals. Presently, construction of all the beach enhancements is expected to occur simultaneously over a 12-15 month period after receipt of the necessary approvals. The total improvement cost is estimated to be approximately \$900,000.00 for the Project which also includes expenses for the upgraded landscaping (approximately \$450,000 of cost of improvements), the tiki torches, gas lines and small portable structures. The current maintenance cost for the affected area, including the daily cleaning of the public beach assumed by the Applicant, is approximately \$2,200 per week. At the present time, there are no estimates on the maintenance cost for the affected area following completion of the proposed improvements.

3 LAND USE CONFORMANCE

Relevant State of Hawai'i and City and County of Honolulu land use plans, policies, and ordinances are described below.

3.1 STATE OF HAWAI'I

3.1.1 Land Use Commission

The Project site is located within the State Urban (TMK: 3-5-023: 039 por.) and Conservation (TMK: 3-5-023: 041) Land Use Districts (Figure 3), and the proposed beach enhancements to the existing beach are regulated by the City and County of Honolulu Department of Planning & Permitting (Urban) and the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands (Conservation), respectively. During the Draft EA Pre-Consultation process, the Office of Conservation and Coastal Lands (OCCL) wrote: "The DLNR-OCCL regulates land-use in the State Conservation District, which, in coastal areas, extends seaward from the State Certified Shoreline out to the three-mile limit of State Waters. A DLNR Conservation District Use Permit (CDUP) would be required for proposed land uses occurring in the Conservation District, including marine dredging and beach nourishment."

3.1.2 Coastal Zone Management Act, Chapter 205A, Hawai'i Revised Statutes

The U.S. Congress enacted the Coastal Zone Management (CZM) Act to assist States in better managing coastal and estuarine environments. The Act provides grants to States that develop and implement Federally-approved CZM plans. The State of Hawai'i's CZM Act Program was enacted pursuant to Chapter 205A, HRS. The program outlines management objectives centered around ten (10) areas: 1) Recreational Resources; 2) Historic Resources; 3) Scenic and Open Space Resources; 4) Coastal Ecosystems; 5) Economic Uses; 6) Coastal Hazards; 7) Managing Development; 8) Public Participation in Coastal Management; 9) Beach Protection; and 10) Marine Resources. All lands within the State of Hawai'i fall within the CZM area, including the Project Site.

Portions of the proposed Project Site are located within the Special Management Area (SMA) (Figure 5). The objectives and policies of the Hawai'i Coastal Zone Management (CZM) Program, along with a detailed discussion of how the proposed Project conforms to these objectives and policies, are discussed below.

Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.

Policy A: Improve coordination and funding of coastal recreational planning and management; and

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

- *(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
- (ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
- *(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
- *(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
- (v) Ensuring public recreational uses of County, State, and Federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;
- (vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
- (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and
- (viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and County authorities; and crediting such dedication against the requirements of section 46-6.

Discussion: The Site is located in East Honolulu along the coastline fronting The Kāhala Hotel & Resort. To protect marine water quality, the Project will be designed and built in compliance with all applicable Federal, State, and City regulations pertaining to storm water management including the City & County of Honolulu's grading ordinance. The Project will provide increased public recreational opportunities as the swimming lagoon and sandy beach fronting the hotel provides some of the most attractive and safest stretches of oceanfront along Maunalua Bay. Applicant is proposing to place up to 100 beach lounge chairs for use by guests and the general public, without discrimination on a first-come, first-serve basis, along the eastern end of the sandy shoreline fronting the hotel. BMPs will be integrated into the construction of the Project.

Historic Resources

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

Policy A: Identify and analyze significant archaeological resources; Policy B: Maximize information retention through preservation of remains and artifacts or salvage operations; and

Policy C: Support State goals for protection, restoration, interpretation, and display of historic resources.

Discussion: A Cultural Impact Assessment was conducted by the Rev. Dr. Malcolm Nāea Chun, PhD., a cultural consultant and long-time resident of the area, in order to determine whether any Native Hawaiian cultural practices are presently occurring on the Site, and if so, whether the Project will impact those practices. Dr. Chun conducted a series of consultations with various community groups and individuals for public input, including long-term employees of the Hotel. These interviews enhanced and confirmed the historical and ethnographic research on the Project area. In addition, a walking survey of the proposed Project site was also conducted. There was coordination between Dr. Chun and the archaeological consultant (Pacific Legacy, Inc.) throughout the process.

It was found that the main cultural activity of the proposed Project site is fishing. Any other traditional and/or cultural activities on the Site are related to Hotel activities and programs for guests. No one consulted could verify that there were any other cultural activities, in memory or at present, that were not somehow related to the Hotel activities and programs.

The Cultural Impact Assessment concluded that the Project is not anticipated to produce adverse effects to any Native Hawaiian rights related to fishing, gathering, or other cultural practices. If there are any impacts to fishing or gathering/harvesting practices, these effects would be experienced only temporarily during the construction phase of the Project. The Project will not deny access to the beach at any time during the construction phase except there will be times when certain areas will be closed during active construction work. The beach will still be accessible via the designated public access between the hotel's parking structure and the neighboring Kāhala Beach Apartments property, as well as laterally along the shoreline from the City and County's Waialae Beach Park. The cultural impact survey also identified potential for the Project to improve cultural and historic awareness and education, which would be beneficial to both hotel guests and the general public. The use of native plants and interpretative signage in the Hawaiian language was included in the recommendations of the cultural impact survey for the Project as well as incorporating cultural and

historical features such a historic-themed footpath and water features that made the district known for its hospitality and connection with the ocean. The Cultural Impact Assessment is included as Appendix C of this EA.

Pacific Legacy, Inc. conducted an Archaeological Inventory Survey (AIS) for the Project area. Since no historic or cultural properties were identified in the Project area, Pacific Legacy, Inc. submitted its investigation and report the State Historic Preservation Division ("SHPD") as an archaeological assessment (AA), which document is attached as Appendix D of this EA.

Scenic and Open Space Resources

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

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

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

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

Policy D: Encourage those developments which are not coastal dependent to locate in inland areas.

Discussion: The proposed Project is coastal dependent and will be located along the shoreline; however, when the proposed beach enhancements have been completed, it is anticipated that there will be a positive effect on the quality of the coastal scenic and open space resources. There are no new permanent structures proposed by the Project that would impact or alter natural landforms or existing public views to and along the shoreline.

Coastal Ecosystems

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

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

Policy B: Improve the technical basis for natural resource management;

Policy C: Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

Policy D: Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing

competing water needs; and

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

Discussion: To protect marine water quality the Project will be designed and built in compliance with all applicable federal, state, and county regulations pertaining to storm water management including the City & County of Honolulu's grading. In particular, the City and County of Honolulu, Department of Planning and Permitting's Rules Relating to Storm Drainage Standards, June 2013, will be incorporated in drainage design to ensure the proposed Project does not impact the existing volume or quality of storm water runoff. BMPs will be employed during construction to reduce erosion of soils and fugitive dust during construction. These measures will also protect down-gradient resources and prevent secondary and cumulative impacts of storm water.

Economic Uses

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

Policy A: Concentrate coastal dependent development in appropriate areas;

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

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

(i) Use of presently designated locations is not feasible;

(ii) Adverse environmental effects are minimized; and

(iii) The development is important to the State's economy.

Discussion: The proposed beach enhancements will not only be beneficial to a coastal-dependent visitor industry facility (The Kāhala Hotel & Resort), but also to the general public, and will be located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area.

Coastal Hazards

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

Policy A: Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;

Policy B: Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and non-point source pollution hazards;

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

Policy D: Prevent coastal flooding from inland projects.

Discussion: Most of the Project area is located within the coastal flood zone. The proposed Project will not include any new buildings or other permanent structures. However, there is an existing gazebo on the State Parcel located *makai* of the Plumeria Restaurant which has been used periodically by hotel guests for weddings and vow renewal ceremonies and a small open-air hut partially within the State Parcel-as shown on the Site Plan (Figure 7) but neither will not increase base flood elevation levels.

Managing Development

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

Policy A: Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

Policy B: Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and

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

Discussion: This EA discusses potential impacts and mitigation measures of the Project and provides an opportunity for input. Before the EA was prepared, comments on potential scope of impacts from the proposed Project were sought and obtained, and are reproduced in Appendix A.

Public Participation

Objective: Stimulate public awareness, education, and participation in coastal management. Policy A: Promote public involvement in coastal zone management processes; Policy B: Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and *Policy C: Organize workshops, policy dialogues, and site- specific mediations to respond to coastal issues and conflicts.*

Discussion: This EA discusses potential impacts and mitigation measures of the Project and provides an opportunity for input. Before the EA was prepared, comments on potential scope of impacts from the proposed Project were sought and obtained, and are reproduced in Appendix A.

Beach Protection

Objective: Protect beaches for public use and recreation.

Policy A: Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;

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

Discussion: The proposed Project involves the enhancement of the beach fronting The Kāhala Hotel & Resort that will help to maintain the lawn and existing vegetation and minimize erosion. There are no new buildings or permanent structures proposed in the development of the Project. There may be limited sand replenishment in the beach area above the Mean Higher High Water (MHHW) mark or the high tide line but no shoreline hardening structures are being proposed. While there will be temporary disruption during construction, once completed, existing recreational and beach activities can resume and will be enhanced. The Project does not include any armoring of the shoreline or erosion protection.

Marine Resources

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policy A: Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

Policy B: Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

Policy C: Assert and articulate the interests of the State as a partner with Federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

Policy D: Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand

how ocean development activities relate to and impact upon ocean and coastal resources; and Policy E: Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: To protect marine water quality the Project will be designed and built in compliance with all applicable federal, state, and county regulations pertaining to storm water management including the City & County of Honolulu's grading ordinance and the DOH fugitive dust. In particular, the City and County of Honolulu, Department of Planning and Permitting's Rules Relating to Storm Drainage Standards, June 2013, will be incorporated in drainage design to ensure the proposed Project does not impact the existing storm water quality or volume of runoff. BMPs will be employed during construction to reduce erosion of soils and fugitive dust during construction. These measures will also protect down-gradient resources and prevent secondary and cumulative impacts of storm water.

3.1.3 Hawai'i State Plan

The Hawai'i State Plan (Chapter 226, HRS), establishes a set of goals, objectives and policies that serve as long-range guidelines for the growth and development of the State. Objectives and policies pertinent to the proposed Project are as follows:

§ 226-6: Objectives and policies for the economy—in general.

Objective: (a) Planning for the State's economy in general shall be directed toward achievement of the following objectives:

(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited...

Policies:

(19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.

Discussion: One of the goals of the proposed Project is to enhance the beach-going experience for hotel guests and the general public of the scenic beauty of the State Parcel and the beach fronting The Kāhala Hotel & Resort, by making landscape improvements and maintaining those improvements.

§226-8: Objective and policies for the economy--visitor industry. (a) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai'i's economy. (b) To achieve the visitor industry objective, it shall be the policy of this State to:

- (1) Support and assist in the promotion of Hawai'i's visitor attractions and facilities.
- (2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people.

Discussion: By making landscape improvements and maintaining those improvements, The Kāhala Hotel & Resort would enhance the beach-going experience of not only hotel guests, but the general public as well. Continued success of The Kāhala Hotel & Resort would be beneficial to the economic needs of the hotel's and various hotel's vendors' employees and their families.

§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources. (a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:

- (1) Prudent use of Hawai'i's land-based, shoreline, and marine resources...
- (b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:
 - (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
 - (3) Take into account the physical attributes of areas when planning and designing activities and facilities...
 - (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.
 - (7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion...
 - (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Discussion: By making landscape improvements and maintaining those improvements, The Kāhala Hotel & Resort would promote increased accessibility and prudent use of the shoreline areas fronting the Hotel for public recreational purposes, at no cost to the public.

§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources. (a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources. (b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:

- (2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.
- (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features...
- (5) Encourage the design of developments and activities that complement the natural beauty of the islands.

Discussion: The proposed Project involves enhancements of the beach fronting The Kāhala Hotel & Resort. None of the proposed enhancement will negatively impact the views and vistas of the mountains, ocean and other natural features. Granting a non-exclusive easement would incentivize the Applicant to implement the proposed beach enhancements and maintain these improvements, at no cost to the public.

§226-23 Objective and policies for socio-cultural advancement--leisure. (a) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations. (b) To achieve the leisure objective, it shall be the policy of this State to:

- (3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.
- (4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.

Discussion: The proposed Project will result in improved facility design and maintenance of the beach fronting The Kāhala Hotel & Resort. If certain design

elements are permitted for the Diamond-head side groin, interpretive/educational experiences can be provided to visitors, either orally and/or with interpretive signage. The interpretive signage will promote cultural and historical values, including where appropriate the use of Hawaiian names and terms, in celebrating the islands rich and diverse heritage while providing a "sense-of-place" in facility design and maintenance of the proposed improvements.

3.2 CITY AND COUNTY OF HONOLULU

Relevant land use plans of the City and County of Honolulu which pertain to this Project include the O'ahu General Plan, the East Honolulu Sustainable Communities Plan Urban Land Use Map, the Land Use Ordinance, and Special Management Area.

3.2.1 O'ahu General Plan

As required by the City Charter, the General Plan for the City and County of Honolulu serves two purposes. The first is a statement of the long-range social, economic, environmental, and design objectives for the general welfare and prosperity of the people of O'ahu. Second, the General Plan is a statement of broad policies which facilitate the attainment of the objectives of the plan.

The proposed enhancements to the beach are in accordance with the following policies:

<u>Policy II. Economic Activity</u> Objective B, Policy 8: "*Preserve the well-known and widely publicized beauty of O'ahu for visitors as well as residents.*"

Policy III. Natural Environment

Objective B, Policy 4: "Provide opportunities for recreational and educational use and physical contact with O'ahu's natural environment."

Discussion: The proposed enhancements to the beach fronting The Kāhala Hotel & Resort conform to the relevant objectives of the General Plan for the City and County of Honolulu. The proposed enhancements not only will preserve and augment the beauty of the beach, but also will continue to provide opportunities for outdoor recreational activity for visitors and residents.

3.2.2 East Honolulu Sustainable Communities Plan

The *East Honolulu Sustainable Communities Plan* has been prepared in accordance with the Charter-prescribed requirements for development plans and is to be accorded force

and effect as such for all Charter- and ordinance-prescribed purposes (City and County of Honolulu 1999) (Figure 8).

The *East Honolulu Sustainable Communities Plan* summary states that the "vision statement and supporting provisions are oriented toward maintaining and enhancing the region's ability to sustain its unique character and lifestyle." The plan recognizes the need to protect the community's natural, scenic, cultural and historic resources. It also recognized the area is nearly built out and is targeted for very little growth. According to the *East Honolulu Sustainable Communities Plan Urban Land Use Map*, the Project area is designated *Resort* (TMK: 3-5-023: 039 por.). The following land use policies, principles, and guidelines are applicable to the proposed beach enhancements fronting The Kāhala Hotel & Resort:

3.1 Open Space Preservation and Development, 3.1.1 General Policies: "Open space will be used to: Protect scenic views and provide recreation..."

3.1 Open Space Preservation and Development, 3.1.3 Guidelines: "East Honolulu's shoreline extends for approximately 13 miles between Wai'alae and Makapu'u. The shoreline provides residents and visitors with significant active and passive recreational value...It is also important in this area to retain and, if possible, expand visual access to the shoreline from the coastal highway. Presently, the most significant makai views are from the H-1 Freeway viaduct looking across the Wai'alae Country Club golf course..."

3.6 Non-Residential Development, 3.6.1 Overview: "...East Honolulu has only one resort hotel – the Kāhala Mandarin Hotel – that was developed nearly 30 years ago and recently underwent major renovation and change in management. No expansion of this resort hotel is anticipated."

Discussion: The proposed enhancements to the beach fronting The Kāhala Hotel & Resort conform to the policies and guidelines of the *East Honolulu Sustainable Communities Plan*. The beach provides opportunities for outdoor recreational activity for visitors and residents, and none of the elements of the proposed beach enhancements will be visible from the H-1 Freeway viaduct looking across the Wai'alae Country Club golf course.

3.2.3 Land Use Ordinance (LUO)

The proposed beach enhancements may occur over two zoning districts (Figure 4):

P-1 Restricted Preservation (TMK: 3-5-023: 041) *Resort* (TMK: 3-5-023: 039 por.) **Discussion:** Uses within the P-1 zoning district are not regulated by the City and County of Honolulu, but instead, by the State Department of Land and Natural Resources. The existing and proposed use is categorized as "Recreation facilities, outdoor". The LUO permits such uses in the Resort zoning district.

3.2.4 Special Management Area

As shown on Figure 5, only portions of the Project area (TMK: 3-5-023: 039 por. and 041) are located within the Special Management Area (SMA). The areas within the SMA are subject to the provisions of Chapter 25 of the Revised Ordinances of the City and County of Honolulu. As such, the appropriate zoning for the proposed uses must be in place prior to SMA approval. Since the parcel is properly zoned, the overall Project will be generally consistent with the Objectives, Policies and Guidelines set forth in Chapter 25, ROH, Article 2. Special Management Area Rules and Regulations.

Objectives

The following objectives from Section 205A-2, Hawai'i Revised Statutes, shall be used by the City and County of Honolulu for the review of developments within the Special Management Area:

- a. Provide coastal recreational opportunities accessible to the public;
- b. Protect, preserve, and where desirable, restore those natural and man-made historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture;
- c. Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources;
- *d.* Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems;
- *e. Provide public or private facilities and beach enhancements important to the State's economy in suitable locations; and*
- *f.* Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence.

Discussion: The Kāhala Hotel & Resort provides public access to the beach along a designated public accessway from the end of Kāhala Avenue along the west side of the hotel parking structure. The public accessway to the beach and signage was formally put in place as a condition of the hotel's SMA permit. In providing access to private recreational facilities for the public, The Kāhala Hotel & Resort has proposed the daily placement of up to 100 beach lounge chairs for use by members of the general public

and for guests without discrimination on a first-come, first-serve basis along the eastern end of the sandy shoreline fronting the hotel property. The proposed Project is intended to enhance visitors' and residents' enjoyment of the beach fronting The Kāhala Hotel & Resort. Any beach enhancements should have minimal impact on erosional factors and coastal ecosystems during the construction phase and little to no impact afterwards.

Policies

Section 205A-2(c)(1)(B), HRS. *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*

- *i.* Protecting coastal resources uniquely suited for recreation activities that cannot be provided in other areas;
- *ii.* Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;
- *iii.* Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
- *iv. Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
- v. Ensuring public recreational use of County, State, and Federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources; and
- vi. Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters.

Discussion: The proposed Project is intended to enhance the beach fronting The Kāhala Hotel & Resort, a coastal resource having significant recreational value to both visitors and residents. To protect the shoreline and coastal water quality resources, Best Management Practices (BMPs) will be implemented during construction. After construction, public access along the shoreline will be enhanced by the proposed Project.

Historic Resources (Section 205A-2(c)(2), HRS)

- *A. Identify and analyze significant archaeological resources;*
- B. Maximize information retention through preservation of remains and artifacts or salvage operations; and

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

Discussion: Pacific Legacy, Inc. conducted an Archaeological Inventory Survey (AIS) for the Site. Since no historic or cultural properties were identified in the Project area, Pacific Legacy, Inc. submitted its investigation and report to the SHPD as an archaeological assessment (AA), which is attached as Appendix D of this EA.

Scenic and Open Space Resources (Section 205A-2(c)(3), HRS)

- *A. Identify valued scenic resources in the coastal zone management area;*
- B. Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline;
- *C. Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
- *D. Encourage those developments which are not coastal dependent to locate in inland areas.*

Discussion: While the proposed will result in improving and restoring the shoreline open space and scenic resource of the beach fronting The Kāhala Hotel & Resort, none of the elements of the proposed beach enhancements will be visible from the H-1 Freeway viaduct looking across the Wai'alae Country Club golf course.

Coastal Ecosystems (Section 205A-2(c)(4), HRS)

- *A. Improve the technical basis for natural resource management;*
- B. Preserve valuable coastal ecosystems of significant biological or economic importance;
- C. Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- D. Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate State water quality standards.

Discussion: The proposed enhancements of the beach fronting The Kāhala Hotel & Resort will result in improving a coastal ecosystem of significant economic importance. The ocean resources will be protected during Project construction by implementation of Best Management Practices. During Project construction, erosion will be controlled by
limiting the exposed areas through the establishment of landscaping, watering, and other forms of groundcover in accordance with City and County standards and adopted Best Management Practices.

Economic Uses (Section 205A-2(c)(5), HRS)

- *A.* Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;
- B. Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - *i.* Use of presently designated locations is not feasible;
 - *ii.* Adverse environmental effects are minimized; and
 - *iii.* Important to the State's economy.

Discussion: The location of The Kāhala Hotel & Resort near the ocean is part of its worldwide appeal. As such, the proposed enhancements to the beach fronting The Kāhala Hotel & Resort is important to the State's economy, while adverse environmental effects will be minimized.

The Project is not contrary to the SMA Rules and Regulations, or the other plans, ordinances and regulations formulated by the State or the City and County. No significant adverse effects on the environment, the ecology or on the economic or social welfare of the Project area are anticipated. Positive social and economic impacts will result from the proposed enhancements to the beach and from temporary direct and indirect jobs during the construction phase of the beach enhancements. The cumulative adverse effects of the Project will be confined to those of the Project itself which will be negligible.

3.2.5 Shoreline Setback Variance

Chapter 23 (Shoreline Setbacks) of the Revised Ordinances of Honolulu provides standards and procedures that apply to all lands within the shoreline area of the City. Construction or activities that may adversely affect beach processes, public access along the shoreline, or shoreline open space are generally prohibited in the shoreline area. The shoreline area is defined as "all of the land area between the shoreline and the shoreline setback line." In general, the shoreline setback line is established 40 feet

inland from the certified shoreline. The shoreline and shoreline setback area are shown on Figure 9.

Discussion: Portions of the proposed beach enhancement may require a Shoreline Setback Variance, but none of the proposed enhancements should adversely affect beach processes or public access along the shoreline. During the Draft EA Pre-Consultation process, the City and County of Honolulu Department of Planning & Permitting wrote: "The EA should...include a discussion of existing and proposed infrastructure including intake systems for the salt water ponds maintained on the property as well as other structures in the shoreline setback area."

According to the Applicant, the salt water ponds on the Hotel property are fed by on-site brackish water wells and not through ocean intake systems.

In the June 1994 Special Management Area Use Permit Application (94/SMA-022), the hotel owner's agent, Kusao and Kurahashi, Inc., reported that:

"There are three private storm drainage systems within the hotel property that discharge into the ocean.

The first system consists of various drain pipes, trench drains, inlets and manholes connecting the receiving area and a portion of the garage and access drive. This system discharges via a 24-inch diameter pipe directly to the ocean located on the western side of the Kāhala Hilton.

The second storm drainage system consists of various storm drain inlets within the lower level of the parking garage. These inlets are connected by small drain lines connecting to two submersible sump pumps (primary plus a backup) located adjacent to the garage. Storm water is pumped via a small drain line to a storm drain manhole, then flows to the ocean.

The third storm drainage system is a series of ditches and pipe culverts leading to an outlet, discharging to the ocean on the eastern side of the property adjacent to the Wai'alae Golf Course. These vary in size and include a 24-inch culvert. This system is used primarily to drain the lagoons.'

In August 16, 1994, the Director's Report included the following statements:

"The Project will utilize the existing hotel drainage system that empties into the ocean through three outlets..."

"No alterations are proposed to the existing ocean intake and discharge system supporting the hotel lagoons..."

While the former statement is consistent with the June 1994 Special Management Area Use Permit Application (94/SMA-022), the latter statement does not reflect any information that was provided in the June 1994 application (94/SMA-022).

For a subsequent Special Management Area Use Permit Application (2001/SMA-10), the Director's Report included the following statements:

"The proposed improvements will utilize the hotel's existing drainage system and will not affect drainage patterns. The existing system consists of two private storm drainage systems that discharge into the ocean. The first discharges via a 24-inch diameter pipe directly to the ocean on the western end of the site. The second system is used primarily to drain the lagoons, and discharges through an outlet on the eastern end of the property adjacent to the golf course."

3.3 APPROVALS AND PERMITS

During the implementation stages of the Project, the Applicant will be working with the State and City and County review agencies for examination and approval of Project plans and specifications.

ТМК	3-5-023: 041	3-5-023: 039
Owner	State	Kamehameha Schools
Current Use	Beach	Hotel & Oceanfront Resort Amenities
Use Approved	Revocable Permit approved; Seeking to	Leased by Resorttrust Hawaii, LLC
	replace with non-exclusive easement.	
Proposed Use	Oceanfront amenities	Hotel & Oceanfront Resort Amenities
State Land Use District	Conservation	Urban
State/County Jurisdiction	State DLNR	City and County of Honolulu - DPP
State Approvals Required	Conservation District Use Permit	N/A
	(CDUP); Non-exclusive easement;	
Special Management	Inside SMA	Inside SMA
Area (SMA)		
SMA Use Permit (SMP)	Yes, SMP Minor Permit required as the	Yes, SMP Minor Permit required as the
Approvals Required?	non-exempt development activities	non-exempt development activities
	proposed by the Project will not exceed	proposed by the Project will not exceed
	\$500,000.	\$500,000.
Shoreline Setback	N/A. State Conservation lands are not	Certain portions of this parcel is within the
	subject to the provisions of the County's	Shoreline Setback .
	Shoreline Setback Ordinance.	
Shoreline Setback	N/A. State Conservation lands are not	SSV not likely to be required for those
Variance (SSV) Required?	subject to the provisions of the County's	portions of the Project proposed on this
	Shoreline Setback Ordinance.	parcel. In the event that Minor Structures
		(defined by the DPP Part II Rules) are
		located within this parcel, it may be
		allowed with an approved Minor Shoreline
		Structure Permit from the DPP.

Required Permits and Approvals

Permit/Approval	Responsible Agency	
Conservation District Use Permit	Department of Land and Natural Resources, Land Division	
Non-Exclusive Easement	Department of Land and Natural Resources, Land Division	
SMA Use Permit (Minor)	Department of Planning and Permitting/City Council	
Grading/Building Permits	Department of Planning and Permitting	

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4 DESCRIPTION OF THE AFFECTED ENVIRONMENT, POTENTIAL IMPACTS OF THE PROPOSED ACTION, AND MITIGATION MEASURES

The environment surrounding the proposed Project includes the physical or natural environment and the human or social environment. This section describes the existing conditions, potential impacts to the environment, and mitigation measures.

4.1 PHYSICAL CHARACTERISTICS

4.1.1 Topography

The site is a nearly flat property, ranging from sea level to just under seven feet mean sea level (MSL) elevation (Figure 9).

Potential Impacts and Mitigation Measures

The site has already been extensively modified by past fill activities related to the beach construction. The proposed beach enhancements will not require any major alterations to the site, including the area closest to the shoreline; therefore no significant impacts to the site topography are anticipated.

4.1.2 Climate

The average temperatures in Kāhala range from 67 to 83 degrees Fahrenheit with an average annual rainfall of approximately 20 to 35 inches, which ranges seasonally. Trade winds are generally from the northeast. Strong winds do occur at times in connection with storm systems moving through the Hawaiian Islands.

Potential Impacts and Mitigation Measures

The proposed Project will have no effect on climatic conditions and no mitigation measures are necessary.

4.1.3 Geology

The site is situated on the southeast shoreline of the elongated Ko'olau Mountain Range. The mountain range is believed to have formed during the late Tertiary/early Pleistocene time (between 1 and 12 million years ago). After cessation of the main volcanic activity, erosion reduced the height of the volcanic dome by as much as 1,000 feet. Stream activity cut deep valleys into the mountain range. During high stands of

sea level, the valleys were infilled with sediment (alluviated) grading to the high sea level stands. (Stearns, 1967)

Potential Impacts and Mitigation Measures

The implementation of the proposed beach enhancements are not expected to cause potential shifting or sinking of surrounding lands.

4.1.4 Soils

There have been three soil suitability studies prepared for Hawai'i whose principal focus has been to describe the physical attributes of land and the relative productivity of different land types for agricultural production. These studies are: 1) the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Survey; 2) Land Study Bureau Detailed Land Classification; and 3) the Agricultural Lands of Importance to the State of Hawai'i (ALISH).

Soil Conservation Survey. According to the *United States Department of Agriculture Soil Conservation Service, Soil Survey of Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i, 1972,* the soils on the fast lands of the Project site are predominantly unclassified or "Beaches" (BS). A small portion of the site is classified as "Jaucas sand" (JaC) (Figure 10).

Detailed Land Classification. A five-class productivity rating is applied using the letters A, B, C, D, and E, with A representing the class of highest productivity and E the lowest. The physical characteristics of the soils of the property are generally unsuited for most soil-based forms of agriculture. The University of Hawai'i's Land Study Bureau *Detailed Land Classification of O'ahu*, has classified this entire Wai'alae Beach as Urban and has not classified this parcel by an agricultural potential rating.

Agricultural Lands of Importance to the State of Hawai'i. The State Department of Agriculture *Agricultural Lands of Importance to the State of Hawai'i (ALISH)* system of defining agricultural suitability has not classified the property according to its rating system. All of the property is delineated within the existing urban development boundary; therefore, there are no soils on site classified as "prime agricultural land" or "other important agricultural land".

Potential Impacts and Mitigation Measures

The Project will not reduce the inventory of agriculturally significant land. The factors of the site limiting its agricultural potential are its urban setting (oceanfront land value) and current use. In addition, the Site is not classified under the LSB and ALISH classification system. There are other areas within O'ahu and in the State where soil

conditions are better suited for commercial agriculture.

Impacts to the soils of the Site include the potential for soil erosion and the generation of fugitive dust during grading and construction. Clearing and grubbing activities will temporarily disturb the soil retention values of the existing vegetation and expose soils to erosional forces. Some wind erosion of soils could occur without a proper watering and re-grassing program. Heavy rainfall could also cause erosion of soils within disturbed areas of land. BMPs that include both structural and non-structural controls will be incorporated into temporary construction practices and permanent site design to minimize impacts. BMPs utilized during construction may include the following:

- Minimizing the time of construction including coordinated phasing for site control;
- Retaining existing ground cover as long as possible;
- Constructing drainage and erosion control features early;
- Using temporary area sprinklers in non-active construction areas when ground cover is removed;
- Using temporary, ground-cover, berms and cut-off ditches, where needed, for control of erosion;
- Watering graded areas when construction activity for each day has ceased;
- Grassing or planting all cut and fill slopes immediately after grading work has been completed;
- Installing silt fences, sediment traps, and diversion swales, where appropriate; and
- Contractor training

During construction, the grading will follow BMPs as described in the grading permit and Hawai'i Administrative Rules on Fugitive Dust, Section 11-60.133, Anti-degradation policy, Section 11-54-1.1. By utilizing BMPs, the Project will minimize sediment coming off the Site, reducing the potential of the Project contributing to the turbidity of the ocean. The contractor will submit a site specific construction BMP Plan to the State DOH before grading commences.

After construction, establishment of permanent landscaping will provide long-term erosion control.

4.1.5 Flooding

The Flood Insurance Rate Map (Figure 11) shows the following flood designations for the Project area:

- Zone VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevation (BFE) determined. (The BFE in this area is 12 feet)
 Zone AE An area inundated by 1% annual chance of flooding for
- Zone AE An area inundated by 1% annual chance of flooding for which BFEs have been determined. (The BFE in this area is nine feet)

During the Draft EA Pre-Consultation process, the Federal Emergency Management Agency (FEMA) wrote:

"If the area of construction is located within a Regulatory Floodway as delineated on the FIRM, any *development* must not increase base flood elevation levels. The term development means any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials. A hydrologic and hydraulic analysis must be performed <u>prior</u> to the start of development, and must demonstrate that the development would not cause any rise in base flood levels. No rise is permitted within regulatory floodways."

Potential Impacts and Mitigation Measures

The proposed development will not include any buildings and will not increase base flood elevation levels. A hydrologic and hydraulic analysis will be performed prior to the start of development and must demonstrate that the development would not cause any rise in base flood levels.

The proposed Project may result in an increase in impervious surface area and therefore more potential storm runoff. However, the City and County of Honolulu, Department of Planning and Permitting's Rules Relating to Storm Drainage Standards, June 2013, will be incorporated into drainage design to ensure the Project does not impact the existing quality or volume of storm water runoff.

4.1.6 Natural Hazards

O'ahu is susceptible to potential natural hazards, such as flooding, tsunami inundation, hurricanes, earthquakes, and wildfires. This section provides an analysis of the Site's vulnerability to such hazards.

The State of Hawai'i Department of Defense, Hawai'i Emergency Management Agency (HI-EMA, formerly State Civil Defense) operates a system of outdoor warning sirens

throughout the State to alert the public of emergencies and natural hazards, particularly tsunamis and hurricanes.

The closest existing siren is OA107, Wai'alae Beach Park siren, which is located approximately 0.25 miles (west) from the Kāhala Hotel and Resort.

Based on information provided by the State Department of Land and Natural Resources Engineering Division, according to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program, the Project Site is located in Zones AE and VE, which are areas where flood hazards have been determined (Figure 11). This information was confirmed by the Department of Land and Natural Resources Engineering Division's comments during the Pre-Consultation process.

Since the early 1800's, approximately 50 tsunamis have inundated the State of Hawai'i's shores. Seven historical events have caused major damage. While there are several emergency shelters located nearby, typically hotels advise their guests to move to a floor above the flood elevation height (12 feet above mean sea level) to avoid coastal flooding.

Hurricanes are classified into one of five categories according to the Saffir-Simpson Hurricane Scale. This scale provides some indication of the potential damage and flooding a hurricane will cause upon landfall. Since 1980, two hurricanes have had a devastating effect on Hawai'i. They were Hurricane 'Iwa in 1982 (Category 1- sustained winds between 75–95 mph) and Hurricane 'Iniki in 1992 (Category 4- sustained winds between 131–155 mph). In both instances, much of the damage sustained on O'ahu occurred along the Wai'anae Coast as the hurricanes passed between the islands of Kaua'i and O'ahu. While it is difficult to predict such natural occurrences, it is reasonable to assume that future incidents are likely, given historical events.

In Hawai'i, most earthquakes are linked to volcanic activity, unlike other areas where a shift in tectonic plates is the cause of an earthquake. Each year, thousands of earthquakes occur in Hawai'i, the vast majority of which are detectable only with highly sensitive instruments. However, moderate and disastrous earthquakes have occurred in the islands in the past. The largest earthquake in the state (magnitude 7.9) occurred in 1868 on Hawai'i Island.

According to the City and County of Honolulu, the greatest danger of fire is where wild-land (trees and brush) borders urban areas. Although all the Hawaiian Islands are vulnerable to wild-land fires (especially during the summer months, prolonged drought and/or high winds), the great majority of wildfires are human-caused (intentionally

caused or by negligence) and start along roadsides. Wildfires can and do also occur naturally. The Project site is not located next to any wild lands that could present a wildfire hazard.

Potential Impacts and Mitigation Measures

The Project will not exacerbate any hazard conditions. In the event of an emergency, the closest emergency shelter is located at Kalani High School, but other shelters located nearby include: Wilson Elementary School, Wai'alae Elementary School and Kaimukī Intermediate School. During the Draft EA Pre-Consultation process, the State Department of Defense had no comments to offer relative to the Project.

During the Pre-Consultation process, the Department of Planning and Permitting wrote:

"The DEA should include an analysis of the proposed impact of sea level rise on the project. If it is likely that sea level rise will increase the risk of flooding and/or coastal erosion during the life of the project structures, the DEA should discuss how the design of the project and proposed operations at the project site will address that risk and provide resilience in recovering from any flooding and/or coastal erosion. The national standard for making such project assessments has been developed by the United States Army Corps of Engineers (USACE)."

In planning for the impacts of climate change, the national standard for assessing the potential impacts of sea level rise on coastal projects has been developed by the United States Army Corps of Engineers (USACE). In December 2013, the USACE issued an Engineering Circular (EC 1165-2-212) which provides "guidance for incorporating the direct and indirect physical effects of projected future sea level change across the project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects." The circular can be used as the basis for assessing the "potential relative sea level change" that might be experienced by projects in shoreline areas, and is required to be used for all USACE civil works. More recently, USACE has provided online tools which can be used to adapt the circular's guidance to reflect historic sea level rise conditions measured at the Honolulu National Oceanic and Atmospheric Administration (NOAA) tidal gauges. The online calculator utilizes two sets of historic data to estimate future scenarios: the USACE Scenarios (Low, Intermediate, and High), and the NOAA Scenarios (Low, Intermediate Low, Intermediate High, and High). This tool can be used to quickly and easily provide a range of scenarios of potential relative sea level change from the present to 2100. For the purposes of the modelling, we assumed that The Kāhala Hotel & Resort would "freshen" its beach enhancements within 10 years in response to competition in the

resort marketplace. So the "life of the project structures" was assumed to be 10 years (2025).

According to the USACE online Sea-Level Change Curve Calculator (2014.88) <<u>http://www.corpsclimate.us/ccaceslcurves.cfm</u>>, the Honolulu area is predicted to experience moderate sea level rise in the next 10 years (2025). The estimated relative sea level change projections are provided in the chart below:



Chart 1: Estimated relative sea level change projections from 2015 to 2025

As depicted in the chart, the USACE/NOAA Low Scenario estimates a rise (relative to 2015 baseline levels) of just 0.03 feet (0.36 inches) by the year 2020, and 0.05 feet (0.6 inches) by 2025. Meanwhile, the USACE Intermediate/NOAA Intermediate Low Scenario estimates a rise of 0.05 feet (0.6 inches) by 2020, and 0.1 feet (1.2 inches) by 2025. The highest scenario, NOAA High, estimates a rise of 0.16 feet (1.92 inches) by 2020, and 0.34 feet (4.08 inches) by 2025. As the sea level rise is estimated to be anywhere between 0.6 inches and 4.08 inches by the year 2025, the potential impact of sea level rise on this Project site is thus predicted to be minimal.

4.1.7 Flora and Fauna

A terrestrial flora and fauna survey of the proposed Project area was conducted by Robert Hobdy in July 2015 (survey report is attached to this EA as Appendix E). According to Hobdy, the vegetation in the Project area is a well-manicured landscape with a spreading lawn and an assortment of shade trees and ornamental hedges and borders. Of grass species, centipede grass (*Eremochloa ophiuroides*), was abundant and was the primary lawn grass fronting The Kāhala Hotel & Resort. Other common species in the landscape included coconut (*Cocos nucifera*), hau (*Hibiscus tiliaceus*) and Natal plum (*Carissa macrocarpa*). Three native plant species were found during the survey, naupaka kahakai (*Scaevola taccada*), manawanawa (*Vitex rotundifolia*) and pohuehue (*Ipomoea pes-caprae* subsp. *brasiliensis*). In addition, three plant species of Polynesian origin were found, the coconut, the hau and the kamani (*Calophyllm inophyllum*).

The vegetation within the Project area is dominated by non-native plants. The three native plant species recorded are all widespread and common in Hawai'i, and all of them had been planted here as components of the landscaping. The three plants of Polynesian origin were, likewise, common and had been purposely introduced into the landscape.

A walk-through fauna survey method was conducted by Hobdy in conjunction with the botanical survey. All parts of the Project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails, tracks, scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

The Kāhala Hotel & Resort is heavily used by guests and the general public, especially along the beachfront portion of the property. This usage discourages many forms of wildlife from using the habitat. Occurrences of mammals, birds and insects were sparse to moderate, and only one native bird, the indigenous and endangered white tern, was present. Other common native crustacean and mollusk species frequent the sand beach or the rocky shoreline above the water's edge.

The white tern population on Oahu has been growing slowly since its first discovery in 1981. They are becoming increasingly common around trees in parks between Koko Head and Honolulu Harbor. Habitat for these terns is not highly specialized. Any tree species with suitable forking branches that will hold an egg will do. It is recommended that any tree pruning or removal work within The Kāhala Hotel &

Resort be preceded by inspections to ensure that no white tern nesting perches with eggs or chicks are present or will be affected.

The endemic and protected Hawaiian hoary bat was not detected during the survey. These bats have no known habitats in urban Honolulu and are not expected to occur in the Project area.

No endangered nēnē or Hawaiian geese have known habitats on Oahu except in captivity and are not expected in the Project area.

No Blackburn's sphinx moths (*Manduca blackburni*) were found during the survey. They are not presently known to have habitats on Oahu and none of their special host plants were found either.

No protected waterbirds, the ae'o or Hawaiian stilt (*Himantopus mexicanus knudseni*), 'alae ke'oke'o or Hawaiian coot (*Fulica alai*), 'alae'ula or common moorhen (*Gallinula chloropus sandvicensis*) or the koloa or Hawaiian duck (*Anas wyvilliana*) were seen during the survey and no suitable undisturbed wetland habitat occurs on or near to the Project area.

Hawaiian petrels (*Pterodroma phaeopygia sandwichensis*) and Newell's shearwaters (*Puffinus auricularis newellii*), collectively known as seabirds, may transit over the Project area when flying between the ocean and nesting sites in the mountains during their breeding season (March through November).

Potential Impacts and Mitigation Measures

No federally listed Endangered or Threatened terrestrial plant species (USFWS, 2015) were found in the Project. No special habitats were identified within the Project area. This Project area lies within urban Honolulu, distant from any natural habitats other than the ocean.

Because of the above existing conditions it has been determined that there is little of botanical concern in the Project area, and that the anticipated disturbances associated with the proposed beachfront improvements are not expected to have a significant negative impact on the terrestrial botanical resources in this part of O'ahu.

As The Kāhala Hotel & Resort is heavily used by guests and the general public, especially along the beachfront portion of the property, this usage discourages many forms of terrestrial wildlife from using the Project area. It should be noted that fatalities to seabirds resulting from collisions with artificial structures that extend above the

surrounding vegetation have been documented in Hawai'i where high densities of transiting seabirds occur. Additionally, artificial lighting such as floodlighting for construction work can adversely impact seabirds by causing disorientation which may result in collision with utility lines, buildings, fences and vehicles. Fledgling seabirds are especially affected by artificial lighting and have a tendency to exhaust themselves while circling the light sources and become grounded. Too weak to fly, these birds become vulnerable to predation by predators such as mongoose, cats and dogs. These threats can be minimized by the shielding of any outdoor lighting so that the light is visible only from below. Moreover, construction of the proposed beach enhancements will not occur at night and thus will not require such artificial lighting.

4.1.8 Marine Environment

The beach and the marine environment fronting The Kāhala Hotel & Resort is man-made. According to Pacific Legacy's Archaeological Assessment (Appendix D):

Originally constructed in the early 1960s, the Kāhala Hotel opened in January 1964 as a 10-story hotel/resort then known as The Kāhala Hilton...As part of the construction, two man-made peninsulas were created on each end of the resort's beach and 18,000 yards of fine sand were barged from Moloka'i island to pad the 800-foot stretch of beach (Kāhala Hotel: 2015). The man-made peninsulas and sand-filled beach are clearly visible in Figure 10, a 1966-1967 aerial photograph of the resort. A tennis court is also shown on the beach at the east end of the project area. In addition, approximately 100 coconut palms were planted as part of the resorts development.

During the Pre-Consultation process, the U.S. Fish and Wildlife Service wrote:

We understand that two native seagrasses (Halophila descipiens and Halophila Hawaiiana), may occur within the project area. Seagrass is considered a Special Aquatic Site in accordance with Section 404 of the Clean Water Act. Also, we understand that an endemic gastropod (Smaragdia bryanae), which is known to feed on the native seagrasses, may also occur within the project footprint. Also, Green sea turtles have also been known to occur within the project area as well.

A marine biological survey was conducted by Steve Dollar, and his report is attached to this Draft EA as Appendix F.

Results of the marine biological survey reveal that water chemistry of the nearshore area is influenced primarily by the mixing of open coastal water and groundwater emanating from the shoreline. While water emanating from a permitted point source is discernable at the point of entry to the ocean, there appears to be limited effects to other areas. Long-shore currents flowing in an east to west direction result in short residence time of water within the semi-enclosed Kāhala lagoon resulting in surprisingly good water quality. None of these factors are likely to be affected to a noticeable extent beyond the range of natural variability by the proposed beach improvement.

Biotic community structure within the lagoon is clearly in response to the degree of sediment deposition and resuspension. The sand floor of the lagoon is not suited for coral settlement and growth. However, the habitat is apparently ideally suited for colonization by two species of seagrass, which occur abundantly throughout the lagoon floor. While the more common of the grasses may not be a native species, the owner of The Kāhala Hotel & Resort has decided not to pursue the dredging of sediments on the lagoon floor given the unclear status of the *Halophila* seagrass meadows at the present time. There were no observations of any aggregations of species of nuisance algae that have been reported to occur at other areas of Oahu. As the lagoon is heavily used by swimmers, it is apparent that such human activities do not seem to introduce a negative influence on the abundance of seagrass.

During the Pre-Consultation process, the U.S. Army Corps of Engineers (Corps), Honolulu District Regulatory Program wrote: "Waters of the United States (WOUS) regulated by the Corps fall under Section 404 of the Clean Waters Act (Section 404) and Section 10 of the Rivers and Harbors Act of 1899 (Section 10). Section 404 requires authorization prior to the discharge and/or placement of dredged or fill material into WOUS, including adjacent wetlands. Section 10 requires authorization prior to installing structures or conducting any work in, over, under Section 10 waters."

Potential Impacts and Mitigation Measures

The marine waters of the State are classified as either "AA" or "A". The marine waters fronting the Project area are designated Class A. According to HAR 11-54-3, "It is the objective of class A waters that their use for recreational purposes and aesthetic enjoyment be protected." No major changes in water uses are expected. As the Applicant's business is in the visitor industry, The Kāhala Hotel & Resort would not propose any actions that would adversely affect water quality (HAR, Section 11-54-4 through 11-54-8).

After reviewing the preliminary findings from the marine biological survey (Appendix F) and after conducting a field visit with a representative from the U.S. Fish and Wildlife Service, the Applicant has decided not to pursue the dredging of the lagoon bottom fronting the beach at the present time as part of the proposed beach enhancements due the uncertain status of the seagrass meadows identified there. There has been a small recreational raft platform anchored in the middle of the lagoon fronting the beach since the opening of the Hotel in January 1964. However, no work is

anticipated on this except for periodically replacing the floating platform. It is not anticipated that the Project will involve work in, over, or under the waters of the United States.

During the Pre-Consultation process, the State of Hawai'i Department of Land and Natural Resources Division of Aquatic Resources wrote:

The Division has some concerns regarding the proposed project since it could have potential impacts on aquatic resources within the area. A native seagrass species along with an endemic gastropod and green sea turtles have been sighted in the area previously. As part of the Environmental Assessment, the Division would like see [sic] Best Management Practices addressed toward conserving these species along with mitigation measures that include preventing any contaminants such as sediments, pollutants, petroleum products and other debris from possibly entering the aquatic environment during project activities. We also suggest that site work be scheduled during periods of minimal rainfall and lands denuded of vegetation be replanted or covered as quickly as possible to control erosion.

All of these considerations indicate that the proposed on-land, beach improvements at the Kāhala Hotel and Resort will not have any significant negative or likely even measurable, effect on water quality or marine biota in the coastal ocean offshore of the property. Sand placement in the beach area, though well above the Mean Higher High Water (MHHW) line, will be engineered to remain on the beach to the greatest extent possible, thus maintaining the present condition of the offshore areas. Replacement of the anchoring system of the raft to a method that is more stable than the existing hollow tiles may lessen the effects of dragging of the blocks across the bottom during periods of high winds. As long as reasonable Best Management Practices are engaged for the sand placement and other aspects of the improvement, the Project it is not likely that there will be any negative effects to the existing condition of the marine environment.

While the proposed Project does not include dredging the channel fronting The Kāhala Hotel & Resort beach, before the installation of the beach enhancements, the contractor will be instructed to:

- Prevent any contaminants such as sediments, pollutants, petroleum products and other debris from possibly entering the aquatic environment during Project activities, or possible leakages of oil and fuel from construction equipment and machinery.
- Conduct construction during periods of minimal rainfall.
- Replant or revegetate denuded areas as quickly as possible to control erosion.

4.2 HUMAN ENVIRONMENT

4.2.1 Archaeological, Cultural, and Historic Resources

Pacific Legacy, Inc. conducted an Archaeological Inventory Survey (AIS) for the Site. The AIS was submitted to the State Historic Preservation Division for review on September 10, 2015. According to Pacific Legacy, Inc.'s report:

The current AIS consisted of hand excavating nine shovel test units spread evenly throughout the project area. Due to the nature of the project area being within an active hotel and resort, it was determined that hand excavation would be both safer and more feasible than using a backhoe or mini track excavator to conduct excavations.

Fragments of modern trash were observed in all nine of the excavated test units. Modern trash consisted of a variety of bottle glass, plastic, metal wire, and asphalt, which was mostly concentrated in the upper layers of the test units. In addition, existing subsurface utility lines were encountered in a total of six of the nine test units excavated. Both the presence of modern trash debris and existing subsurface utilities indicate that the majority of the current project area has been previously disturbed, most likely by construction activities related to several phases of development associated with The Kāhala Hotel & Resort.

None of the shovel test units excavated uncovered any traditional or historic cultural material, deposits, or remains. The investigations reported upon in this report are considered an archaeological assessment based on the lack of findings – no historic properties were found in the project area.

Not only does it appear that the majority of the current project area has been previously disturbed, but based upon the results of the test excavations, it appears that the area is also underlain by a relatively shallow coral shelf. During excavation of the nine test units, the coral shelf was encountered in a total of seven of the test units.

Based upon the complete lack of archaeological findings, the previously disturbed nature of the project area, and the presence of a relatively shallow coral shelf, no further work is recommended for this project.

In addition, a Cultural Impact Assessment was conducted by the Rev. Dr. Malcolm Nāea Chun, PhD., a cultural consultant and long-time resident of the area, in order to determine whether any Native Hawaiian cultural practices are presently occurring on the Site, and if so, whether the Project will impact those practices. Dr. Chun conducted a series of consultations with various community groups and individuals for public

input, including long-term employees of the Hotel. These interviews enhanced and confirmed the historical and ethnographic research on the Project area. In addition, a walking survey of the proposed Project site was also conducted. There was coordination between Dr. Chun and the archaeological consultant (Pacific Legacy, Inc.) throughout the process.

It was found that the main cultural activity of the proposed Project site is fishing. Any other traditional and/or cultural activities on the Site are related to Hotel activities and programs for guests. No one consulted could verify that there were any other cultural activities, in memory or at present, that were not somehow related to the Hotel activities and programs.

Potential Impacts and Mitigation Measures

Given that no historic properties were found in the Project area, Pacific Legacy, Inc. deemed the investigation as an archaeological assessment (AA), as documented by the AA included as Appendix D of this EA.

The Cultural Impact Assessment concluded that the Project is not anticipated to produce adverse effects to any Native Hawaiian rights related to fishing, gathering, or other cultural practices. If there are any impacts to fishing or gathering/harvesting practices, these effects would be experienced only temporarily during the construction phase of the Project. The Project will not deny access to the beach at any time during construction, as the beach will still be accessible via the beach access between the Hotel and the neighboring Kāhala Beach Apartments property, as well as laterally along the shoreline. The cultural survey also identified the potential for the Project to improve cultural and historic awareness and education, which would be beneficial to both hotel guests and the general public. The proposed use of native plants and interpretative signage in the Hawaiian language as well as incorporating cultural and historical features such a historic-themed foot path and water features that made the district known for its hospitality and connection with the ocean would also mitigate the cultural impact, if any, of the Project. The Cultural Impact Assessment is included as Appendix C of this EA.

4.2.2 Traffic and Circulation

This portion of Kāhala Avenue, northeast of the intersection with Keala'olu Avenue, dead ends, with the final destination being the Hotel. Other than the Hotel, this portion of Kāhala Avenue services approximately nine single-family residences, the City and County of Honolulu's Wai'alae Beach Park, the Wai'alae Country Club (and Golf Course) and the 196-unit Kāhala Beach Apartment complex (see Appendix G - Traffic

Management Plan, Figure 1). The Kāhala Beach Apartment has an off-street parking capacity of 273 stalls, and is currently not meeting the County's Land Use Ordinance off-street parking requirement of 412 stalls (therefore there is significantly less traffic volume that would be generated by development of this size). There is no on-street parking provided along this portion of Kāhala Avenue. There is one raised crosswalk on this section of Kāhala Avenue (connecting the Wai'alae Country Club clubhouse and the golf course) and a speed bump at the driveway to the Wai'alae Country Club overflow parking lot (Appendix G, Figure 2).

Sidewalks are provided along the *makai* side of Kāhala Avenue, between Keala'olu Avenue and the Kāhala Hotel (Appendix G, Figure 2). The sidewalk is interrupted by several driveways, and the majority of the sidewalks at these driveways do not have curb cuts, rendering them less safe to access via bicycles or wheelchairs. The only sidewalk on the *mauka* portion of this stretch of Kāhala Avenue is at the bridge over Wai'alae Stream. For those employees who bicycle to and from work, bicycle parking is provided at the entrance to the parking garage within the hotel property. While sidewalk conditions are not ideal on Kāhala Avenue, between Keala'olu Avenue and the Kāhala Hotel, it is actually better than the vast majority of Kāhala Avenue (Appendix G, Figure 1), which generally lacks sidewalks on either side of the road (between Black Point Road and Keala'olu Avenue), and higher motor vehicle speeds (because of wider travel ways and lack of speed bumps).

TheBus is a public transportation service provided by the City and County of Honolulu. There are presently no bus routes that directly serve the Hotel, but there are two bus routes along Kāhala Avenue, including Bus Routes: 14 and 22 (Appendix G, Figure 3). The closest bus stops are located near the intersection of Kāhala Avenue and Pueo Street, which is approximately half a mile from the Hotel. Bus Route 14 provides convenient transportation for employees living in Kaimukī, Kapahulu, Saint Louis Heights, and Maunalani. Bus Route 22 connects much of Waikīkī (as far west as Olohana Street), Diamond Head Road/Kāhala Avenue, and Kalaniana'ole Highway up to Sea Life Park.

Potential Impact and Mitigation Measures

During the Pre-Consultation process, the State of Hawai'i Department of Transportation wrote: "The subject project is not expected to significantly impact the State highway facility. However, a permit from DOT Highways Division, is required for the transport of oversized and/or overweight materials and equipment on State highway facilities."

During the Pre-Consultation process, the City and County of Honolulu Department of Transportation Services (DTS) wrote: "The DEA should include a Traffic Management Plan, which discusses traffic impacts the project may have on any surrounding City roadways, including short-term impacts during construction and measures to mitigate those impacts." Based on suggestions provided by DTS, measures to mitigate potential impacts from the proposed Project include:

- Notifying the area Neighborhood Board prior to construction;
- Limiting the transfer of construction materials and equipment 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; and
- Obtaining a street usage permit from DTS, in the unlikely event that the construction of the proposed Project may require the temporary closure of any traffic lane or on-street parking spaces on a City street.

4.2.3 Air Quality

There are no industrial developments upwind of The Kāhala Hotel & Resort during predominant trade wind (from the northeast) conditions and the only major source of man-made pollution in the region upwind are from the cars traveling on Kalaniana'ole Highway. During extended periods of Kona wind (southerly) conditions, the natural air pollutant is vog from Kīlauea Volcano on Hawai'i Island.

Potential Impacts and Mitigation Measures

During construction, the grading will follow BMPs as described in the grading permit and Hawai'i Administrative Rules on Fugitive Dust, Section 11-60.133, Anti-degradation policy, Section 11-54-1.1. By utilizing BMPs, the Project will minimize sediment coming off the Site, reducing the potential of the Project contributing to the turbidity of the ocean. The contractor will submit a site specific construction BMP Plan to the State DOH before grading commences.

4.2.4 Noise

Noise in the vicinity of the proposed beach enhancements is generally from traffic on Kāhala Avenue, wind through vegetation, vocalizations by humans and birds, and the ocean.

Potential Impacts and Mitigation Measures

During the construction period, the use of construction equipment is expected to increase the noise levels on the site. Proper mitigating measures (such as limiting construction to daylight hours) will be employed to minimize the noise impacts. All work will be monitored to comply with State of Hawai'i Department of Health noise limits. The proposed beach enhancements will not likely to attract more visitors, since

The Kāhala Hotel & Resort has capacity for only 338 rooms, and there are no adjacent hotel rooms. The proposed enhancements to the beach, then, will not generate additional visitors (other than non-hotel beach goers) that would result in adversely impacting noise conditions.

4.2.5 Visual Resources

The site was attempted to be viewed from publicly accessible locations (except from the H-1 Freeway - which is a no stopping/parking zone) including: Laukahi Street on Wai'alae Iki, Halekoa Drive on 'Āinakoa, Kāhala Mall, Kāhala Lookout at Diamond Head, and Keala'olu Street. The beach fronting The Kāhala Hotel & Resort is not viewable from most public viewpoints, except from along the adjoining beaches or from the ocean. From *mauka* areas, the Project area is blocked from public view by The Kāhala Hotel & Resort, as well as the Kāhala Beach

Potential Impacts and Mitigation Measures

The proposed beach enhancements will not be visible from Keala'olu Avenue, Wai'alae Avenue and Kalaniana'ole Highway. The proposed beach enhancements will generally not be visible to the public except for those who either visit The Kāhala Hotel & Resort or who access the shoreline either through the Hotel beach access, or laterally along the beach.

4.2.6 Economic Factors/Government Revenues

Currently The Kāhala Hotel & Resort generates: 1) state excise taxes on income generated from hotel rooms, restaurants, spa, retail, and leases to vendors (such as Dolphin Quest); 2) transient accommodations tax; and 3) real property tax.

Potential Impacts and Mitigation Measures

Resorttrust Hawai'i, LLC, as the lessee, will expend internal funds to construct the proposed beach enhancements. Sales taxes on building materials will be generated during construction. The construction of the Project will provide short-term employment opportunities. Also, those employed during construction will generate income taxes.

4.2.7 Infrastructure

4.2.7.1 Roadways

There are no improved roadways on the subject property. The Project site is accessed directly from Kāhala Avenue which connects to Kalaniana'ole Highway via Keala'olu Avenue. Traffic impacts have been described in Section 4.2.2.

4.2.7.2 Water System

The Kāhala Hotel & Resort is surrounded by residential areas serviced by the municipal water system.

During the Pre-Consultation period, the Board of Water Supply wrote:

"The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The proposed project is subject to BWS Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications."

Potential Impacts and Mitigation Measures

The proposed beach enhancements will not increase the residential or daytime visitor population to the area, so there should be no long-term increase in water demand.

4.2.7.3 Wastewater Treatment and Disposal

The Kāhala Hotel & Resort is surrounded by residential areas serviced by the municipal sewer system.

Potential Impacts and Mitigation Measures

The proposed beach enhancements will likely not increase the residential or daytime visitor population (non-hotel beach goers) to the area, so there should be no long-term increase in wastewater generation after construction is complete. The proposed Project

will not connect to the County wastewater system, because users of the beach enhancements can use The Kāhala Hotel & Resort restrooms. Wastewater generated at The Kāhala Hotel & Resort will be collected by the County wastewater system. No cesspool is being proposed.

4.2.7.4 Drainage Facilities

In the June 1994 Special Management Area Use Permit Application (94/SMA-022), the hotel owner's agent, Kusao and Kurahashi, Inc. reported that:

"There are three private storm drainage systems within the hotel property that discharge into the ocean.

The first system consists of various drain pipes, trench drains, inlets and manholes connecting the receiving area and a portion of the garage and access drive. This system discharges via a 24-inch diameter pipe directly to the ocean located on the western side of the Kāhala Hilton.

The second storm drainage system consists of various storm drain inlets within the lower level of the parking garage. These inlets are connected by small drain lines connecting to two submersible sump pumps (primary plus a backup) located adjacent to the garage. Storm water is pumped via a small drain line to a storm drain manhole then flows to the ocean.

The third storm drainage system is a series of ditches and pipe culverts leading to an outlet, discharging to the ocean on the eastern side of the property adjacent to the Wai'alae Golf Course. These vary in size and include a 24-inch culvert. This system is used primarily to drain the lagoons."

In August 16, 1994, the Director's Report included the following statements:

"The project will utilize the existing hotel drainage system that empties into the ocean through three outlets..."

"No alterations are proposed to the existing ocean intake and discharge system supporting the hotel lagoons..."

While the former statement is consistent with the June 1994 Special Management Area Use Permit Application (94/SMA-022), the latter statement does not reflect any information that was provided in the June 1994 application (94/SMA-022).

For a subsequent Special Management Area Use Permit Application (2001/SMA-10), the Director's Report included the following statements:

"The proposed improvements will utilize the hotel's existing drainage system and will not affect drainage patterns. The existing system consists of two private storm drainage systems that discharge into the ocean. The first discharges via a 24-inch diameter pipe directly to the ocean on the western end of the site. The second system is used primarily to drain the lagoons, and discharges through an outlet on the eastern end of the property adjacent to the golf course."

Potential Impacts and Mitigation Measures

The present drainage patterns will be maintained during the proposed construction and the present system will remain unchanged.

The proposed Project may result in an increase in impervious surface area and therefore more potential storm runoff. However, the City and County of Honolulu, Department of Planning and Permitting's Rules Relating to Storm Drainage Standards, June 2013, will be incorporated into drainage design to ensure the Project does not impact the existing quality or volume of storm water runoff.

During the Pre-Consultation period, the State Office of Environmental Quality Control wrote: "Identify staging area for construction equipment, including addressing possible leakages of oil and fuel from equipment and machinery." As presently planned, the construction staging area, covering an area of approximately 750 s.f., would be located within TMK: 3-5-023: 041 just *makai* of the hotel parking structure since there is direct access along a private service road within TMK: 3-5-023: 039 running from *makai* from a Kāhala Avenue. The construction bid set would include the following directions to the bidding contractors:

- 1) Identify all storm drains, drainage swales and streams located near the staging area and make sure all site users are aware of their locations to prevent pollutants from entering them.
- 2) Install barriers around perimeter of site to prevent runoff from entering and leaving site.
- 3) Control dust using as little water as possible to prevent runoff.
- 4) Construct and maintain temporary stabilized construction entrance to minimize tracking of sediment onto public rights-of-way.

- 5) Immediately remove any sediment spilled, dropped, washed or tracked onto public rights-of-way.
- 6) Provide protection to nearby storm drain inlets from all sediment and materials from site.
- 7) Before it rains, sweep and remove materials from surfaces that drain to storm drains, streams or channels.
- 8) Cover exposed piles of soil or construction materials with plastic sheeting or temporary roofs to prevent contact with rainwater.
- 9) Clean up leaks, drips and other spills immediately so they do not contaminate soil or groundwater or leave residue on paved surfaces.
- 10) Designate one area of the site, well away from streams or storm drain inlets, for auto parking, refueling, and routine vehicle and equipment maintenance.
- 11) Maintain all vehicles and heavy equipment. Inspect frequently for leaks.
- 12) If you must drain and replace motor oil, radiator coolant, or other fluids on-site, use drip pans or drop cloths to catch drips and properly dispose of all spills. Collect all spent fluids, store in separate containers, and recycle whenever possible.
- 13) Perform major maintenance, repair jobs, and vehicle and equipment washing off-site. If equipment must be washed on-site, do not use solvents, degreasers, or steam cleaning equipment (unless all wash water is collected and disposed up properly off site) and prevent water from entering the storm drain. Direct wash water to a low point where it can evaporate and/or infiltrate.
- 14) Do not use diesel oil to lubricate equipment or parts.
- 15) Never hose down "dirty" pavement or impermeable surfaces where fluids have spilled. Use dry cleanup methods (sweeping and use of absorbent materials, cat litter and/or rags) whenever possible, and dispose of used materials properly.
- 16) Sweep up spilled dry materials immediately. Never attempt to wash them away with water or bury them.
- 17) Clean up spills on dirt areas by digging up properly and disposing of contaminated soil.

- 18) Report significant spills to the appropriate spill response agencies immediately.
- 19) Place trash cans and recycling receptacles around the site to minimize litter.
- 20) Cover and maintain trash cans and recycling receptacles. Check frequently for leaks and use drip pans if necessary. Repair or replace leaking trash cans and recycling receptacles as soon as possible. When rain is expected, place trash cans and recycling receptacles under roofs or cover with tarps or plastic sheeting secured around the outside of the trash cans and recycling receptacles.
- 21) Never clean out a trash cans and recycling receptacles by hosing it down on the construction site.
- 22) Make sure portable toilets are in good working order. Check frequently for leaks.

A National Pollutant Discharge Elimination System (NPDES) permit for discharges of storm water runoff into State surface waters (Chapter 11-55, HAR) has been issued for the Hotel's storm drains and ocean outlets. All NPDES permit requirements will continue to be implemented.

4.2.7.5 <u>Utilities</u>

Underground electrical and other communications utilities services for The Kāhala Hotel & Resort are available from the utility distribution system along Kāhala Avenue. Electric power is available to the site by Hawaiian Electric Industries (HEI) overhead utility lines along Kāhala Avenue.

Potential Impacts and Mitigation Measures

The proposed beach enhancements will not have any long-term impacts on public utilities, as no additional visitors will result from the Project and there will be no additional demand for electricity and telephone services. There will be a very minimal increase in demand for these utilities during construction.

4.2.8 Solid Waste Disposal

The subject property consists primarily of open space lawn and exposed sandy areas; therefore, construction of the Project will require minimal vegetation removal. Should any vegetation be removed from the property during construction, it will be taken to a permitted green waste recycling facility. In addition, the developer will ensure that all

solid waste generated during the Project's construction will be directed to permitted solid waste disposal, processing, or recycling facilities.

Solid waste that cannot be recycled will be disposed of at either landfills, the incinerator, or transfer stations. A waste-to-energy combustor, H-POWER (Honolulu Program of Waste Energy Recovery) located at the Campbell Industrial Park incinerates about 1,800 tons of combustible waste per day. The electricity generated is bought by Hawaiian Electric Company. Currently, the H-POWER facility receives all residential and commercial packer truck wastes on the island. Waste contractors will be asked to submit disposal receipts and invoices to ensure proper disposal of waste.

4.2.9 Public Services

4.2.9.1 Fire Protection

Fire protection is provided by the Wailupe and Kaimukī Fire Stations, both located within 5 minutes from The Kāhala Hotel & Resort.

Potential Impacts and Mitigation Measures

There may be an occasional and unavoidable demand for fire protection services associated with the Kāhala Hotel & Resort. However, during the Pre-Consultation process, the Honolulu Fire Department wrote that it: "...determined that there will be no significant impact to fire department services."

4.2.9.2 Police Protection

The Project site is located in the Honolulu Police Department's Patrol District 7. District 7 encompasses about 40 square miles in East Honolulu, from Punahou Street to Makapu'u Point. District 6 and District 7 Criminal Investigations are conducted from a substation located on 4087 Diamond Head Road. A walk-in / store front Substation is located in the Hawai'i Kai Towne Center. The address is 6600 Kalaniana'ole Highway.

Potential Impacts and Mitigation Measures

During the Pre-consultation period, the Honolulu Police Department wrote: "Based on the information provided, this Project should have no significant impact on the service or operations of the Honolulu Police Department at this time."

4.2.9.3 Health Care Services

Various health care services in Honolulu provide primary patient care to adults, women, and children. All facilities currently provide outpatient care. The nearest hospital is Queen's Medical Center in Honolulu approximately 8 to 10 minutes from the Project location by ambulance service.

Potential Impacts and Mitigation Measures

There may be an unavoidable and occasional need for emergency health care services. However, the proposed Project will not have a long-term adverse impact on emergency medical services, since the proposed beach enhancements will not result in an increase in daytime population (more visitors).

4.2.9.4 <u>Schools</u>

State Department of Education (DOE) schools which serve the a Project rea include Wilson Elementary School, Kāhala Elementary School, and Kalani High School.

Potential Impacts and Mitigation Measures

The proposed Project will not generate new residents nor introduce new school-aged children to the area. Therefore, no demands will be placed on area DOE facilities.

4.2.9.5 <u>Recreational Facilities</u>

The Project site is within walking distance of the Wai'alae Beach Park. The beach and ocean fronting The Kāhala Hotel & Resort are used for sunbathing, swimming, snorkeling, stand up paddling, kayaking, and fishing.

Potential Impacts and Mitigation Measures

The proposed Project will not generate new residents to the area. Therefore, no additional demand will be placed on area parks. During the Pre-Consultation process, the City and County of Honolulu Department of Parks and Recreation wrote that it: "…has no comment, as the proposed project will have no impact on any of our program [sic] or facilities."

4.2.9.6 Public Transit

Fixed route bus service is provided through the City Department of Transportation Services, which currently contracts with O'ahu Transit Services (OTS) for operation of TheBus. TheBus is a public transportation service provided by the City and County of Honolulu. There are presently no bus routes that directly serve the Hotel, but there are two bus routes along Kāhala Avenue, including Bus Routes: 14 and 22 (see Appendix G - Traffic Management Plan, Figure 3). The closest bus stops are located near the intersection of Kāhala Avenue and Pueo Street, which is approximately half a mile from the Hotel. Bus Route 14 provides convenient transportation for employees living in Kaimukī, Kapahulu, Saint Louis Heights, and Maunalani. Bus Route 22 connects much of Waikīkī (as far west as Olohana Street), Diamond Head Road/Kāhala Avenue, and Kalaniana'ole Highway up to Sea Life Park.

The OTS also operates the Handi-Van system, which is a demand responsive paratransit service for semi-ambulatory and non-ambulatory persons with disabilities.

Potential Impacts and Mitigation Measures

The proposed Project will not generate new residents to the area. Therefore, no additional demand will be placed on area public transit operations except maybe during construction as construction workers may utilize this form of transportation.

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5 ALTERNATIVES TO THE PROPOSED ACTION

In compliance with the provisions of Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-17(f), *the "known feasible" alternatives to the proposed* Project *are limited to those that would allow the objectives of the* Project *to be met, while minimizing potential adverse environmental impacts*. To review, the goal and objectives of the Project are to:

- Enhance the beach-going experience of hotel guests and the general public of the beach fronting The Kāhala Hotel & Resort, by making landscape improvements and maintaining those improvements.
- Incorporate appropriate elements of the host culture into improvements and activities that provide a Hawaiian sense-of-place to The Kāhala Hotel & Resort and that enriches an appreciation of the history and culture of our unique island community for visitors and residents.
- Formalize a non-exclusive easement over TMK 3-5-023: 041, as well as: 1) the (State of Hawai'i-owned) shoreline fronting the hotel including two groins that extend perpendicular from the beach; 2) a raft in the channel between both groins that is secured to the ocean bottom; 3) use and placement of beach chairs for guests and the general public, without discrimination, on the sandy shoreline; and 3) a small island off the western groin.

As such, a number of possible alternatives have been evaluated.

5.1 NO ACTION ALTERNATIVE

The no action alternative will not accomplish the desired objective of enhancing "...the beach-going experience of hotel guests and the general public of the beach fronting The Kāhala Hotel & Resort."

5.2 DREDGING ALTERNATIVE

This alternative would include all of the proposed beach enhancements (rejuvenating the landscape architectural design of the areas currently maintained by the hotel; improving the lateral access along the shoreline; non-permanent improvements and operations to allow for outdoor weddings; and sand replenishment of the beach) and dredging of the lagoon fronting the beach to remove sand and silt. During the Pre-Consultation process, the U.S. Fish and Wildlife Service wrote: We understand that two native seagrasses (Halophila descipiens and Halophila Hawaiiana), may occur within the Project area. Seagrass is considered a Special Aquatic Site in accordance with Section 404 of the Clean Water Act. Also, we understand that an endemic gastropod (Smaragdia bryanae), which is known to feed on the native seagrasses, may also occur within the Project footprint. Also, Green sea turtles have also been known to occur within the Project area as well.

After reviewing the preliminary findings from the marine biological survey (Appendix F) and after conducting a field visit with a representative from the U.S. Fish and Wildlife Service, the Applicant has decided not to include the dredging of the lagoon fronting the beach as part of the proposed beach enhancements. The replenishment of sand in the beach area, if any, shall be made well above the Mean Higher High Water (MHHW) line using clean white sand from commercially available sources. It is not anticipated that the Project will involve work in, over, or under the waters of the United States.

6 ANTICIPATED DETERMINATION, FINDINGS, AND REASONS FOR SUPPORTING DETERMINATION

To determine whether the proposed action may have a significant impact on the environment, every phase and expected consequences, both primary and secondary, and the cumulative as well as short- and long-term effects have been evaluated. Based on the studies performed and research evaluated, it is anticipated that a finding of no significant impact will be reached as summarized in this section.

6.1 SIGNIFICANCE CRITERIA

According to the Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the Project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the following criteria:

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;

The shoreline fronting the Hotel has been used for a beach and ocean-based recreational activities since the creation of the swimming lagoon and the initial opening of the Kāhala Hilton Hotel in January 1964 and does not serve as a critical habitat to endangered terrestrial plant or animal species. The proposed Project involves minor enhancements to the beach and does not represent a loss or destruction of any natural resources. In regards to cultural resources, the State Historic Preservation Division believes that the proposed beach enhancements would have "no adverse effect" on significant historic sites.

As such, the Project should have "no effect" on historic resources. However, should any archaeologically significant artifacts, bones, or other indicators of previous on-site activity be uncovered during the construction phases of development, their treatment will be conducted in compliance with the requirements of the Department of Land and Natural Resources.

(2) Curtails the range of beneficial uses of the environment;

The proposed enhancements are located on the State Parcel adjoining a public beach, which in its present state provides open space and recreation in an area surrounded by residential and hotel use. The proposed enhancements will enhance the beach and will not curtail the range of beneficial and recreational uses of the beach.

(3) Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Hawaii Revised Statutes (HRS) Chapter 344; and any revisions thereof and amendments thereto, court decisions, or executive orders;

The proposed development is consistent with the Environmental Policies established in HRS Chapter 344 and the National Environmental Policy Act.

(4) Substantially affects the economic or social welfare of the community or state;

The proposed enhancements to the beach enhance its attractiveness as the site as a resort destination for many visitors to the State, especially those visitors attending the annual Sony Open held at the adjoining Waialae Country Club, which in its first two years raised approximately \$815,000 for various charities in the State of Hawai'i, attracted visitors to Hawai'i, increased visitor spending, and increased excise taxes. The resort also provides direct employment of approximately 300 employees as well as generating or supporting indirectly many more non-resort jobs - all of which contribute to the economic and social welfare of the community and State of Hawai'i.

(5) Substantially affects public health;

Impacts to public health may be temporarily affected by air and noise impacts during construction, however, these will be of a short-term duration, and insignificant, especially when weighed against the positive economic, social, safety, and quality of life benefits associated with the Project.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities;

The proposed enhancements are to a coastal parcel adjoining an existing public beach, and after completion, will not result in attracting more play (and an increase in daytime visitors) and accompanying traffic to the area.

The proposed beach enhancements will not place additional infrastructure demands on existing roads, water, and sewer drainage systems.

In addition, the construction of the proposed beach enhancements will generate new sources of direct and indirect revenue for individuals and the State of Hawai'i (through income and excise taxes) by providing construction employment opportunities.

(7) Involves a substantial degradation of environmental quality;

The proposed enhancements will occur on small portions of the existing beach and is not expected to degrade environmental quality on-site or in the surrounding neighborhood. The property was previously extensively modified and today lacks any significant natural resources. Appropriate best management practices will provide safeguards for protection of water quality during the short-term construction period.

(8) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions;

While the proposed enhancements are limited, they represent improvements to a beach already in place.

(9) Substantially affects a rare, threatened or endangered species or its habitat;

No federally listed Endangered or Threatened terrestrial plant species (USFWS, 2015) were found in the Project. No special habitats were identified within the Project area. This Project area lies within urban Honolulu, distant from any natural habitats other than the ocean.

Because of the above existing conditions it has been determined that there is little of botanical concern in the Project area, and that the anticipated disturbances associated with the proposed beachfront improvements are not expected to have a significant negative impact on the terrestrial botanical resources in this part of O'ahu.

As The Kāhala Hotel & Resort is heavily used by guests, especially along the beachfront portion of the property, this usage discourages many forms of terrestrial wildlife from using the Project area. It should be noted that fatalities to seabirds resulting from collisions with artificial structures that extend above the surrounding vegetation have been documented in Hawai'i where high densities of transiting seabirds occur. Additionally, artificial lighting such as floodlighting for construction work can adversely impact seabirds by causing disorientation which may result in collision with utility lines, buildings, fences and vehicles. Construction of the proposed beach enhancements will not occur at night. Fledgling seabirds are especially affected by artificial lighting and have a tendency to exhaust themselves while circling the light sources and become grounded. Too weak to fly, these birds become vulnerable to
predation by predators such as mongoose, cats and dogs. These threats can be minimized by the shielding of any outdoor lighting so that the light is visible only from below.

(10) Detrimentally affects air or water quality or ambient noise levels;

Any possible impact to the adjacent shoreline will be minimized and mitigated by the establishment of on-site detention of runoff during the construction phases of development. After development, detention areas will serve the same function to encourage recharge of the groundwater. BMPs will be implemented for water quality protection to the extent practicable. Minimal impacts on air quality and noise are anticipated during construction, but will be limited by appropriate construction practices (i.e., mufflers, water wagons, construction during daylight hours only, etc.).

(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.

The proposed enhancements will occur on a beach which is subject to occasional coastal and inland flooding. However, an open space use such as beach is the best use of land in such areas. It is possible that the proposed beach enhancements may someday suffer damage from tsunami inundation, but it should be noted that the enhancements are relatively minor in value, and involve recreational and not residential use.

(12) Substantially affects scenic vistas and view planes identified in county or state plans or studies;

The proposed beach enhancements are not expected to impact long views of the ocean or any ridge lines in the area. The proposed beach enhancements will not be visible from Keala'olu Avenue, Wai'alae Avenue, Kāhala Mall and most of Kalaniana'ole Highway. The visual character of the area will remain open space (beach).

The City's *Coastal View Study* (Chu 1987) recognizes the *makai* views from along a couple of sections of Kalaniana'ole Highway as significant.

"Due to the heavy traffic along Kalaniana'ole Highway, walls at front property lines are a common theme, creating a corridor effect along the highway. Landscape plantings, median strip plantings and several open spaces (parks, Kalani High School and the Wai'alae Beach) help to soften this effect and provide a moderate sense of visual unity to the corridor." The beach is not visible from the Koko Head-bound lanes of Kalaniana'ole Highway. In fact, The Kāhala Hotel & Resort, a 10-story structure attracts the eye when viewing in the direction of the beach. Thus, the proposed beach enhancements will not "substantially affect" scenic vistas and view planes identified in county or state plans or studies.

(13) Requires substantial energy consumption.

Construction of the proposed beach enhancements will not require substantial energy consumption. Once completed the proposed enhancements to the beach will not consume energy (i.e., electricity and gas).

6.2 ANTICIPATED DETERMINATION

On the basis of the above criteria, and the discussion of impacts and mitigation measures contained in this document, it is anticipated that the proposed Project will not have a significant effect on the environment.

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7 **REFERENCES**

- Baker, H.L. et al., 1965. *Detailed Land Classification, Island of Hawai'i*. L.S. Land Study Bureau, University of Hawai'i.
- Chu M. and R.B. Jones, 1987. *Coastal View Study*. Prepared for City and County of Honolulu, Department of Land Utilization. Honolulu, Hawai'i.
- Honolulu, City and County of, Department of General Planning, 1992. *General Plan: Objectives and Policies*. Honolulu, Hawai'i.
- Honolulu, City and County of, Department of Planning and Permitting, 1999. *East Honolulu Sustainable Communities Plan.* Honolulu, Hawai'i.
- Hawai'i State Department of Agriculture, 1977. *Agricultural Lands of Importance to the State of Hawai'i.* Honolulu, Hawai'i.
- Juvik, S. & J. Juvik, eds., 1998. *Atlas of Hawai'i*. 2nd edition. Honolulu: University of Hawai'i Press.

Sheehan, Ed, 1990. Kāhala: The Hotel that Could Only Happen Once. Kāhala Hilton, Hong Kong.

United States Department of Agriculture Soil Conservation Service, 1972. Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i.

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8 COMMENTS AND RESPONSES

The public comment period as required by Chapter 343, Hawai'i Revised Statutes, will follow the publishing of the Draft EA. The comments and our responses will be included as an appendix.

8.1 COMMENTS RECEIVED DURING THE PRE-CONSULTATION PROCESS

The following agencies, organizations and individuals were mailed written requests on July 6, 2015 inviting their input on the Project and comments as to whether the proposed Project may have an impact on any of their existing or proposed projects, plans, policies, or programs, and if there are any specific issues that should be addressed in the Draft Environmental Assessment. Those that have provided written comments are highlighted in *italics* in the table below. The comments received and corresponding responses are reproduced in Appendix A.

State of Hawai'i Office of Environmental Quality Control
State of Hawai'i Department of Accounting & General Services
State of Hawai'i Department of Business, Economic Development & Tourism
State of Hawai'i Department of Defense
State of Hawai'i Department of Health
State of Hawai'i Department of Labor and Industrial Relations
State of Hawai'i Department of Land and Natural Resources (DLNR)
State of Hawai'i DLNR - Historic Preservation Division
State of Hawai'i Department of Transportation
State of Hawai'i Hawai'i Tourism Authority
State of Hawai'i Office of Planning
U.S. Army Corps of Engineers, Honolulu District
U.S. Federal Emergency Management Agency
U.S. Fish and Wildlife Service
City and County of Honolulu Board of Water Supply
City and County of Honolulu Department of Environmental Services
City and County of Honolulu Department of Parks and Recreation
City and County of Honolulu Department of Planning and Permitting
City and County of Honolulu Department of Transportation Services
City and County of Honolulu Fire Department
City and County of Honolulu Police Department

ENVIRONMENTAL ASSESSMENT PROCESSING BACKGROUND

THE KĀHALA HOTEL & RESORT BEACH ENHANCEMENTS Draft Environmental Assessment/Anticipated Finding of No Significant Impacts

State Senator Stanley Chang

State Representative Bertrand Kobayashi

City Councilmember Trevor Ozawa

City and County of Honolulu Neighborhood Board #3 Chair Richard Turbin

Hawaiian Electric Company, Inc.

Hawaiian Telcom

Kāhala Beach Condominium Apartments

Kamehameha Schools

Oceanic Time Warner Cable

Wai'alae Country Club

Appendix A



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DAVID Y. IGE GOVERNOR OF HAWAII



JESSICA E. WOOLEY DIRECTOR Mr. Shigekuni July 28, 2015 Page **2** of **2**

Thank you very much for the opportunity to review and provide comments for your project. Feel free to contact our office at (808) 586-4185 if you have further questions.

Sincerely,

Herman Tuiolo Senior Planner

STATE OF HAWAI'I OFFICE OF ENVIRONMENTAL QUALITY CONTROL Department of Health 235 South Beretania Street, Suite 702 Honolulu, Hawaii 966130 Telephone (809) 586-4185 Facsimile (808) 586-4185 Email: reegt/awail@doh.hawaii.gov

July 28, 2015

Vincent Shigekuni PBR HAWAII & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KAHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039, 041 AND 001

Dear Mr. Shigekuni,

We have reviewed your July 9, 2015, letter requesting comments about the proposed beach enhancements project at the Kahala Hotel and Resort. Accordingly, the project will improve landscape design, lateral access along the shoreline, non-permanent improvements to allow for outdoor weddings, dredging the channel fronting the hotel to remove sand and silt, and sand replenishment of the beach.

The Office of Environmental Quality Control offers these comments:

- 1. The EA should include input from all relevant permitting agencies at the county, state and federal level, stakeholders and the affected community.
- 2. Discuss the handling, treatment, and disposal of dredged material.
- 3. Discuss the source of sand to be used for the beach replenishment.
- 4. The project should observe relevant best management practice during all phases to address polluted runoff, water quality, erosion, construction waste, fugitive dust, sensitive areas for indigenous species (if applicable), and noise.
- 5. Identify staging area for construction equipment, including addressing possible leakages of oil and fuel from equipment and machinery.
- 6. The Guidebook contains a checklist that can help you with the environmental assessment content requirements; you can also find the content requirements under Hawai'i Administrative Rules §11-200-10.



Mr. Scott Glenn, Director

THOMAS S. WITTEN, FASLA Chairman / Principal

R. STAN DUNCAN, ASLA President / Principal

RUSSELL Y. J. CHUNG, FASLA, LEED*AP BD-C Executive Vice-President / Principal Office of 1 235 South

Vice-President / Principal GRANT T. MURAKAMI, AICP, LEED®AP BD+C

Vice-President / Principal

Principal

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director RAMSAY R. M. TAUM

Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associate

CATIE CULLISON, AICP Senior Associate

SCOTT MURAKAMI, ASLA, LEED®AP Associate

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA Associate State of Hawai'i Office of Environmental Quality Control 235 South Beretania Street, Suite 702 Honolulu, Hawai'i 96813

Dear Mr. Glenn:

Thank you for your agency's letter dated July 28, 2015 regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your agency's letter.

We appreciate your participation in the environmental review process, and your input on the issues that should be addressed, especially if dredging will be proposed. After reviewing the preliminary findings from our biological survey and a field visit with a representative from the U.S. Fish and Wildlife Service, we had decided not to include the dredging of the lagoon fronting the beach as part of the proposed beach enhancements. Your letter will be included in the Draft Environmental Assessment (EA). We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Junca R. Shigh

Vincent Shigekuni Vice President

O:\Job31\3156.01 Kahala Hotel & Resort Beach Plng\EA\Pre-Consultation\Responses\OEQC response (rev April 2017).docs

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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DOUGLAS MURDOCK AUDREY HIDANO

(P)1181.5

STATE OF HAWAII DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES P.O. BOX 119, HONOLULU, HAWAII 96810-0119

JUL 1 5 2015

Mr. Vincent Shigekuni PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

DAVID Y. IGE

Subject: Pre-Consultation for an Environmental Assessment The Kahala Hotel & Resort's Proposed Beach Enhancements Honolulu, Oahu, Hawaii TMK: (1) 3-5-023: Por 039, 041, and 001

Thank you for the opportunity to comment on the subject project. The proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Public Works Division at 586-0584.

Sincerely, hate DOUGLAS MURDOCK

Comptroller



April 3, 2017

State of Hawai'i

P.O. Box 119

Mr. Roderick K. Becker, Comptroller

Honolulu, Hawai'i 96810-0119

Department of Accounting and General Services

THOMAS S. WITTEN, FASLA hairman / Princing

R. STAN DUNCAN, ASLA President / Principal

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C

Executive Vice-President / Principal VINCENT SHIGEKUNI

Vice-President / Principal

GRANT T. MURAKAMI, AICP I FED®AP BD+C

Vice-President / Principal Attn: Ms. Gayle Takasaki

TOM SCHNELL, AICP Principa

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associat

CATIE CULLISON, AICP Senior Associat

Associate

SCOTT MURAKAMI, ASLA, LEED®AP

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA

Vincent Shigekuni Vice President

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Dear Mr. Becker:

Thank you for your agency's letter (your reference number (P)1181.5) dated July 15, 2015 regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter.

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL

ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED

BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

We appreciate your participation in the environmental review process, and your input that your Department has no comments to offer at this time as the project will not impact any of your projects or existing facilities. Your letter will be included in the Draft Environmental Assessment (EA).

Sincerely,

PBR HAWAII

DAVID Y. IGE GOVERNOR



STATE OF HAWAII DEPARTMENT OF DEFENSE OFFICE OF THE ADJUTANT GENERAL 3949 DIAMOND HEAD ROAD HONOLULU, HAWAII 96816-4495

July 13, 2015

Mr. Vincent Shigekuni PBR HAWAII & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Subject: Pre-Consultation for an Environmental Assessment - The Kahala Hotel & Resort's Proposed Beach Enhancements - TMK: 3-5-023 Portions of 039, 041 and 001.

Dear Mr. Shigekuni,

Thank you for the opportunity to comment on the above project. The State of Hawaii Department of Defense has no comments to offer relative to the project.

If you have any questions or concerns, please have your staff contact Mr. Lloyd Maki, Assistant Chief Engineering Officer at (808) 733-4250.

Sincerely,

ARTHUR J. LOGAN

Major General Hawaii National Guard Adjutant General

C: Ms. Havinne Okamura, Hawaii Emergency Management Agency



April 3, 2017 THOMAS S. WITTEN, FASLA Chairman / Principa R. STAN DUNCAN, ASLA Major General Arthur J. Logan President / Principal State of Hawai'i RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Executive Vice-President / Principa Department of Defense Office of the Adjutant General VINCENT SHIGEKUNI Vice-President / Principal 3949 Diamond Head Road GRANT T. MURAKAMI, AICP, LEED®AP BD+C Honolulu, Hawai'i 96816-4495 Vice-President / Principa TOM SCHNELL, AICP Attn: Mr. Lloyd Maki KIMI MIKAMI YUEN, LEED®AP BD+C SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL W. FRANK BRANDT, FASLA Chairman Emeritus

ASSESSMENT - THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

be included in the Draft Environmental Assessment (EA).

Thank you for your letter dated July 13, 2015 regarding the subject project. As the

planning consultant for The Kāhala Hotel & Resort, we want to thank you for your

We appreciate your participation in the environmental review process, and your input

that your Department has no comments to offer relative to the project. Your letter will

ANN MIKIKO BOUSLOG, PhD Project Director Dear Major General Logan:

letter.

Sincerely,

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associate

Principal

Principal

ARTHUR J. LOGAN

MAJOR GENERAL ADJUTANT GENERAL

KENNETH S. HARA COLONEL DEPUTY ADJUTANT GENERAL

CATIE CULLISON, AICP

SCOTT MURAKAMI, ASLA, LEED®AP

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA Associate

Vince R. Shigh

Vincent Shigekuni Vice President

PBR HAWAII

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VIRGINIA PRESSLER M.D.

n reply, please refer to

07023PGH.15

STATE OF HAWAII DEPARTMENT OF HEALTH P. O. BOX 3378 HONOLULU, HI 96801-3378

July 16, 2015

Mr. Vincent Shigekuni PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

SUBJECT: Comments on Pre-Consultation for an Environmental Assessment The Kahala Hotel & Resort's Proposed Beach Enhancements TMK 3-5-023 Portions of 039, 041 and 001

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated July 6, 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).
- 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 a 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 Mr. Vincent Shigekuni July 16, 2015 Page 2

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: <u>https://eha-cloud.doh.hawaii.gov/epermit/</u>. 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.

 As 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 <u>result</u> 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 Hawaii Administrative Rules (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.
- 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 bioengineering 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.

DAVID Y. IGE

07023PGH.15

Mr. Vincent Shigekuni July 16, 2015 Page 3

07023PGH.15



- 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: <u>http://health.hawaii.gov/cwb/</u>, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

(,)on

ALEC WONG, P.E., CHIEF Clean Water Branch

GH:ay



April 3, 2017

THOMAS S. WITTEN, FASLA Chairman / Principal

VINCENT SHIGEKUNI

Vice-President / Princinal

R. STAN DUNCAN, ASLA President / Principal RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Executive Vice-President / Principal

Mr. Alec Wong, P.E., Chief Clean Water Branch State of Hawai'i Department of Health P.O. Box 3378 Honolulu, Hawai'i 96801-3378

GRANT T. MURAKAMI, AICP, LEED®AP BD+C Vice-President / Principal

TOM SCHNELL, AICP Principal

KIMI MIKAMI YUEN, LEED®AP BD+C

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Proiect Director

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA

CATIE CULLISON, AICP

SCOTT MURAKAMI, ASLA, LEED®AP

DACHENG DONG, LEED®AP

MARC SHIMATSU, ASLA

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039 AND 041

Dear Mr. Wong:

Thank you for your letter (your reference number 07023PGH.15) dated July 16, 2015 regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter.

We reviewed the Clean Water Branch's (CWB) standard comments relating to Environmental Health programs. We understand that all standard comments specifically applicable to the proposed project must be adhered to.

- The Draft EA will acknowledge that any potential impacts to State waters caused by the construction and/or operation of the proposed project will meet the provisions of the:
 - a) Anti-degradation policy (Chapter 11-54-1.1, Hawaii Administrative Rules (HAR));
 - b) Designated uses (Chapter 11-54-3, HAR); and c) Water quality criteria (Chapter 11.54-4 through 11-54-8, HAR).
- A National Pollutant Discharge Elimination System (NPDES) permit for discharges
 of storm water runoff into State surface waters (Chapter 11-55, HAR) will be
 obtained as required. All NPDES permit requirements will be implemented.
- It is not anticipated that the project will involve work in, over, or under the waters
 of the United States.
- All discharges related to the construction and operation of the proposed project will comply with the State's Water Quality requirements contained in Chapters 11-54 and 11-55, HAR. In accordance with County standards, all runoff due to the proposed project will be detained on-site.
- We acknowledge 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.

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HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484

Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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April 3, 2017 Mr. Alec Wong SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039 AND 041 Page 2 of 2

Thank you for participating in the environmental review process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Vince R. Shigh

Vincent Shigekuni Vice President

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STATE OF HAWAII DEPARTMENT OF HEALTH P. O. BOX 3378 HONOLULU, HI 96801-3378

July 13, 2015

Mr. Vincent Shigekuni Vice-President PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484 Via emaii: vshiqekuni@pbrhawaii.com

Dear Mr. Shigekuni:

SUBJECT: Pre-Consultation for an Environmental Assessment (EA) The Kahala Hotel & Resorts Proposed Beach Enhancements TMK: 3-5-023 Portions of 039, 041, and 001

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your EA to our office on July 13, 2015. Thank you for allowing us to review and comment on the proposed project. The EA was routed to the Clean Water Branch. 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: <u>https://eha-cloud.doh.hawaii.gov</u>

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-guality-standards

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 Mchtyre, AICP Program Manager, Environmental Planning Office

c: DBEDT, Office of Planning, DLNR, Office of Conservation and Coastal Lands CWB, OEQC {via email only}



April 3, 2017

State of Hawai'i

P.O. Box 3378

Department of Health

Dear Ms. McIntyre:

thank you for your letter.

Honolulu, Hawai'i 96801-3378

Ms. Laura Leialoha Phillips McIntyre, AICP

the list of standard comments on your website.

THOMASS WITTEN-ESSLA Chairman / Principal R STAN DUNCAN ASLA President / Principal RUSSELL Y, I. CHUNG, FASLA, I.FED'AP BD-C Executive Vice-President / Principal VINCENT SHIGEKUN Vice-President / Principal GRANT T. MICRAKAM, AICP, I.EED'AP BD-C

VIRGINIA PRESSLER, M.D.

In reply, please refer to File:

EPO 15-174

TOM SCHNELL, AICP Principal

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA

CATIE CULLISON, AICP

SCOTT MURAKAMI, ASLA, LEED®AP Associate

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA Associate project's development. Clean Water Branch

Clean Air Branch

We reviewed and understand the standard comments provided by the Clean Water Branch (CWB).

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT -

THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH

Thank you for your letter (your reference number EPO 15-174) dated July 13, 2015 regarding

the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to

We reviewed the Environmental Planning Office's (EPO) standard comments relating to

Environmental Health programs. We understand that all standard comments specifically

applicable to the proposed project must be adhered to. The organization of this letter follows

We acknowledge that there is a significant potential for fugitive dust emissions during all

phases of construction and operations. The Draft EA will address construction-related

impacts related to fugitive dust. All construction activities will comply with the provisions of

Section 11-60.1-33, Hawaii Administrative Rules (HAR) related to Fugitive Dust. Adequate

measures to control dust during various phases of construction will be required to be

implemented by whatever contractor is employed by The Kāhala Hotel & Resort to effect the

ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

- Potential Impacts to State Waters. The Draft EA identifies the type and class of State
 waters off the coast of Honolulu as "A". Any potential impacts to these waters caused by
 the construction and/or operation of the proposed project will meet the provisions of the:
 a) anti-degradation policy (Chapter 11-54-1.1, HAR); b) designated uses (Chapter 11-54-3, HAR); and c) water quality criteria (Chapter 11.54-4 through 11-54-8, HAR).
 However, direct discharges of storm water runoff into marine waters are not expected to
 occur due to Best Management Practices to reduce airborne dust and waterborne silt
 during construction.
- National Pollutant Discharge Elimination System permit coverage. Although the area to be disturbed is estimated at approximately 40,000 square feet, if soil disturbance exceeds one acre in area, a National Pollutant Discharge Elimination System (NPDES) permit for Storm Water Associated with Construction Activity will be necessary.

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HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484

Tel: (808) 521-5631 Fax: (808) 523-1402

E-mail: sysadmin@pbrhawaii.com

PLANNING + LANDSCAPE ARCHITECTURE + ENVIRONMENTAL STUDIES + ENTITLEMENTS / PERMITTING + GRAPHIC DESIGN

Ms. Laura Leialoha Phillips McIntyre

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039 AND 041 April 3, 2017

Page 2 of 3

- 3. **Clean Water Act.** Pursuant to the "Clean Water Act," a Section 401 Water Quality Certification from the State Department of Health, Clean Water Branch will be obtained if it is determined that the project may result in any discharge into navigable waters or as otherwise triggered.
- State Water Quality Standards (Chapter 11-54 and 11-55, HAR). All discharges related to the construction and operation of the proposed project will comply with the State's Water Quality requirements contained in Chapters 11-54 and 11-55, HAR.

Hazard Evaluation and Emergency Response Office

We understand that the Hazard Evaluation and Emergency Response (HEER) Office provides leadership, support, and partnership in preventing, planning for, responding to, and enforcing environmental laws relating to releases or threats of releases of hazardous substances. We do not expect hazardous substances, pollutants, or contaminants to be present at the project site. However, if any of these are found at the project site, HEER will be contacted to determine the appropriate actions to comply with the relevant environmental laws.

Indoor and Radiological Health (IRH) Branch

The proposed beach enhancements will probably not trigger the need to comply the following Hawaii Administrative Rules:

- Chapter 11-39 Air conditioning and Ventilation
- Chapter 11-45 Radiation Control
- Chapter 11-46 Community Noise Control

In addition, the proposed beach operations will probably not trigger the need to comply with HAR Chapters 11-501 through 11-504 regarding asbestos.

Safe Drinking Water Branch

We note that the Safe Drinking Water Branch administers programs to protect drinking water sources from contamination.

- Public Water System. A public water system will not be developed as part of the proposed project. Potable water will be supplied by the City and County of Honolulu Board of Water Supply, which draws water from a series of groundwater wells and shafts.
- 2. Underground Injection Control. Wastewater generated by the users of the proposed beach enhancements will be collected by the County wastewater system.

Solid and Hazardous Waste Branch

Solid waste that cannot be recycled will be disposed of at either landfills, the incinerator, or transfer stations. A waste-to-energy combustor, H-POWER (Honolulu Program of Waste Energy Recovery) located at the Campbell Industrial Park incinerates about 1,800 tons of combustible waste per day. The electricity generated is bought by Hawaiian Electric Company. Currently, the H-POWER facility receives all residential and commercial packer truck wastes on the island. Waste contractors will be asked to submit disposal receipts and invoices to ensure proper disposal of waste. The proposed beach enhancements will also comply with the provisions of Section 11-260 to 11-280, Hawaii Administrative Rules, relating to hazardous waste.

Ms. Laura Leialoha Phillips McIntyre

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039 AND 041 April 3, 2017 Page 3 of 3

Wastewater Branch

The proposed project will not connect to the County wastewater system, because users of the beach enhancements can use The Kāhala Hotel & Resort restrooms. Wastewater generated at The Kāhala Hotel & Resort will be collected by the County wastewater system. No cesspool is being proposed.

Thank you for participating in the environmental review process. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Inco R

Vincent Shigekuni Vice President

O:\Job31\3156.01 Kahala Hotel & Resort Beach Ping\EA\Pre-Consultation\Responses\DOH EPO response (rev April 2017).docx

DAVID Y. IGE GOVERNOR OF HAWAII





STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES LAND DIVISION

> POST OFFICE BOX 621 HONOLULU, HAWAII 96809

> > July 29, 2015

PBR HAWAII & Associates, Inc. Attention: Mr. Vincent Shigekuni 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

via email: vshigekuni@pbrhawaii.com

SUZANNE D. CASE CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE

MANAGEMENT

Dear Mr. Shigekuni,

SUBJECT: Pre-Consultation for an Environmental Assessment – The Kahala Hotel & Resort's Proposed Beach Enhancements

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from (1) Land Division – Oahu District; (2) Division of Boating & Ocean Recreation; and (3) Engineering Division. No other comments were received as of our suspense date. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at 587-0439. Thank you.

Sincerely,

Russell Y. Tsuji Land Administrator

Enclosure(s)





STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES LAND DIVISION

> POST OFFICE BOX 621 HONOLULUL HAWAII 96809

> > July 13, 2015



MEMORANDUM

DLNR Agencies: X Div. of Aquatic Resources X 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 X Land Division – Oahu District X Historic Preservation Russell X Fsuji, Land Administrator

FROM: SUBJECT: LOCATION:

Pre-consultation for an Environmental Assessment – The Kahala Hotel & Resort's Proposed Beach Enhancements TMK 3-5-023 portions of 039, 041 and 001; Honolulu Judicial District, O'ahu

APPLICANT: The Kahala Hotel & Resort by its consultant PBR HAWAII & Associates, Inc.

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

Please submit any comments by July 29, 2015. 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: Print Name: Date:

Reserve umnerts from @DLO until the DEA/FEA is available

SUZANNE D. CASE CHAIRPERSO BOARD OF LAND AND NATURAL RESOURCES IN ON WATER RESOURC



Please submit any comments by July 29, 2015. 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. (\mathbf{X}) Comments are attached.

Signed: Print Name: Date:

JUL15'15PM 1:02BOR ADM

your comments on this document.

Please submit any comments by July 29, 2015. 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: Print Name, Carty S. Chang, Chief Engineer Date:

DEPARTMENT OF LAND AND NATURAL RESOURCES ENGINEERING DIVISION

LD/ Russell Y. Tsuji

REF: Pre-Consultation for EA for The Kahala Hotel & Resort's Proposed Beach Enhancements Oahu.052

COMMENTS

- () We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ____.
- (X) Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zones AE and VE. The National Flood Insurance Program regulates developments within Zones AE and VE as indicated in bold letters below.
- Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is
- (X) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- (X) Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
- Mr. Carter Romero (Acting) at (808) 961-8943 of the County of Hawaii, Department of Public Works.
- () Mr. Carolyn Cortez at (808) 270-7253 of the County of Maui, Department of Planning.
- Mr. Stanford Iwamoto at (808) 241-4896 of the County of Kauai, Department of Public Works.
- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
- () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.
- () Additional Comments:
- () Other:

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed CARTY S. CHANG, CHIEF ENGINEER





THOMAS S. WITTEN, FASLA Chairman / Principal Mr. Russell Y. Tsuji R. STAN DUNCAN, ASLA Land Administrator President / Principal State of Hawai'i RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Department of Land and Natural Resources Executive Vice-President / Principal P.O. Box 621 VINCENT SHIGEKUNI Vice-President / Principal Honolulu, Hawai'i 96809 GRANT T. MURAKAMI, AICP, LEED®AP BD+C Vice-President / Principal Attn: Mr. Steve Molmen, Supervising Land Agent TOM SCHNELL, AICP Principal SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL KIMI MIKAMI YUEN, LEED®AP BD+C Principal ASSESSMENT - THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041 W. FRANK BRANDT, FASLA Chairman Emerit Dear Mr. Tsuji: ANN MIKIKO BOUSLOG, PhD Project Director Thank you for your letter dated July 29, 2015 regarding the subject project. As the RAMSAY R. M. TAUM planning consultant for The Kāhala Hotel & Resort, we want to thank you for your Cultural Sustainability Planner letter and review by Land Division - Oahu District, Division of Boating & Ocean Recreation, and Engineering Division. RAYMOND T. HIGA, ASLA Senior Associate We appreciate your participation in the environmental review process, and the CATIE CULLISON, AICP information provided. Your letter will be included in the Draft Environmental Assessment (EA). SCOTT MURAKAMI, ASLA, LEED®AP Associate DACHENG DONG, LEED®AP Sincerely, Associate MARC SHIMATSU, ASLA PBR HAWAII Associate Vince R. Shigh Vincent Shigekuni Vice President O:Job31\3156.01 Kahala Hotel & Resort Beach Plng\EA\Pre-Consultation\Responses\DLNR (Ltr Dated 7-29-15) response (rev April 2017).docx

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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- Title: Pre-consultation for an Environmental Assessment The Kahala Hotel & Resort's Proposed Beach Enhancements
- Project by: The Kahala Hotel & Resort by its consultant PBR HAWAII & Associates, Inc.

Location: TMK 3-5-023 portions of 039, 041 and 001; Honolulu Judicial District, Oahu

<u>Brief Description</u>: The Applicant is proposing the following possible beach enhancements: rejuvenating the landscape architectural design of the areas currently maintained by the hotel; improving the lateral access along the shoreline; non-permanent improvements and operations to allow for outdoor weddings; dredging of the channel fronting the hotel to remove sand and silt; and sand replenishment of the beach.

<u>Comments:</u> The Division has some concerns regarding the proposed project since it could have potential impacts on aquatic resources within the area. A native seagrass species along with an endemic gastropod and green sea turtles have been sighted in the area previously. As part of the Environmental Assessment, the Division would like see Best Management Practices addressed toward conserving these species along with mitigation measures that include preventing any contaminants such as sediments, pollutants, petroleum products and other debris from possibly entering the aquatic environment during project activities. We also suggest that site work be

scheduled during periods of minimal rainfall and lands denuded of vegetation be replanted or covered as quickly as possible to control erosion.

.

Thank you for providing DAR the opportunity to review and comment on the proposed project. We request the opportunity to review and comment on the prepared EA for any projects resulting from this planning process when it becomes available.



P.O. Box 621

Mr. Russell Y. Tsuji

Department of Land and Natural Resources

Attn: Mr. Steve Molmen, Supervising Land Agent

THOMAS S. WITTEN, FASLA Chairman / Principal

R. STAN DUNCAN, ASLA President / Principal

RUSSELLY.J.CHUNG, FASLA, LEED*APBD+C Executive Vice-President / Principal State of Hawai'i

VINCENT SHIGEKUNI Vice-President / Principal

GRANT T. MURAKAMI, AICP, LEED*AP BD+C Honolulu, Hawai'i 96809 Vice-President / Principal

vice-rresident / rrincipat

TOM SCHNELL, AICP Principal

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associate

CATIE CULLISON, AICP Senior Associate

SCOTT MURAKAMI, ASLA, LEED®AP Associate

DACHENG DONG, LEED®AP

Associate

MARC SHIMATSU, ASLA Associate Dear Mr. Tsuji:

Thank you for your letter dated August 4, 2015 regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter and review by the Division of Aquatic Resources. After reviewing the preliminary findings from our biological survey and a field visit with a representative from the U.S. Fish and Wildlife Service, we had decided not to include the dredging of the lagoon fronting the beach as part of the proposed beach enhancements.

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED

BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

We appreciate your participation in the environmental review process, and the information provided. Your letter will be included in the Draft Environmental Assessment (EA).

Sincerely,

PBR HAWAII

Vince R. Shigh

Vincent Shigekuni Vice President

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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DAVID Y. IGE





STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES LAND DIVISION

> POST OFFICE BOX 621 HONOLULU, HAWAII 96809

> > August 3, 2015

PBR HAWAII & Associates, Inc. Attention: Mr. Vincent Shigekuni 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

via email: vshigekuni@pbrhawaii.com

SUZANNE D. CASE CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE

MANAGEMENT

Dear Mr. Shigekuni,

SUBJECT: Pre-Consultation for an Environmental Assessment – The Kahala Hotel & Resort's Proposed Beach Enhancements

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments sent to you dated July 29, 2015, enclosed are additional comments from the Office of Conservation & Coastal Lands 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)

DAVID Y. IGE GOVERNOR OF HAWAI



EPT. OF LAND & STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES OFFICE OF CONSERVATION AND COASTAL LANDS POST OFFICE BOX 621

HONOLULU, HAWAII 96809

Correspondence: OA-16-8

JUL 3 0 2015

SUZANNE D. CASE

KEKOA KALUHIWA FIRST DEPUTY W. ROY HARDY

PBR Hawaii & Associates, Inc. Attn: Vincent Shigekuni 1001 Bishop Street, Suite 650 Honolulu, HI 96813-3484

SUBJECT: Re: Pre-Consultation for an Environmental Assessment – The Kahala Hotel & Resort's Proposed Beach Enhancements, TMKs (1) 3-5-023:039, 041, and 001

Dear Mr. Shigekuni:

DLNR:OCCL:BR

The State of Hawaii Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) is responding to your July 6, 2015 request for input and comments in pre-consultation for an Environmental Assessment (EA) for proposed beach enhancements at the Kahala Hotel & Resort, Kahala, Oahu (TMKs (1) 3-5-023:039, 041, and 001). The Resort is proposing beach enhancements including landscape and architectural improvements, improvements to lateral shoreline access, operations to allow for outdoor weddings, dredging of the channel fronting the hotel to remove sand and silt, and sand replenishment of the beach.

The DLNR-OCCL regulates land-use in the State Conservation District, which, in coastal areas, extends seaward from the State Certified Shoreline out to the three-mile limit of State Waters. A DLNR Conservation District Use Permit (CDUP) would be required for proposed land uses occurring in the Conservation District, including marine dredging and beach nourishment.



Thank you for the opportunity to comment on this matter. The DLNR is generally supportive of efforts to restore and improve access to public shoreline areas. The DLNR-OCCL has experience in conducting beach restoration projects, including the 2012 Waikiki Beach Restoration Project. Please consider our staff at the OCCL Coastal Lands Program a resource for information in planning your beach enhancements. Please include the DLNR-OCCL on your list of agencies for review of the Draft EA. You may contact Brad Romine, University of Hawaii Sea Grant Extension Agent and OCCL Coastal Lands Program Coordinator at (808) 587-0049 or by email at Bradley.M.Romine@hawaii.gov, should you have questions or need more information related to this matter.

incerely, Samuel J. Lemmo, ADMINISTRATOR Office of Conservation and Coastal Lands

Cc: Land Division - Steve Molmen

VINCENT SHIGEKUNI Vice-President / Principal GRANT T. MURAKAMI, AICP, LEED®AP BD+C Vice-President / Principal

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Executive Vice-President / Principa

TOM SCHNELL, AICP Principal

THOMAS S. WITTEN, FASLA

Chairman / Principal

R. STAN DUNCAN, ASLA

President / Principal

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director

RAMSAY R. M. TAUM

RAYMOND T. HIGA, ASLA Senior Associat CATIE CULLISON, AICP

Associat

DACHENG DONG, LEED® AP Associate

Mr. Samuel J. Lemmo Administrator Office of Conservation and Coastal Lands State of Hawai'i Department of Land and Natural Resources P.O. Box 621 Honolulu, Hawai'i 96809

Attn: Mr. Bradley Romaine, OCCL Coastal Lands Program Coordinator

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT - THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

Dear Mr. Lemmo:

Cultural Sustainability Planne

SCOTT MURAKAMI, ASLA, LEED®AP

MARC SHIMATSU, ASLA Associate

We appreciate your participation in the environmental review process, and the information provided. Your letter will be included in the Draft Environmental Assessment (EA).

Thank you for your letter dated July 30, 2015 (your correspondence reference no.: OA-16-8) regarding the subject project. As the planning consultant for The Kāhala Hotel &

Resort, we want to thank you for your letter and review by OCCL. After reviewing the

preliminary findings from our biological survey and a field visit with a representative

from the U.S. Fish and Wildlife Service, we had decided not to include the dredging of

the lagoon fronting the beach as part of the proposed beach enhancements.

Sincerely,

PBR HAWAII

Vincent Shigekuni Vice President

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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Page 2 of 2

DAVID Y IGE GOVERNOR



DEPARTMENT OF TRANSPORTATION 869 PUNCHBOWL STREET HONOLULU, HAWAII 96813-5097

July 24, 2015

Mr. Vincent Shigekuni Vice President PBR HAWAII & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Kahala Hotel and Resort's Beach Enhancements Pre-Consultation for an Environmental Assessment Kahala, Oahu, Hawaii TMK: (1) 3-5-023: Portions of 039, 041 and 001

Our Department of Transportation's (DOT) comments on the subject project are as follows:

The subject project is not expected to significantly impact the State highway facility. However, a permit from DOT Highways Division, is required for the transport of oversized and/or overweight materials and equipment on State highway facilities.

If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Sincerely,

FORD N. FUCHIGAMI

Director of Transportation

FORD N. FUCHIGAMI DIRECTOR

Deputy Directors JADE T. BUTAY ROSS M. HIGASHI EDWIN H. SNIFFEN DARRELL T. YOUNG

IN REPLY REFER TO: STP 8.1828

R. STAN DUNCAN, ASLA President / Principal RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C VINCENT SHIGEKUNI

Executive Vice-President / Principal

THOMAS S. WITTEN, FASLA Chairman / Principa

Vice-President / Principal

GRANT T. MURAKAMI, AICP, LEED®AP BD+C Vice-President / Princina

Principal

Principal W. FRANK BRANDT, FASLA

Chairman Emerit

Project Directo

ANN MIKIKO BOUSLOG, PhD

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associat CATIF CULLISON, AICP

SCOTT MURAKAMI, ASLA, LEED®AP Associate

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA Associate

PBR HAWAII

Sincerely,

Vincent Shigekuni Vice President

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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April 3, 2017

Mr. Ford N. Fuchigami, Director State of Hawai'i

Department of Transportation 869 Punchbowl Street Honolulu, Hawai'i 96813-5097

Attn: Mr. Norren Kato, DOT Statewide Transportation Planning Office

TOM SCHNELL, AICP

KIMI MIKAMI YUEN, LEED®AP BD+C

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

Dear Mr. Fuchigami:

Thank you for your letter (your reference number STP 8.1828) dated July 24, 2015 regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter.

We appreciate your participation in the environmental review process, the information provided on oversized and overweight materials and equipment on State highway facilities, and your input that the subject project is not expected to significantly impact the State highway facility. Your letter will be included in the Draft Environmental Assessment (EA).

O:Job31\3156.01 Kahala Hotel & Resort Beach Plng\EA\Pre-Consultation\Responses\DOT response (rev April 2017).docx



OFFICE OF PLANNING STATE OF HAWAII

DAVID Y. IGE GOVERNOR LEO R. ASUNCION ACTING DIRECTOR OFFICE OF PLANNING

Web: http://planning.hawaii.gov

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Telephone

Fax

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813 Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Ref. No. P-14828

July 16, 2015

Mr. Vincent Shigekuni PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Pre-Consultation for An Environmental Assessment – The Kahala Hotel & Resort's Proposed Beach Enhancements, Oahu, Hawaii; Tax Map Key: (1) 3-5-023: portions of 039, 041 and 001

We are in receipt of your pre-consultation request, received July 8, 2015, for Environmental Assessment (EA) for Kahala Hotel & Resort's beach enhancement project.

According to the information you provided, Resorttrust Hawaii, LLC proposes a beach enhancement project, which includes: 1) rejuvenating the landscape architectural design of the area currently maintained by the hotel; 2) improving the lateral access along the shoreline; 3) improvements and operations for outdoor weddings; 4) dredging of the channel fronting the hotel to remove sand and silt; and 5) sand replenishment of the beach.

The Office of Planning (OP) has reviewed your EA pre-consultation request and has the following comments to offer.

- 1. The Draft EA should clarify the trigger(s) of requirements of Hawaii Revised Statutes (HRS) Chapter 343.
- 2. OP provides technical assistance to state and county agencies in administering the statewide planning system in HRS Chapter 226, the Hawaii State Plan. The Hawaii State Plan presents the goals, objectives, priorities, and priority guidelines for growth, development, and the allocation of resources through 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.

Mr. Vincent Shigekuni July 16, 2015 Page 2

c:

The subject EA should include an analysis on the Hawaii State Plan, HRS Chapter 226, that addresses how the proposed Master Plan conforms with state and county plans, policies and controls. The analysis should include a discussion on the ability of the proposed Master Plan to meet the objectives and policies, and priority guidelines listed in HRS Chapter 226.

 The coastal zone management (CZM) 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 United States territorial sea" see HRS § 205A-1.

HRS Chapter 205A requires all state and county agencies to enforce the CZM objectives and policies. The assessment on compliance with HRS Chapter 205A is an important component for satisfying the requirements of HRS Chapter 343.

The subject EA should include an assessment as to how the proposed action conforms to CZM objectives and supporting policies set forth in HRS § 205A-2, as amended. 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. The proposed beach enhancement project is shoreline related, and is located within the special management area (SMA), under HRS Chapter 205A. The EA should specifically discuss the compliance with the requirements of SMA use and shoreline setbacks, by consulting with the Department of Planning and Permitting, City and County of Honolulu.

If you have any questions regarding this comment letter, please contact Shichao Li of our CZM Program at (808) 587-2841.

Sincerely,

Leo R. Asuncion Acting Director

Mr. Luis P. Salaveria, Director Department of Business, Economic Development and Tourism



Dear Mr. Asuncion:

 THOMASS WITTER ISAL
 Mr. Leo R. Asuncion, Director

 Chairman / Principal
 Mr. Leo R. Asuncion, Director

 RISAN DINCAN, ASLA
 Office of Planning

 President / Principal
 State of Hawai'i

 RUSSELIX I. CHUNG, ISALA, IED^aAP RD-C
 P.O. Box 2359

 VINCEST SUBCEXINI
 Honolulu, Hawai'i 96804

GRANT T. MURAKAMI, AICP, LEED*AP BD+C Attn: Mr. Shichao Li, CZM Program Vice-President / Principal

TOM SCHNELL, AICP Principal

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

RAYMOND T. HIGA, ASLA

CATIE CULLISON, AICP

DACHENG DONG, LEED® AP

MARC SHIMATSU, ASLA Associate

SCOTT MURAKAMI, ASLA, LEED®AP

Senior Associate

Senior Associate

Associate

ANN MIKIKO BOUSLOG, PhD Project Director RAMSAY R. M. TAUM Cultural Sustainability Planner Thank you for your letter (your reference number P-14828) dated July 16, 2015 regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter.

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL

ASSESSMENT - THE KĀHALA HOTEL & RESORT'S PROPOSED

BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

We appreciate your participation in the environmental review process, and your input that the Draft Environmental Assessment (EA) should (1) clarify the trigger(s) of requirements of HRS Chapter 343; (2) include a discussion of the proposed project's ability to meet the objectives and policies set forth in HRS Chapter 226; (3) include discussion of the proposed project's ability to meet the objectives and policies set forth in HRS \$205A-2; and (4) discuss the compliance with the requirements of SMA use and shoreline setbacks. Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Incal R. Shighen

Vincent Shigekuni Vice President

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

O:Job31/3156.01 Kahala Hotel & Resort Beach Plng/EA/Pre-Consultation/Responses/OP response (rev April 2017).docs

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PLANNING · LANDSCAPE ARCHITECTURE · ENVIRONMENTAL STUDIES · ENTITLEMENTS / PERMITTING · GRAPHIC DESIGN



DEPARTMENT OF THE ARMY HONOLULU DISTRICT, U.S. ARMY CORPS OF ENGINEERS FORT SHAFTER. HAWAII 96858-5440

July 30, 2015

SUBJECT: Request for Comments; File No. POH-2015-00122; Kahala Hotel & Resort; TMK 3-5-023 and portions of TMK 3-5-039, 041, and 001, Island of O'ahu, Hawaii

PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484 Attn: Vincent Shigekuni

Dear Mr. Shigekuni:

The U.S. Army Corps of Engineers, Honolulu District (Corps), is in receipt of your request for comments pertaining to the forthcoming Draft Environmental Assessment (EA) that PBR Hawaii & Associates, Inc. will prepare for this proposal. The file has been assigned Department of the Army (DA) **POH-2015-00122**. Please reference this number in all future correspondence concerning this project. The project site is located at 5000 Kahala Avenue, Kahala, Honolulu, Island of O'ahu, Hawaii.

Waters of the United States (WOUS) regulated by the Corps fall under Section 404 of the Clean Water Act (Section 404) and Section 10 of the Rivers and Harbors Act of 1899 (Section 10). Section 404 requires authorization prior to the discharge and/or placement of dredged or fill material into WOUS, including adjacent wetlands. Section 10 requires authorization prior to installing structures or conducting any work in, over, or under Section 10 waters.

Considering the regulatory authority described in the previous paragraph, the Draft EA should contain information on the impacts to aquatic resources in order for the Corps to provide meaningful comments about the project within our jurisdictional authority. Therefore, the EA should provide the following:

1. Detailed plan sheets that show all work entailing fill proposed below the Mean Higher High Water (MHHW) line – this will explain and quantify the Section 404 component of the project pertaining to fill. The actual elevation number would be calculated by subtracting the Mean Low Lower Water (MLLW) from the MHHW to give the adjusted MHHW (high tide line).

2. Detailed plan sheets that show all work (structures, dredging, etc.) proposed below the Mean High Water (MHW) – this will explain and quantify the Section 10 component of the project (i.e., all work in, over, or under a Section 10 water – the Pacific Ocean). This

- 2 -

elevation would be calculated by subtracting the MLLW from the MHW to give the adjusted MHW.

3. The narrative describing the work should include a summary and quantification of each type of impact in a tabular format. For example you would describe and quantify the linear feet of shoreline and the area (square feet) that is proposed for beach replenishment (Note – this would be considered fill in a Section 10 water and regulated under Section 404 of the Clean Water Act). For dredging, you would show the area proposed for dredging, quantify the square feet of the dredge area, quantify the cubic yards proposed for removal, indicate if the activity would be a hydraulic or mechanical dredge. and describe where the dredged material would be disposed.

4. All actual plan sheets should be clear and legible at 8 ½ x 11 scale – which may mean that the font size would be increased in order to be read at this scale. These should be black and white engineering sheets and not aerials with color-coded lines and arrows.

Review of this information in the EA will ultimately determine the content of the Corps' comments with regard to that document.

I am requesting that a copy of the Draft EA be sent in PDF form.

Please note that Michelle L. Lynch is the Regulatory Chief. Lt. Col. Crary is the Honolulu District Commander. All further submittals or questions should be mailed to Building 230, Room 302, Fort Shafter, Hawaii 96858, or sent by e-mail to <u>CEPOH-RO@usace.army.mil</u>. The Regulatory Office can be reached by telephone at 808-835-4303.

Thank you for the opportunity to comment on the forthcoming EA document and for your cooperation with the Honolulu District Regulatory Program.

Sincerely,

Michelle Synch

Michelle R. Lynch Chief, Regulatory Office



THOMAS S. WITTEN, FASLA Chairman / Principal Ms. Michelle R. Lynch, Chief R. STAN DUNCAN, ASLA Regulatory Office President / Principal Department of the Army RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Honolulu District Executive Vice-President / Principal U.S. Army Corps of Engineers VINCENT SHIGEKUNI Vice-President / Principal Building 230, Room 302 GRANT E MURAKAMI, AICPLEED*APBD+C Fort Shafter, Hawaii 96858 Vice-President / Principal

TOM SCHNELL, AICP

KIMI MIKAMI YUEN, LEED®AP BD+C

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director RAMSAY R. M. TAUM

RAYMOND T. HIGA, ASLA

CATIE CULLISON, AICP

DACHENG DONG, LEED®AP

SCOTT MURAKAMI, ASLA, LEED®AP

Senior Associa

Senior Associ

Associate MARC SHIMATSU, ASLA

Associate

Principal

Principal

SUBJECT: POH-2015-00122 PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S **PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023** PORTIONS OF 039 AND 041

Dear Ms. Lynch:

Thank you for your letter dated July 30, 2015 regarding the subject project. As the Cultural Sustainability Planner planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter and the information provided. After reviewing the preliminary findings from our biological survey and a field visit with a representative from the U.S. Fish and Wildlife Service, we had decided not to include the dredging of the lagoon fronting the beach as part of the proposed beach enhancements.

> We appreciate your participation in the environmental review process. Your letter and the relevant information will be included in the Draft Environmental Assessment (EA).

Sincerely,

PBR HAWAII

Vince R. Singlen

Vincent Shigekuni Vice President

O:/Job31/3156.01 Kahala Hotel & Resort Beach Plng/EA/Pre-Consultation/Responses/USCOE response (rev April 2017).docx

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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U.S. Department of Homeland Security FEMA Region IX 1111 Broadway, Suite 1200 Oakland, CA. 94607-4052

July 17, 2015

Vincent Shigekuni PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

This is in response to your request for comments regarding the Pre-Consultation for Environmental Assessment – The Kahal Hotel & Resorts Proposed Beach Enhancements – TMK (3)-5-023 Portions of 039, 041, and 001 project.

Please review the current effective countywide Flood Insurance Rate Maps (FIRMs) for the City and County of Honolulu (Community Number 150001), Maps revised November 5, 2014. Please note that the City and County of Honolulu, Hawaii is a participant in the National Flood Insurance Program (NFIP). The minimum, basic NFIP floodplain management building requirements are described in Vol. 44 Code of Federal Regulations (44 CFR), Sections 59 through 65.

A summary of these NFIP floodplain management building requirements are as follows:

- All buildings constructed within a riverine floodplain, (i.e., Flood Zones A, AO, AH, AE, and A1 through A30 as delineated on the FIRM), must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map.
- If the area of construction is located within a Regulatory Floodway as delineated on the
 FIRM, any *development* must not increase base flood elevation levels. The term *development* means any man-made change to improved or unimproved real estate,
 including but not limited to buildings, other structures, mining, dredging, filling,
 grading, paving, excavation or drilling operations, and storage of equipment or
 materials. A hydrologic and hydraulic analysis must be performed *prior* to the start of
 development, and must demonstrate that the development would not cause any rise in
 base flood levels. No rise is permitted within regulatory floodways.

Vincent Shigekuni, PBR Hawaii & Associates Page 2 July 17, 2015

- All buildings constructed within a coastal high hazard area, (any of the "V" Flood Zones as delineated on the FIRM), must be elevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.
- Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FEMA of the changes by submitting technical data for a flood map revision. To obtain copies of FEMA's Flood Map Revision Application Packages, please refer to the FEMA website at http://www.fema.gov/business/nfip/forms.shtm.

Please Note:

Many NFIP participating communities have adopted floodplain management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. Please contact the local community's floodplain manager for more information on local floodplain management building requirements. The Honolulu floodplain manager can be reached by calling Mario Siu-Li, NFIP Coordinator, at (808) 768-8098.

If you have any questions or concerns, please do not hesitate to call Sarah Owen of the Mitigation staff at (510) 627-7050.

Sincerely

Gregor Blackburn, CFM, Branch Chief Floodplain Management and Insurance Branch

cc:

Mario Siu-Li, NFIP Coordinator, City and County of Honolulu, Hawaii

Carol L. Tyau-Beam, NFIP State Coordinator, Hawaii Department of Land and Natural Resources

Sarah Owen, NFIP Planner, DHS/FEMA Region IX

Alessandro Amaglio, Environmental Officer, DHS/FEMA Region IX



THOMAS S. WITTEN, FASLA Chairman / Principal

 RESTRADUNCANARAA
 Mr. Gregor Blackburn, CFM, Branch Chief

 President / Principal
 Floodplain Management and Insurance Branch

 RUSELI Y, GUURGENSLALEDYAPBD-C
 U.S. Department of Homeland Security

 VENCENT SHIGEKUN
 FEMA Region IX

 VINCENT SHIGEKUN
 1111 Broadway, Suite 1200

 GRANTT SHURGHARMU, AICPLEEDYAPBD-C
 Oakland, CA 94607-4052

Attn: Ms. Sarah Owen

Dear Mr. Blackburn:

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039 AND 041

Thank you for your letter dated July 17, 2015 regarding the subject project. As the

planning consultant for The Kāhala Hotel & Resort, we want to thank you for your

We appreciate your participation in the environmental review process. Your letter and

the relevant information will be included in the Draft Environmental Assessment (EA).

ANN MIKIKO BOUSLOG, PhD Project Director

KIMI MIKAMI YUEN, LEED®AP BD+C

TOM SCHNELL, AICP Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

Principal

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associate CATIE CULLISON, AICP

Senior Associate SCOTT MURAKAMI, ASLA, LEED*AP

Associate DACHENG DONG, LEED®AP

Associate

MARC SHIMATSU, ASLA Associate PBR HAWAII

Sincerely,

letter and the information provided.

Vince R. Shigh

Vincent Shigekuni Vice President

O:\Job31\3156.01 Kahala Hotel & Resort Beach Ping\EA\Pre-Consultation\Responses\FEMA response (rev April 2017).docx

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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United States Department of the Interior



FISH AND WILDLIFE SERVICE Pacific Islands Fish and Wildlife Office 300 Ala Moana Boulevard, Room 3-122 Honolulu, Hawai'i 96850

In Reply Refer To: 2015-TA-0346

OCT 1 6 2015

Mr. Vincent Shigekuni Vice President PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484

Subject: Technical Assistance for The Kahala Hotel & Resort's Proposed Beach Enhancements, O'ahu

Dear Mr. Shigekuni:

The U.S. Fish and Wildlife Service (Service) received your letter on July 8, 2015, requesting our comments on the proposed Kahala Hotel & Resort's Beach Enhancements, O'ahu [TMKs: 3-5-023: 039 and 3-5-023: 041]. We understand PBR Hawaii & Associates, Inc. has been contracted by The Kahala Hotel & Resort to prepare a Chapter 343 Hawai'i Revised Statutes Environmental Assessment (EA) for the proposed project.

Initially, The Kahala Hotel & Resort proposed to rejuvenate the landscape architectural design of areas maintained by the hotel, improve lateral access along the shoreline, conduct non-permanent improvements and operations to allow for outdoor weddings, dredge the channel fronting the hotel to remove sand and silt, and replenish sand on the beach. However, based upon an email received on September 11, 2015, it is our understanding the project will no longer include work in the waters of the United States. Therefore, the project will not involve dredging the channel fronting Kahala Hotel to remove sand and silt.

The following comments have been prepared pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended (ESA); and other authorities mandating Federal oversight of environmental resources including the Migratory Bird Treaty Act (16 U.S.C. 103 *et seq.*), as amended (MBTA). Based on these authorities, we offer the following comments for your consideration.

We have reviewed the information you provided and pertinent information in our files, including data compiled by the Hawai'i Biodiversity and Mapping Program as it pertains to listed species and designated critical habitat. There is no federally designated critical habitat within the immediate vicinity of the proposed project. Our data indicate the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), threatened green sea turtle (*Chelonia mydas*), threatened

Mr. Vincent Shigekuni

Newell's shearwater (*Puffinus newelli*), and seabirds protected under the MBTA, such as the wedge-tailed shearwater (*Puffinus pacificus*) and white tern (*Gygis alba*), could be impacted by components of your project.

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 since they are too young to fly or may not move away. 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.

To minimize and avoid artificial lighting impacts to sea turtles and seabirds, a comprehensive lighting plan should be developed and incorporated into the draft EA. 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 and so that light from the shielded source cannot be seen from the beach. Construction activities should occur during daylight hours only.

Additionally, white fairy terns often nest in urban parks and residential areas from Hawaii Kai to Hickam Air Force Base. White fairy terns do not build nests, instead they lay a single egg directly on a ledge, tree branch, or other suitable location. The egg will hatch after approximately 35 days, after which it takes 45 days for the chick to be mature enough to leave the nest on its own. If tree trimming becomes part of your project, please examine all trees slated to be cut to determine if there are white fairy terns nesting in them. Similarly, we recommend examining any structures slated for demolition. Signs that white fairy terns are present include accumulation of white feathers or white droppings underneath the tree or structure.

If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with Endangered Species Act compliance.

Hawai'i's native ecosystems are heavily impacted by exotic invasive plants. Whenever possible we recommend using native plants for landscaping purposes. If native plants do not meet the landscaping objectives, we recommend choosing species that are thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (http://www.hear.org/Pier/), Weed Risk Assessment for Hawai'i and Pacific Islands (http://www.betany.hawaii.edu/faculty/daehler/wra/) and Global Compendium of Weeds (http://www.hear.org/gcw/).

Mr. Vincent Shigekuni

If the proposed project will involve earthwork, there is a potential that it may cause soil erosion and sedimentation into the marine environment since the project area is directly adjacent to the ocean. Therefore, we are attaching the Service's recommended Best Management Practices regarding sedimentation and erosion control. We encourage you to incorporate the relevant practices into your project design.

We appreciate your efforts to conserve endangered species. If you have questions regarding these comments, please contact Leila Gibson, Fish and Wildlife Biologist (phone: 808-792-9400, email: leila_gibson@fws.gov).

Sincerely.

Aaron Nadig Island Team Manager Oʻahu, Kauaʻi, North Western Hawaiian Islands, and American Samoa

Enclosure: Service BMPs for erosion and sediment control

U.S. Fish and Wildlife Service Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service (USFWS) recommend the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.

2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.

3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.

4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see http://www.haccp-nrm.org/Wizard/default.asp) can help to prevent attraction and introduction of non-native species.

5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

3
From:	Vincent Shigekuni
To:	"Gibson, Leila"
Cc:	Kevin Foster; Aaron Nadig; Dan Polhemus; David Tessler; Danielle.Javewardene@noaa.gov; Donald.Hubner@noaa.gov; Patrick.Opav@noaa.gov; wiltse.wendy@epa.gov; Paul.Y.Murakawa@hawaii.gov; Michelle.R.Lynch@usace.army.mil
Subject:	RE: Kahala Hotel & Resort"s Proposed Beach Enhancements
Date:	Wednesday, July 22, 2015 12:48:00 PM

Hi Ms. Gibson,

Thanks very much for your email. I left a voicemail, but in case you can't retrieve it, please call me at your convenience at (808) 521-5631. BTW, Ms. Lynch may be out of the office, so per a conversation I had with Ms. Judy Gibson (USACE) this morning, I forwarded your email to her.

Thanks,

Vincent

From: Gibson, Leila [mailto:leila_gibson@fws.gov]
Sent: Tuesday, July 21, 2015 11:00 AM
To: Vincent Shigekuni
Cc: Kevin Foster; Aaron Nadig; Dan Polhemus; David Tessler; Danielle.Jayewardene@noaa.gov; Donald.Hubner@noaa.gov; Patrick.Opay@noaa.gov; wiltse.wendy@epa.gov; Paul.Y.Murakawa@hawaii.gov; Michelle.R.Lynch@usace.army.mil
Subject: Kahala Hotel & Resort's Proposed Beach Enhancements

Dear Mr. Shigekuni,

My name is Leila Gibson and I am a Fish and Wildlife Biologist with the U.S. Fish and Wildlife Service in Honolulu. Our office will be responding to you in an official letter but, I wanted to contact you ahead of time regarding Kahala Hotel & Resort's Proposed Beach Enhancements Project.

We understand that two native seagrasses (*Halophila descipiens* and *Halophila hawaiiana*), may occur within the project area. Seagrass is considered a Special Aquatic Site in accordance with Section 404 of the Clean Water Act. Also, We understand that an endemic gastropod (*Smarngdia bryanae*), which is known to feed on the native seagrasses, may also occur within the project footprint. Also, Green sea turtles have also been known to occur within the project area as well.

We are concerned that planned project dredging may negatively impact these species. Therefore, we recommend that you schedule a meeting with us, the U.S. Army Corps of Engineers, National Oceanic Atmospheric Administration (NOAA), U.S. Environmental Protection Agency (EPA), and the State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR) to discuss the proposed project and potential impacts to the above species. Below are the people to contact for each agency and their email address:

Army Corps of Engineers - Michelle Lynch, <u>Michelle R. Lynch@usace.army.mil</u> NOAA - Danielle Jayewardene, <u>Danielle Jayewardene@noaa.gov</u> NOAA - Don Hubner, <u>Donald Hubner@noaa.gov</u> NOAA - Patrick Opay, <u>Patrick.Opay@noaa.gov</u> EPA - Wendy Wiltse, <u>wiltse.wendy@epa.gov</u> DAR - Paul Murakawa, <u>Paul Y.Murakawa@hawaii.gov</u>

If you are in need of a room to have the meeting, we have a conference room available.

Thank you,

Leila Gibson Fish & Wildlife Biologist Oahu, Kauai, North Western Hawaiian Islands, and American Samoa Pacific Islands Fish and Wildlife Office 300 Ala Moana Blvd., Rm. 3-122 Honolulu. HI 96850

(808)792-9467



April 3, 2017

THOMAS S. WITTEN, FASLA Chairman / Principal	Mr. Aaron Nadig		
R. STAN DUNCAN, ASLA President / Principal	Island Team Manager O'ahu, Kaua'i, North Western Hawaiian Islands, and American Samoa U.S. Department of the Interior Fish and Wildlife Service		
RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Executive Vice-President / Principal			
VINCENT SHIGEKUNI Vice-President / Principal	Pacific Islands Fish and Wildlife Office 300 Ala Moana Boulevard, Room 3-122		
GRANT T. MURAKAMI, AICP, LEED®AP BD+C Vice-President / Principal	Honolulu, Hawaiʻi 96850		
TOM SCHNELL, AICP Principal	Attn: Ms. Leila Gibson, Fish & Wildlife Biologist		
KIMI MIKAMI YUEN, LEED®AP BD+C Principal	SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL		
W. FRANK BRANDT, FASLA Chairman Emeritus	ASSESSMENT – THE KAHALA HOTEL & RESORTS PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039 AND 041		
ANN MIKIKO BOUSLOG, PhD Proiect Director	Dear Mr. Nadig:		
RAMSAY R. M. TAUM Cultural Sustainability Planner	Thank you for your agency's email dated July 21, 2015, and your letter dated October 16, 2015 regarding the subject project (your reference no. 2015-TA-0346). As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter, the information provided, and your office's participation in a field visit on August 14, 2015. After reviewing the preliminary findings from the marine survey and the field visit, the Applicant has decided not to include the dredning of the lagoon fronting the beach as part of the proposed beach		
RAYMOND T. HIGA, ASLA Senior Associate			
CATIE CULLISON, AICP Senior Associate	enhancements.		
SCOTT MURAKAMI, ASLA, LEED®AP Associate	We appreciate the information provided on the lack of a federally designated critical habitat within the immediate vicinity of the proposed project, as well as the information provided on endangered, threatened and protected species that could be impacted by the proposed landscaping of the land-side portion of the beach. We also appreciate the information on landscape materials and Best Management Practices regarding sedimentation and erosion control.		
DACHENG DONG, LEED®AP Associate			
MARC SHIMAT SU, ASLA Associate			
	We appreciate your participation in the environmental review process. Your letter and relevant information will be included in the Draft Environmental Assessment (EA).		
	Sincerely,		

PBR HAWAII

Vince R. Shigh

Vincent Shigekuni Vice President

O:Job31/3156.01 Kahala Hotel & Resort Beach Plng/EA/Pre-Consultation/Responses/USFWS (Ltr Dated 10-16-15) response (rev April 2017).docx

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PLANNING + LANDSCAPE ARCHITECTURE + ENVIRONMENTAL STUDIES + ENTITLEMENTS / PERMITTING + GRAPHIC DESIGN

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU 630 SOUTH BERETANIA STREET HONOLULU, HI 96843



August 19, 2015

KIRK CALDWELL, MAYOR

DUANER MIYASHIRO Chair

ADAM C. WONG, Vice Chair THERESIA C. McMURDO DAVID C. HULIHEE KAPUA SPROAT

ROSS S. SASAMURA, Ex-Officio FORD N. FUCHIGAMI, Ex-Officio

Deputy Manager and Chief Engineer

ERNEST Y. W. LAU, P.E. Manager and Chief Enginee

ELLEN E. KITAMURA, P.E.

Mr. Vincent Shigekuni PBR Hawaii & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Your Letter Dated July 6, 2015 Requesting Comments on the Pre-Consultation for an Environmental Assessment for the Kahala Hotel & Resort's Proposed Beach Enhancement - Tax Map Key: 3-5-023: 039, 041 and 001

Thank you for the opportunity to comment on the proposed project.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The proposed project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNES Y. W. LAU. P.E. Manager and Chief Engineer

PBR HAWAII

April 3, 2017

Mr. Ernest Y.W. Lau, P.E.

Board of Water Supply

Manager and Chief Engineer

City and County of Honolulu

Attn: Mr. Robert Chun, Project Review Branch, Water Resources Division

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT - THE KĀHALA HOTEL & RESORT'S PROPOSED

BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

Thank you for your letter dated August 19, 2015 regarding the subject project. As the

planning consultant for The Kāhala Hotel & Resort, we want to thank you for your

We appreciate your participation in the environmental review process and for your

Your letter will be included in the Draft EA. We will send you a copy of the Draft EA

630 South Beretania Street

Honolulu, Hawai'i 96843

THOMAS S. WITTEN, FASLA Chairman / Principa

Executive Vice-President / Princing

R. STAN DUNCAN, ASLA President / Principa

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C

VINCENT SHIGEKUNI

Vice-President / Principal GRANT T. MURAKAMI, AICP, LEED®AP BD+C

Vice-President / Principal TOM SCHNELL, AICP

Principal

KIMI MIKAMI YUEN, LEED®AP BD+C W. FRANK BRANDT, FASLA

Chairman Emer

ANN MIKIKO BOUSLOG, PhD Project Directo

RAMSAY R. M. TAUM inability Planner Cultural Susta

RAYMOND T. HIGA, ASLA

CATIE CULLISON, AICP

SCOTT MURAKAMI, ASLA, LEED®AP Associate

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA Associate

Sincerely,

letter.

comments.

PBR HAWAII

when it is available.

Dear Mr. Lau:

Vincent Shigekuni Vice President

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-563 ax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com

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DEPARTMENT OF PARKS & RECREATION

CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707 Phone: (808) 768-3003 • Fax: (808) 768-3053 Website: www.honolulu.gov





July 16, 2015

Mr. Vincent Shigekuni, Vice President PBR Hawaii & Associates 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

SUBJECT: Pre Consultation for an Environmental Assessment Kahala Hotel & Resort's Proposed Beach Enhancements TMK: 3-5-023 Portions of 039, 041 and 001

Thank you for the opportunity to review and comment at the Pre-Consultation stage of the Environmental Assessment for the Kahala Hotel & Resort's proposed beach enhancements.

The Department of Parks and Recreation has no comment, as the proposed project will have no impact on any of our program or facilities. You may remove us as a consulted party to the balance of the EIS process.

Should you have any questions, please contact Mr. John Reid, Planner at 768-3017.

Sincerely.

Michele K, Nekota Director

MKN:jr (616070)



April 3, 2017

Ms. Michele K. Nekota, Director

City and County of Honolulu

Honolulu, Hawai'i 96707

Attn: Mr. John Reid

1000 Uluohia Street, Suite 309

Department of Parks and Recreation

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL

ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED

BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

Thank you for your letter dated July 16, 2015 regarding the subject project. As the

planning consultant for The Kāhala Hotel & Resort, we want to thank you for your

We appreciate your participation in the environmental review process, and your input

that your Department has no comments as the proposed project will have no impact any

of your programs or facilities. Your letter will be included in the Draft Environmental

Assessment (EA). As requested, we will remove your Department as a consulted party

THOMAS S. WITTEN, FASLA Chairman / Principal

MICHELE K. NEKOTA

DIRECTOR

JEANNE C ISHIKAWA

DEPUTY DIRECTOR

R. STAN DUNCAN, ASLA President / Principal

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Executive Vice-President / Principal

VINCENT SHIGEKUNI

Vice-President / Principal GRANT T. MURAKAMI, AICP, LEED®AP BD+C

Vice-President / Principal TOM SCHNELL, AICP

Principal KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Dear Ms. Nekota:

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associate CATIE CULLISON, AICP

Senior Associate SCOTT MURAKAMI, ASLA, LEED®AP Associate

DACHENG DONG, LEED®AP Associate MARC SHIMATSU, ASLA

Associate

Sincerely,

letter.

PBR HAWAII

to the balance of the EA process.

Vincent Shigekuni Vice President

O:\Job31\3156.01 Kahala Hotel & Resort Beach Plng\EA\Pre-Consultation\Responses\DPR response (rev April 2017).docs

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DEPARTMENT OF PLANNING AND PERMITTING CITY AND COUNTY OF HONOLULU 650 SOUTH KING STREET. 7TH FLOOR • HONOLULU, HAWAII 96813

650 SOUTH KING STHEET, /**FLOOH + HONOLULU, HAWAII 96813 PHONE: (808) 768-8000 • FAX: (808) 768-6041 DEPT. WEB SITE: <u>www.honoluludpp.org</u> • CITY WEB SITE: <u>www.honolulu.gov</u>

KIRK CALDWELL MAYOR



GEORGE I. ATTA, FAICP DIRECTOR

ARTHUR D. CHALLACOMBE DEPUTY DIRECTOR 2015/ELOG-1361(ST) 2014/MOD-93 94/PRU-4

July 29, 2015

Mr. Vincent Shigekuni PBR HAWAII & Associates, Inc. 1001 Bishop Street, ASB Tower, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

SUBJECT: Pre-consultation for an Environmental Assessment (EA) Kahala Hotel and Resort Proposed Beach Enhancements 5000 Kahala Avenue Tax Map Keys: 3-5-23: 39, 41, and 1

This is in response to your July 6, 2015 requests for comments regarding the Kahala Hotel and Resorts plans for various developments on the makai side of the existing hotel. The required environmental disclosure document should include the information identified below:

- Portions of the project are within the Special Management Area (SMA) and the Shoreline Setback. The EA should address compliance with the requirements, policies and objectives of Chapter 205A, Hawaii Revised Statutes, and Chapters 23 and 25 of the Revised Ordinances of Honolulu related to the Shoreline Setback area and the SMA.
- The EA should address the existing land uses along the coast and include a discussion of existing and proposed infrastructure including intake systems for the salt water ponds maintained on the property as well as other structures in the shoreline setback area.
- 3. The Draft EA (DEA) should describe how the proposed project implements the East Honolulu Sustainable Communities Plan vision and policies.
- We note that there is a sewer line near or in the project area. We recommend that the Department of Environmental Services by included in the environmental review.
- 5. The DEA should include an analysis of the possible impact of sea level rise on the project. If it is likely that sea level rise will increase the risk of flooding and/or coastal erosion during the life of the project structures, the DEA should discuss how the design of the project and proposed operations at the project site will

Mr. Vincent Shigekuni July 28, 2015 Page 2

address that risk and provide resilience in recovering from any flooding and/or coastal erosion. The national standard for making such project assessments has been developed by the United States Army Corps of Engineers (USACE).

The USACE issued an Engineering Circular (EC 1165-2-212) on December 13, 2013, which provides "guidance for incorporating the direct and indirect physical effects of projected future sea level change across the project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects." The circular can be used as the basis for assessing the "potential relative sea level change" that might be experienced by projects in shoreline areas, and is required to be used for all USACE civil works. More recently, USACE has provided online tools which can be used to adapt the circular's guidance to reflect historic sea level rise conditions measured at the Honolulu National Oceanic and Atmospheric Administration (NOAA) tidal gauges. The tool can be used to potential relative sea level change from the present to 2100. The on-line sea level alculator is available at

<u>http://www.corpsclimate.us/ccaceslcurves.cfm</u>. For further details on how the Engineering Circular and local tidal gauge information could be used to assess sea level rise risk for a local project, contact Mr. Michael Wong, Chief, Engineering and Construction Technical Branch, Army Corps of Engineers, Honolulu District (808-835-4138).

Should you have any questions, please contact Ardis Shaw-Kim of our staff, at 768-8021.

Very truly yours. George I. Atta, FACP Director



April 3, 2017

 THOMASS WITTEN INSLA Chairman / Principal
 Ms. Kathy Sokugawa, Acting Director

 RSIND DUNCAN, ASLA President / Principal
 Department of Planning and Permitting City and County of Honolulu

 RUSSELI X1 CHING, FASLA, LIED^APIDAC Executive Vice-President / Principal
 650 South King Street, 7th Floor Honolulu, Hawai'i 96813

Vice-President / Principal

GRANT T. MURAKAMI, AICP. LEED"AP BD+C Attn: Ms. Ardis Shaw-Kim Vice-President / Principal

TOM SCHNELL, AICP Principal

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA

CATIE CULLISON, AICP

DACHENG DONG, LEED®AP Associate MARC SHIMATSU, ASLA

Senior Associate

Senior Associate SCOTT MURAKAMI, ASLA, LEED®AP

Associate

Thank you for your agency's letter dated July 29, 2015 (your reference number 2015/ELOG-1361(ST)) regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter.

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL

ASSESSMENT - THE KĀHALA HOTEL & RESORT'S PROPOSED

BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

We appreciate your participation in the environmental review process and for identifying the information that should be included in the Draft Environmental Assessment (EA).

Your letter will be included in the Draft EA. We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Dear Ms. Sokugawa:

Vince R. Shigh

Vincent Shigekuni Vice President

HONOLULU OFFICE 1001 Bishop Street, Suite 650 Honolulu, Hawai'i 96813-3484 Tel: (808) 521-5631 Fax: (808) 523-1402 E-mail: sysadmin@pbrhawaii.com O:Job31\3156.01 Kahala Hotel & Resort Beach Plng\EA\Pre-Consultation\Responses\DPP response (rev April 2017).docx

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DEPARTMENT OF TRANSPORTATION SERVICES CITY AND COUNTY OF HONOLULU 650 SOUTH KING STREET, 3RD FLOOR HONOLULU, HAWAII 96813 Phone: (808) 768-3305 + 1967; 400 + 1047; 400 + 1007; 400 + 1007; 400 + 1007; 400 + 1007; 400 + 1007; 400 + 1007; 400 + 1007; 400 + 1007; 400 + 1007; 400 + 1007; 4007

Thone. (000) 708-0303 • Pax. (000) 70

KIRK CALDWELL MAYOR



MICHAEL D. FORMBY DIRECTOR MARK N. GARRITY, AICP DEPUTY DIRECTOR

July 28, 2015

TP7/15-616210R

Mr. Vincent Shigekuni Vice President PBR HAWAII & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

SUBJECT: Pre-Consultation for Draft Environmental Assessment (DEA) for The Kahala Hotel & Resort's Proposed Beach Enhancements, Kahala, Oahu, Hawaii

In response to your letter dated July 6, 2015, we have the following comments:

- The DEA should include a Traffic Management Plan, which discusses traffic impacts the project may have on any surrounding City roadways, including short-term impacts during construction and measures to mitigate these impacts.
- 2. The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus), etc., 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.
- 3. Any 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.
- A street usage permit from the City's Department of Transportation Services should be obtained for any construction-related work that may require the temporary closure of any traffic lane or on-street parking spaces on a City street.

Mr. Vincent Shigekuni July 28, 2015 Page 2

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



April 3, 2017

THOMAS S. WITTEN, FASLA Chairman / Principal

R. STAN DUNCAN, ASLA President / Principal

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C Executive Vice-President / Principal

VINCENT SHIGEKUNI Vice-President / Principal

GRANT T. MURAKAMI, AICP, LEED*AP BD+C

Vice-President / Principal TOM SCHNELL, AICP

Principal

KIMI MIKAMI YUEN, LEED®AP BD+C Principal

W. FRANK BRANDT, FASLA Chairman Emeritus

ANN MIKIKO BOUSLOG, PhD Project Director

RAMSAY R. M. TAUM Cultural Sustainability Planner

RAYMOND T. HIGA, ASLA Senior Associate

CATIE CULLISON, AICP Senior Associate

SCOTT MURAKAMI, ASLA, LEED*AP Associate

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA Associate Mr. Mark Kikuchi, Acting Director Department of Transportation Services City and County of Honolulu 650 South King Street, 3rd Floor Honolulu, Hawai'i 96813

Attn: Ms. Renee Yamasaki

Dear Mr. Kikuchi:

Thank you for your agency's letter dated July 28, 2015 (reference number TP7/15-616210R) regarding the subject project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank you for your letter.

We appreciate your participation in the environmental review process and your input that:

- The DEA should include a Traffic Management Plan.

- The area Neighborhood Board, residents, businesses, emergency personnel, etc. should be kept apprised of the details of the project and potential impacts, especially during construction.
- Any construction materials and equipment should be transferred to and from the project site during off peak traffic hours.
 - A street usage permit from DTS should be obtained for construction-related work that may require temporary closure of any traffic lane or sidewalk area on a City street.

Your letter will be included in the Draft Environmental Assessment (EA). We will send you a copy of the Draft EA when it is available.

Sincerely,

PBR HAWAII

Vince R. Shigele

Vincent Shigekuni Vice President

O: Job313156.01 Kahala Hotel & Resort Beach Plng/EA/Pre-Consultation/Responses/DTS response (rev April 2017) docx

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HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street Honolulu, Hawaii 96813-5007 Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd



July 22, 2015

Mr. Vincent Shigekuni Vice President PBR HAWAII & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

KIRK CALDWELL MAYOR

> Subject: Preconsultation for an Environmental Assessment The Kahala Hotel and Resort's Proposed Beach Enhancements Tax Map Keys: 3-5-023: Portions of 001, 039, and 041

In response to your letter dated July 6, 2015, regarding the above-mentioned subject, the Honolulu Fire Department determined that there will be no significant impact to fire department services.

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

Sincerely,

With Yasen KEITH YASUL

Acting Assistant Chief

KY/SY:jl



April 3, 2017

Mr. Keith Yasui

636 South Street

Acting Assistant Chief

THOMAS S. WITTEN, FASLA Chairman / Principal

MANUEL P. NEVES FIRE CHIEF

LIONEL CAMARA JR DEPUTY FIRE CHIEF

R STAN DUNCAN, ASLA President / Principal RUSSELL Y, LCHUNG, FASLA, LEED'APBD-C Executive Vice-President / Principal VINCENT SHIGEKUN Vice-President / Principal GRANTT MURAKAMI, AICD LED'APBD-C Vice-President / Principal

GRANTT.MURAKAMI, AICP. LEED"AP BD+C Honolulu, Hawaiʻi 96813-5007 Vice-President / Principal

Honolulu Fire Department

City and County of Honolulu

Attn: Battalion Chief Terry Seelig

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL ASSESSMENT – THE KĀHALA HOTEL & RESORT'S PROPOSED BEACH ENHANCEMENTS – TMK 3-5-023 PORTIONS OF 039 AND 041

Thank you for your letter dated July 22, 2015 regarding the subject project. As the

planning consultant for The Kāhala Hotel & Resort, we want to thank you for your

We appreciate your participation in the environmental review process, and your input

that the proposed project should have no significant to Fire Department services. Your

letter will be included in the Draft Environmental Assessment (EA).

ANN MIKIKO BOUSLOG, PhD Dear Assistant Chief Yasui:

letter.

Sincerely,

RAMSAY R. M. TAUM Cultural Sustainability Planner

KIMI MIKAMI YUEN, LEED®AP BD+C

W. FRANK BRANDT, FASLA

Chairman Emeritus

Project Directo

•

TOM SCHNELL, AICP Principal

Principal

RAYMOND T. HIGA, ASLA Senior Associate

CATIE CULLISON, AICP

SCOTT MURAKAMI, ASLA, LEED®AP Associate

DACHENG DONG, LEED®AP Associate

MARC SHIMATSU, ASLA Associate

Vince R. Shigh

Vincent Shigekuni Vice President

PBR HAWAII

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POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU 801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813

TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

KIRK CALOWELL MAYOR



OUR REFERENCE MT-DK

July 16, 2015

Mr. Vincent Shigekuni PBR HAWAII & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

This is in response to your letter of July 6, 2015, requesting comments on the Pre-Consultation, Environmental Assessment, for the Kahala Hotel & Resort's proposed beach enhancements project.

Based on the information provided, this project should have no significant impact on the service or operations of the Honolulu Police Department at this time.

If there are any questions, please call Major Lester Hite of District 7 (East Honolulu) at 723-3369.

Thank you for the opportunity to review this project.

Sincerely,

LOUIS M. KEALOHA Chief of Police

unsmuss By U

MARK TSUYEMURA Management Analyst VI Office of the Chief



April 3, 2017

THOMASS, WITTEN, FASLA Chairman / Principal

LOUIS M. KEALOHA

CHIEF

DAVE M. KAJIHIRO MARIE A. MCCAULEY DEPUTY CHIEFS

R. STAN DUNCAN, ASLA President / Principal

RUSSELL Y. J. CHUNG, FASLA, LEED®AP BD+C

VINCENT SHIGEKUNI Vice-President / Principal

Executive Vice-President / Principal

Chief Louis M. Kealoha Police Department City and County of Honolulu 801 South Beretania Street Honolulu, Hawai'i 96813

Attn: Major Lester Hite, District 7 (East Honolulu)

SUBJECT: PRE-CONSULTATION FOR AN ENVIRONMENTAL

ASSESSMENT - THE KĀHALA HOTEL & RESORT'S PROPOSED

BEACH ENHANCEMENTS - TMK 3-5-023 PORTIONS OF 039 AND 041

Thank you for your letter dated July 16, 2015 (reference MT-DK) regarding the subject

project. As the planning consultant for The Kāhala Hotel & Resort, we want to thank

We appreciate your participation in the environmental review process, and your input

that the proposed project should have no significant impact on the service or operations

of the Honolulu Police Department at this time. Your letter will be included in the Draft

GRANT T. MURAKAMI, AICP, LEED®AP BD+C

Vice-President / Principal TOM SCHNELL, AICP

Principa KIMI MIKAMI YUEN, LEED®AP BD+C Principal W. FRANK BRANDT, FASLA

Dear Chief Kealoha:

you for your letter.

ANN MIKIKO BOUSLOG, PhD RAMSAY R. M. TAUM Cultural Sustainability Planner

Chairman Emeritu

Project Director

RAYMOND T. HIGA, ASLA enior Assoc

CATIE CULLISON, AICP SCOTT MURAKAMI, ASLA, LEED®AP

DACHENG DONG, LEED®AP

MARC SHIMATSU, ASLA

Sincerely, PBR HAWAII

Environmental Assessment (EA).

Vincent Shigekuni Vice President

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Serving and Protecting With Aloha

Appendix B

Figures

Figure 1 - Regional Location Map Figure 2 - Tax Map Key Figure 3 - State Land Use Map Figure 4 - Zoning Map Figure 5 - Special Management Area Map Figure 6 - Site Map Figure 7 - Conceptual Landscape Plan Figure 8 - East Honolulu SCP Urban Land Use Map Figure 9 - Topographical Map Figure 10 - NRCS Soil Survey Map Figure 11 - Flood Insurance Map This page intentionally left blank.



Approximate Project Limits

Figure 1 Regional Location Map The Kāhala Hotel & Resort

The Kāhala Hotel & Resort North Linear Scale (feet)

orth Linear Scale (feet)



Island of O'ahu

Source: ESRI Online Basemap. City and County of Honolulu (2015). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis



Resort/PDF/Figures

ahala

Q:\0a

Approximate Project Limits

Figure 2 Tax Map Key The Kāhala Hotel & Resort

The Kāhala Hotel & Resort North Linear Scale (feet) 100





Island of O'ahu





Figure 3 State Land Use Distircts The Kāhala Hotel & Resort

The Kāhala Hotel & Resort North Linear Scale (feet)





Island of O'ahu

Source: State Land Use Commision (2014). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis



PDF Path:

P-2 Preservation



Source: City and County of Honolulu (2015). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.



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LEGEND



Figure 5 Special Management Area The Kāhala Hotel & Resort

The Kāhala Hotel & Resort North Linear Scale (feet)





Island of O'ahu

Source: City and County of Honolulu (2011). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis. This page intentionally left blank.



LEGEND Approximate Project Limits Tax Map Key Parcel

Figure 6: Site Map The Kāhala Hotel & Resort The Kāhala Hotel & Resort North Linear Scale (feet)







Legend

- Certified Shoreline
 Shoreline Setback
 Ocean Recreation Management Areas
 Possible Wedding Site
 - Canopy Tent
 - 🔢 Cabana Lounger

Source: City and County of Honolulu (2014). Pictometry Aerial (2013). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.





undary interpretations or other spatial analysis

LEGEND



Figure 8 East Honolulu SCP Urban Land Use Map The Kāhala Hotel & Resort

The Kāhala Hotel & Resort North Linear Scale (feet) 0 600 1,200



Island of O'ahu

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Figure **9** Topography The Kāhala Hotel & Resort The Kāhala Hotel & Resort Island of O'ahu

North









Approximate Project Limits
 BS: Beaches
 JaC: Jaucas sand, 0 to 15 percent slopes
 KmA: Keaau clay, 0 to 2 percent slopes
 Ph: Pearl Harbor clay
 W: Water > 40 acres

Figure 10 NRCS Soil Survey The Kāhala Hotel & Resort

The Kāhala Hotel & Resort North Linear Scale (feet) 0 150 3





Island of O'ahu

Source: U.S. Department of Agriculture Natural Resources Conservation Service (1972). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.



LEGEND Approximate Project Limits Flood Zones AE: 1% Annual Chance Flood AEF: Floodway VE: Coastal Flood Zone X: Outside 0.2% Annual Chance Flood

Figure 11 Flood Insurance Rate Map The Kāhala Hotel & Resort

The Kāhala Hotel & Resort North Linear Scale (feet) 0 100 200



Island of O'ahu

Source: Federal Emergency Management Agency Digital Data (2011). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.

Appendix C

Cultural Impact Assessment

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A CULTURAL SURVEY FOR THE ENVIRONMENTAL ASSESSMENT OF THE KĀHALA HOTEL & RESORT BEACH FRONT RENOVATIONS

September 2, 2015

OVERVIEW

A brief ethno-history of the area known as Wai'alae-Kahala was conducted using public resources and publications [This is attached as appendix 1]. The proposed area to be impacted could be part of a historical trail however information on the precise location of the trail is vague and it is assumed that the trail might be a coastal trail that follows the geography of the beach/shoreline. No other sites or events were discovered to be directly located to the project area. The district/region has several sites and events that can be associated with the surrounding areas that are of historic and cultural interest, but not on or associated with the proposed project area.

A series of consultations were held with various community groups and individuals for public input, enhancing and confirming the historical and ethnographic research - included were long term employees of the hotel resort. [This is attached as appendix 2].

A site and walking survey was conducted of the proposed area. Due to the high level of commercial and hotel related activities, especially over a long period of time, there are limited cultural resources for practitioners and activities to be conducted in this particular area. Two fishermen were observed to be reel fishing possibly for baby mullet. A school of the small fish was observed in the existing lagoon. The reef area is known for he'e (squiding), and a partially submerged fishing shrine is said to be near but outside of the area. There was a two-three man fiber casted outrigger canoe on site and surf boards that are probably part of the hotel's guest activities program. Weddings that emphasize a Hawaiian cultural theme are depicted in informational material about the hotel's activities. No endangered animals, plants or marine life were seen during the survey but a native heron and fairy tern birds have been sighted in the surrounding and neighboring area.

It appears the design and shape of the existing lagoon has less beach erosion in comparison to the shoreline of the neighboring golf course and apartment complex. Tides have caused major erosion into the compacted coral beneath an exposed historic level of red and black lava. A possible traditional or historic sharpening stone was found in that eroded layers. Sand used for the shoreline was imported from the island of Moloka'i and could have cultural and historic material in it and this might require archeological monitoring, but this survey found nothing on the exposed beach.

1. Affected Parties

Both written and or published documentation as well as verbal consultations confirm the main cultural activity of the proposed area is fishing. It is apparent that any other traditional and or cultural activities in the proposed area have [not?] been initiated for guests. Anyone fishing and or gathering/harvesting on the reef will be impacted by the removal and replacement of sand. If the lagoon is deepened closer to finging reef it could actually attract fish closer to the shore and benefit marine life on the reef. As cultural activities in the area are mostly related to the hotel activities and programs, they would be impacted during the duration of any renovation. As of this writing, The Kahala Hotel & Resort is not proposing dredging of the channel fronting this particular beach. No one consulted could verify that there were any other public or non-hotel resort cultural activities in memory or present.

2. A Cultural Plan

Although a cultural plan is not a requirement, the renovation of the proposed area offers the potential and possibly of incorporating some historical and cultural features: the restoration or theme of the historical trail, water features in the area that made the district known for traditional hospitality, the increased use of native plants, and walkway materials that encourage use and are ADA-compliant. At appropriate sites, signage can be used to point out the surrounding history and features. The use of Hawaiian language for the trail and features would be desirable.

Several people consulted suggested several recommendations concerning the proposed project area and for the hotel resort in general: restoration of the island with more landscaping and theme that enhances the shore and cocean view. The use of covered awnings for guests who do not want to sunbathe but who want to take in the view and the use of torches (gas, solar, electric) to light up the area during the evening.

Some employees liked the multilingual greetings to guests and wished the idea could be expanded to more frequent phrases such as morning, noon and evening greetings linked to majority guest languages so that all can increase their language skills and hospitality. Several were intrigued by the ethnographic history and would like to learn more and some wished there were more Hawaiian hospitality in-service training.

The employees consulted were very proud of their Hawaiian and local heritage. Others consulted remembered fondly of the hotel resort when it was neighbor/community-oriented and that it gave the area a sense of place.

3. Conclusions and Recommendations

I find no compelling cultural and or historical activates, features or events that would impede the proposed project from proceeding. This is in agreement with the archeological study provided for this project. As pointed out in section 2, there is potential on the part of this project to improve cultural and historic awareness and education, and this would be beneficial to both hotel guests and the general public who utilize the area.

APPROVAL AND AUTHORITY TO PROCEED

We approve the project as described above, and authorize the team to proceed.

Name	Title	Date
The Rev. Dr. Malcolm Nāea Chun, PhD.	Cultural Consultant	9/5/2015

Macalillault 9/5/2015 Approved By Date Approved Date By

Appendix 1

A Brief Ethno-history of Waialae-Kahala

"The Kāhala continues the royal tradition of hospitality."

One of the earliest references (pre-contact or 1778) to the area describes the war the high chief Alapa"i against the chiefs of the island of O'ahu. He was determined to find where his canoe fleets could safely land and was told that Wai'alae and Waikīkī were good harbors. According to the nineteenth century Hawaiian historian, Samuel M. Kamakau, "Alapa'i attempted to land at Waikiki, but encountered so much difficulty that he decided to go on to Wai'alae. Here he was driven back by the warriors of Kanaha-o-ka-lani, the six-year old son of Ka-pii-oho-o-ka-lani who had succeeded his father" (*Ruling Chiefs*, 1992, 71)

Another nineteenth century writer and an attendant of Liholiho, later King Kamehameha II, John Papa 'Ī'ī noted that Wai'alae "together with all the large '*ili kupono* within the lands of the king [were awarded] to Kaahumanu [the political and favourite wife of Kamehameha]."



Honolulu. Joseph Marie de La Passe, 1855 (Fitzpatrick, *The Early Mapping of Hawai'i*, 1986, 82-83) Wai'alae is to the left with coconut trees and some houses and features and Wailupe fishpond is to the right.

There are certain features of the area that made it an attractive place especially for travellers. One was its strategic location where trails from Honolulu merged before heading along to the eastern side of the island. Wai'alae is to the left and Wailupe fishpond is to the right.

Environmental Features: Springs, Trails and Fishing

John Papa 'Î'î wrote that there were three trails during his time that lead from Honolulu and ended at the mouth of the Waialae stream and merged into one that lead to Maunalua Bay. (Fragments of

Hawaiian History, 1959, 92 & 94) He also mentions the name Kahala in describing the seaward (makai) of the trail. As for the upland (mauka) trail he wrote, "From there it went down to, and along side the upper side of, the taro patched sand the pools of Waialae to join the other trails at the sand and [to] go along Keahia and on to Maunalua... (94)

In ancient Hawaiian traditions those water features were discovered or created by the gods. In a rarely cited account version of the travels of the gods Kāne and Kanaloa, who created the water sources for the windward side of O'ahu, are also created with the finding of springs along the eastern shores, too:

"According to some rough notes made by the ethnographer Emma Beckley [Emma Kailikapuolono Metcalf Beckley Nakuina] (Beckley n.d. Hawai'i State Archives), the gods were at Hanauma in Maunalua, traveling west. When they reached Kuli'ou'ou, Kanaloa took some 'awa from the sacred grove at the base of Kuli'ou'ou Ridge. This grove was watched over by a mo'o, a supernatural creature that could change form (a form like a crocodile [more like a lizard, e.n.]) called Lupe. Thus the spring was called 'Elelupe, the 'ele of Lupe. The word 'ele means "a water hole, dark spring covered with growth" (Pukui and Elbert 1986:40). This is probably the same spring Frank (1958:22) called Kanewai ("the water of Kāne"). Kanaloa took some of the 'awa he got from Lupe's 'awa grove and traveled to Wailupe. There he again demanded water from his brother. Kane struck the coral shelf and the water gushed up. Beckley calls this Wailupe Spring, and gives a different translation for Wailupe than most other ethnographers. She says Wailupe means "water of Lupe" since the spring was made for water to mix with the 'awa from Lupe's sacred grove. This spring is probably one of the two springs, Punakou or Puhikahi, at the coast near Wailupe Pond. Kane left his sleeping brother the next morning and walked to Wai'alae where he met the goddess Ka-'alae-nui-a-Hina, who could take the form of an 'alae bird. A boy and his sister, named Keahia, whose parents had been lost at sea lived with their grandmother on the border of Wai'alae and Wailupe. They had to walk far inland to Wai'alae Stream to get water, and Hina pleaded with Kane to create a spring in Wai'alae for them. Kane struck the earth and Wai'alae Nui Spring (near the northern border of the Wai'alae Golf Course) was created." (Cultural Surveys Hawai'i, "Archaeological Literature Review . . . " 4/2009)

According to Bishop Museum ethnographer E.S. Craighill Handy in his 1940 publication on traditional Hawaii agriculture, "The *ahupua'a* [Wai'alae] takes its name from the stone-encased spring, which may be seen today (*Native Planters, Vol. 1,* 1940) just above the highway. From the spring runs a stream which watered terraces that are now largely covered with grass raised for dairying and the golf links. (74)

This corroborates a story from the Hawaiian Ethnological Notes of the Bishop Museum Archives that reports that the Wai'alae spring ". . . supplied water for the chiefs from olden times. The location had been lost for many years. During a tour of the island by Kamehameha III, the King became thirsty and inquired of an old couple who were living at Waialae where he could get water to drink. It happened that the ancestors of these old people were the keepers of this water hole, and they duty descended to them. They said that the only reason they stayed there was so that when the King stopped there they might carry out their duty and reveal the location to him. This hole was covered with pohuehue and

under the pohuehue was a large slab of stone covering the water. (Edgar Henriques Collection, HEN: Vol 1, p 1108 taken from Cultural Surveys Hawai'i, "Archaeological Literature Review . . . " 4/2009)

Two springs were identified in 1920 by J. M. Mokumaia, a prolific writer to the Hawaiian language newspaper $K\bar{u}'oko'a$ when he visited the area. He wrote

There are two springs, one . . . is on Waialaeiki. . . . there is much water . ("Aekai o Waialae-nui a me Waialae-iki", 1920) Mokumaia also reported that "Kamamalu¹ was Waialae-iki's konohiki of fishing. There were ever so many people on the shores when these chiefs came to spend a while with the common people. . . . There was the pool that Kamamalu used to bathe in." And that "Paki² was Waialae-nui's konohiki of fishing."

Mokumaia identifies HRH Victoria Kamāmalu and Abner Pākī as the konohiki (overseers) of the fishing grounds for the Kingdom. In 1857 according to law the konohiki-overseers had to report to the Office of the Kālai'āina (Prime Minister) from their respective district ('ili 'āina) what fish or fishes were prohibited (kapu) from over fishing. It reported that for Wai'alae, and the konohiki was L. Kōnia³, the fish was the 'anae or mullet. (*Ka Hae Hawai'i*, January 14, 1857, 184)

This gives credence to the tradition reported in a Hawaiian language newspaper of the "travelling 'anae" around the island of O'ahu:

"The marine resources of Wai'alae are also emphasized in the stories of the 'anaeholo, the traveling mullet of O'ahu. Each year they leave their main habitat in Pearl Harbor and travel in large schools counter-clockwise around the island, till they reach Lā'ie on the north shore and go no further. They stay a few weeks, then turn around and follow the same route home. During these times, the Hawaiians exploited the opportunity and caught large numbers of the mullet in nets (Titcomb 1972:64). One of the better places to catch the 'anae-holo was the Wai'alae coast especially just west of Wai'alae at Ka'alawai, near Black Point. M. K. Nakuina (1998b:271) translated the following account:

The home of the anae-holo is at Honouliuli, Pearl Harbor, at a place called Ihuopalaai. They make periodical journeys around to the opposite side of the island, starting from Puuloa and going to windward, passing successively Kumumanu, Kalihi, Kou, Kalia, Waikiki, Kaalawai and so on, around to the of this story, the wife of the chief at Lā'ie grew sick and begged her husband for some of the sweet mullet of 'Ewa from her brother Kaihuopala'ai (the Hawaiian name for the west loch of Pearl Harbor). The husband traveled to 'Ewa and Kaihuopala'ai agreed to send fresh 'ama'ama (mullet) to his sister. Kaihuopala'ai told the husband to travel back to Lā'ie along the Kona coast and the 'ama'ama would be sent after him. The husband thought that he meant that he would send a messenger with the fish after him.

Koolau side, ending at Laie, and then returning by the same course to their starting point. In one version

When the husband of Kaihukuuna reached Kapukaki, (now known as Red Hill), he stopped to rest, anxiously scanning the country behind him to see if he could see the messenger with the fish. He could see no one, and so he hurried on; resting at Kahauiki (Fort Shafter), and then at Kou, Honolulu, Waikiki, Kaalawai, at each halting place looking backward to discover the bearer of the fresh amaama.

When, finally, he arrived at Niu an aged couple who lived near the beach asked the tired wayfarer to stop with them and partake of uwala [sweet potatoes], roasting in an imu [oven]. Glading [sic] accepting their invitation, he was just sitting down to eat when the elemakulekane,--the old man,--looking out at the sea, cried in amazement. The ocean was teeming with fish as far as the eye could see [Henriques 1916]." (Cultural Surveys Hawai'i, "Archaeological Literature Review . . . " 4/2009)

Kahala or Kāhala

The name Kahala or Kāhala is mentioned in mid-nineteenth century writings. John Papa 'Ī'ī mentions the name as where the seaward (makai) trail from Honolulu passes by heading to Wai'alae. (94) And in later Hawaiian newspaper articles it is related to its beach (one) and to fishing.

In a 1862 lament for Lokea it was composed by Kawaihaku of Wai'alae, O'ahu and dated Mar. 14, 1862.

Mai ke one la e Kahala, From the sands (beach) oh Kahala Mai ka makani anu la he Kiu From the cold winds there, the Kiu wind (*Kūoko'a* March 22, 1862)

After the revolution of 1893 that overthrew HM Queen Lili'uokalani, the newspaper reported "the fishing at the fishing waters [sea] of Kahala are restricted . . . ua hookapuia ka lawaia ana ma ke Kai Lawaia o Kahala . . . "Those orders came from J. Heleluhe, the agent of the Chief Lili'uokalani on July 1, 1895. (*Ka Maka'āinana*, July 15, 1895)

The next year (1896) that the fishing rights of Kahala, Wai'alae were turned over to J Aea (Mamuli o ka lilo ana o ke kai lawaia o Kahala, Waialae, ia J. Aea malalo o ka hoolimalima, *Ka Maka'āinana*, Thursday, December 21, 1896)

The Coconut Grove of Wai'alae

Another was the location of "pools" and springs, constant flowing streams that watered farm lands and provided refreshment on this dry leeward side and the famous coconut grove found there. The coconut

¹ Born on November 1, 1838, she was the only daughter of Elizabeth Kina'u. Ka'ahumanu II and her third husband <u>Mataio</u> <u>Kekünäö</u>'a. Through her mother she was granddaughter of King <u>Kamehameha1</u> founder of the kingdom. Her two brothers would later become kings of Hawaii as <u>Kamehameha1</u>. J Nounder of the kingdom. Her two brothers <u>Kamehameha1</u>, the consort of <u>Kamehameha1</u>. J was nameda fater her maternal aunt <u>Queen</u> <u>Kamämalu</u>, the consort of <u>Kamehameha1</u>. J who died in <u>London</u> from the measles. The Christian name Victoria signified the close friendship of the British monarchs and the Hawaiian monarchs. She became Kuhina Nui in 1855 mainly due to her brother, Kamehameha IV's, accension to the throne and the death of her uncle. It is probable that Kamehameha1 II had ment for Keoni Ana to hold the office till his death. She presided over the King's Privy Council. She constitutionally assumed the power of state for a day when her brother Kamehameha IV died leaving no designated heirs in 1864. https://en.wiki/victoria. Kam%Cd%BITmalu

² Päki was a <u>Hawaiian</u> high chief during the reign of King <u>Kamehameha III</u>, the father of <u>Bernice Pauahi Bishop</u>. https://en.wikipedia.org/wiki/P%C4%81k%C4%AB

³ Laura Könia was the mother of <u>Bernice Pauahi Bishop</u>. https://en.wikipedia.org/wiki/K%C5%8Dnia

grove was recalled in the traditional and ancient story of the volcano goddess Pele's younger sister. This younger sister Hi'laka journyed across the islands and it was recited

"he ulu niu no malaila, o Waialae ia [there is coconut grove there, (at) Wai'alae." (He Mooolelo No Hiiakaikapoliopele. Issue 10, *Ka Hōkū o Ka Pākīpīkā*, Thursday, March 20, 1862.)

This was also recalled in a personal lament published in *Ka Hōkū o Ka Pākīpīkā*, November 21, 1861 for Rahaba Kaupea, the wife of G. P. Koekoe

Nana i ka niu o Waialae, Look at the coconut tree(s) of Wai'alae

A brief note was reported in the newspaper Kūoko'a that

At the Coconut Gove of Wai'alae. – We heard that this past Wednesday, the Honorable Mrs. Pauahi Bishop⁴ of here in Honolulu, moved to that coconut grove mentioned above for several enjoyable and restful days as the winds and dust ransack the town.

AIA I KA ULU NIU O WAIALAE.—Ua lohe mai makou, ma ka Poakolu iho nei, ua haalele iho ka Mea Hanohano Mrs. Pauahi Bihopa ia Honolulu nei, a ua nee aku la ma kela ulu niu maluna ae e hoonanea iho ai no keia mau la, oiai ka makani a me ka lepo e kuekaa nei i ke kulanakauhale. *Ka Nūpepa Kū'oko'a*, April 4, 1868



1883 Jackson Map (Pacific Legacy Assessment Report, 8/2015)

The circle of palm trees left of the "Project Area" to the right of the stream could be this famous grove of coconut trees of Wai'alale.

A writer to a Hawaiian language newspaper, *Ke Au 'Oko'a*, B. V. Kalanikuihonoinamoku of neighboring district of Kauala'a, Wailupe, Oahu, wrote on July 24, 1865 a letter describing this leeward coast and why the chiefs liked to visit it.

Over at Wai'alae is a site called Kaluaonou [KaluaoNou]. This a place most favoured by the chiefs for the fine, gentle and refreshing breeze that exposes the coconut leaves. A fine house was built for the chiefs and as a place to remember those chiefs who have departed. The beverage [renown] is the fresh coconut water and its soft flesh [from the shell]. And Wai'alae is also known for its break waters . . .

7

Aia ma Waialae, he wahi i kapaia ka inoa o Kaluaonou, he wahi hoi keia i makemake nuiia e na'lii, no ka oluolu nahenahe makalii o ka makani e hue ana i ka lau o ka niu, ua kukulu ia he wahi hale maikai no na'lii, i wahi hoi e hooluana iho ai na puuwai o na poe Alii i hala e aku i ka make, o ka wai ae no o ka niu-haohao a me ka io palupalu, a o kahi poi kai mai no o Waialae. (July 31, 1865)

Commentary

There are several themes that present themselves from this cultural history. The attraction of water features and the historical trials converge to royal hospitality. This is a cultural theme that can be incorporated into the ground plans that give it a sense of place: the replication of a final trail from Honolulu to Maunalua (Hawaii-Kai) with water features such as the Wai'alae stream and spring that intersect with the trail. A replica of the spring of a large slab of stone covered by põhuehue vines. The tradition sets the idea of royal hospitality because the keepers of the spring were duty bound to maintain and provide the waters to the King and the bathing pool of Kamāmalu that could made as a foot wash for guest coming from the beach and sand to wash and remove the sand before heading to the hotel/resort. Water features such as falling water and natural looking fountains could provide a sense of sound to walker-bys.

The in the upper trail areas native plants with scent such as native gardenia and hibiscus intermixed with introduced scent shrubs such as jasmine could present another sense to guest and visitors well in the lower areas a native caper vine that has a very strong perfume scent can be used for its salt and heat tolerance.

A collection of native and introduced ti, hibiscus and anthuriums can be used to introduce another sense, that of color. Native palms can be used for low maintenance shale trees and native and introduced hala (pandanus) planted in open areas or in planters used along the trail or for distant profiles.

The Kāhala is at the point where the trails meet and merger for travelers to come and pass by. The pools, streams and springs of Wai'alae offer refreshment to royal guests fond in the cool breezes and waving coconut trees. It would appropriate to have the portraits of known Hawaiian royalty associated with the area displayed: Kamehameha III, Kamāmalu, Pākī, Kōnia and Pauahi.

As for the name Kāhala I would propose that the island in the lagoon could a replication of a fishermen's site with a small shelter, hung fishing net, a small tower to observer the sea (kilo) and a shrine to the kāhala fish called a ko'a kāhala on the island (a cairn of stones topped with an image of a kāhala fish). With native palms and a low hedge of native plants and vines this would be a historical silhouette from the beach and the hotel. This theme would be reminder that the area has a tradition linked to fishing.

Special menu items could be developed to involve use of the raised kāhala or kampachi fish as such three appetizers: crevice, poke, sashimi and sushi dishes. Whole fish dishes cooked to order as steamed

⁴ She is the daughter of Pākī and Kōnia, hence her estate had "ownership" of the lands of Wai'alae-Kāhala.

Chinese style (oil, sweet shoyu, ginner, green onion), pan fried, etc.). The raised fish is a descendant of wild or open sea fish so to breed out and control any toxins from feeding, so says the aquafarm literature.

Bar drinks that incorporate coconut water and spring water can be offered as Kāhala drinks. The spring or ki'owai was renowned for the mixing of the fresh spring water and traditional 'awa and then later in historic time with alcoholic or rama (a generic term but could be rum or 'okolehao that were distilled in the islands) that attracted the chiefs to visit Wailupe.

The chiefs visited this region because it offered the same things being offered now: comfort in the breezes and shade and refreshments from the town of Honolulu and the people of Wai'alae-Kahala offered them such royal hospitality.

9

Appendix 2

Wai'alae-Kāhala Community List

Mr. Robson Hind (1hr) Descendant of Hind Ranch family. Did not recall much information about the proposed project area. He has a clearer memory of family properties on Hawai'i Island.

Mrs. Cookie Issacs (.5 hr) Secretary to Danny Kaleikini. She recalled the show opened with hula dancers on the grassy lawn area and Samoan fire dancers using the same area for their performance. She regretted that the hotel has not continued some traditional Hawaiian cultural entertainment for the guests. She didn't know if the hotel had any Hawaiian cultural programmes anymore.

Dr. Paul Cleghorn (.5 hr) A former resident for two years on Keala'olu Ave. He declined being interviewed but said he had just taken a walk along the beachfront (8/5/15) and met a fisherman who had been fishing on the east side of the proposed project who had caught a baby pāpio. He said there was another fisherman who appeared to be fishing for 'oama.

Mr. Peter Apo, OHA O'ahu Trustee (1hr) Mr. Peter Apo, OHA O'ahu Trustee (40min) He was concerned about the permitting process for mixed-use on State land. As an entertainer he noticed the lessening of traditional Hawaiian music associated with the hotel, especially since the ending of the Danny Kaleikini show. He thought the hotel might encourage use of either solo or groups, more frequently. He wondered if human resources had a Hawaiian cultural plan and in-service training for employees about local values and history. He thought a management model like the Hilton Hawaiian Village overseeing the beach front area under a sublease with the State (DLNR) might be adaptive to the Kāhala. He noted that a community guest like himself used to go over to the beach, walk around the grounds and pick up a free drinks, but not recently. He was impressed with the findings of the cultural history of the place and thought that some sort of write up should be done for the employees. He also encourages more Hawaiian culture be used along the lines of the programme of the Royal Lahaina with differences based on availability of funds.

Mrs. Bonnie Stevens, Kama'äina (long-time resident) of Keala'olu Ave and member of the Daughters of Hawai'i. (1 1/2hr) Her family were the second owners of a lot on Keala'olu Ave in the late 1940s. She has vivid memories of the proposed project area prior to the development of the hotel. She recalls much more fishing activity there but no limu (seaweed) gathering as both her grandmother (Hawaiian side of family) and mother were limu gatherers but did not use the area for such. The beach frontage was not a particularly good area for recreation such as swimming because it was rocky and mud flats. When they had a dog they would walk the dog there, and used to visit to view the bird life in the mud flats, such as kõlea, and other shore birds that have not been seen since the mud flats were made into a white sand beach.
She could remember the ranch, farms, chicken and pig farms in the area, especially the associated flies and rats. She could not recall any other cultural or traditional activities in the area, except for fishing. She recalled the streams and the Wilson farms in the upper valley.

"We used to walk the dog where the hotel is now! Used to be a tiny zoo where the houses are now between Kalaniana'ole and golf course. Along with the milking house, 3 cows at a time and big window for viewing. I loved it. Could walk the length of beach from Black Point to practically the park at Wailupe. Crummy swimming, though, except where coral was deliberately removed."

Kāhala Resort Employees (6) (2hr) All confirmed that they have seen fishing activities along the beach shore, breakwater and jutting peninsulas, either pole fishing or spearfishing until recently. Catch that were mentioned were 'oama, ulua, 'oi'o, and pāpio (baby ulua). Several employees had engaged in fishing activities before and some had used the area in their younger days for swimming and recreation. Some noted limu activities before but none could confirm any recent activities, while some thought the reef has become degraded due to stream run off and brown water conditions.

Two employees reported that they had heard staff and guest, over the years, talk about the beachfront sightings of a Hawaiian huaka'i o ka pō or night marchers. Traditionally during a certain night a ghostly procession of ancestors, particularly chiefs, are "seen" to be marching on a traditional trail. It was interesting that this story was confirmed by Mrs. Bonnie Stevens as being told to her by her grandmother who would hear drums at night announcing their arrival and marching. There are no other references to this phenomena occurring. I was not aware of this local tradition and sighting.

Several employees have worked either at restaurants or other operations along the beachfront area. These employees made a number of observations over the years including the declining quality of sand due to runoff of soil and other organic material; an increase in rising tide now covers the reef from view during tide changes; the changing vegetation due to tide erosion and management decisions on use of areas, i.e. low hedges were swept away by waves; and changes to facility operations, i.e. outdoor fitness centre, former chapel, outdoor enclosed cabanas.

Some of the long-time employees recall a time when the resort had a catamaran and paddleboats for use in the lagoon fronting the hotel. They also described how certain cultural events were held at the hotel such as: hukilau and lū'au, Sunday Hawaiian concerts, school hula performances, and a cultural day for Hawaiian arts and crafts and vendors, and even the annual visitation of the Aloha Week Royal Court. Several of them confirmed the use of the grassy area as part of the Danny Kaleikini show and the flood/spotlights from the island to project on to the show. Some reminisced of torches lining the beachfront and how they appeared in the evening. Most acknowledge a conflict between beach activities and open space; some were concerned that the engagement policy between workers and guest has some impact on the guests' appreciation of the view and beachfront disturbing their relaxation and enjoyment.

Employees were impressed with facts about the area that they were not aware of or that enlarged their scope of knowledge, i.e. springs, pre-contact traditions and monarchy period.

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Appendix D

Archaeological Assessment

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DAVID Y. IGE GOVERNOR OF HAWAII





STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION KAKUHIHEWA BUILDING 601 KAMOKILA BLVD, STE 555 KAPOLEI, HAWAII 96707

July 5, 2016

Paul Cleghorn, PhD Pacific Legacy 30 Aulike St, Suite 301 Kailua, HI 96734

Dear Dr. Cleghorn,

SUBJECT:

Log No. 2016.01589 Doc. No. 1607KM08 Archaeology

IN REPLY REFER TO:

Chapter 6E-42 Historic Preservation Review – Archaeological Assessment for Beachfront Improvements at the Kahala Hotel and Resort Wai'alae Iki Ahupua'a, Honolulu (Kona) District, Island of O'ahu TMK: (1) 3-5-023:001 por., 039 por., and 041

Thank you for the opportunity to review the revised report titled Archaeological Assessment for the Proposed Beachfront Improvements at the Kahala Hotel & Resort, Wai 'alae Iki Ahupua 'a, Honolulu (Kona) District, Island of O'ahu, TMK: (1) 3-5-023:001, 039, and 041 (Fechner et al., September 2015). The State Historic Preservation Division (SHPD) received the original draft report on September 14, 2015 and requested revisions on October 19, 2015 (Log No. 2016.03437, Doc. No. 1510JSA01). SHPD also received a pre-consultation request for an environmental assessment regarding the beachfront improvements (July 8, 2015; Log No. 2015.02629). We received the revised report on July 5, 2016.

The archaeological inventory survey (AIS) was completed at the request of PBR Hawaii & Associates, Inc., on behalf of the project proponent, the Kahala Hotel & Resort. The project area includes portions of Parcels 001 and 039 owned by the Bernice Pauahi Bishop Estate Trust (Kamehameha Schools), and all of Parcel 041 (beachfront) owned by the State of Hawaii. The project involves several beach improvements including rejuvenation of the landscape's architectural design, improving lateral shoreline access, dredging the channel fronting the hotel, sand replenishment of the beach area, and non-permanent improvements to facilitate outdoor weddings. The project area totals 13.9 acres.

The AIS included a 100% pedestrian survey of the project area and subsurface testing involving the excavation of nine test units (Test Unit-1 through Test Unit-9). Excavations encountered the coral shelf in seven test units and modern trash was observed in upper sediments of all units. No surface or subsurface historic properties were identified during the AIS. Pursuant to Hawaii Administrative Rules (HAR) §13-275-5(b)(5)(A), the negative results of the AIS are reported here as an archaeological assessment (AA). Pursuant to HAR §13-275-7, the project effect determination is no historic properties affected. Due to the absence of any significant cultural deposits, the report recommends no further work for the project area. SHPD concurs with the report's effect determination and mitigation recommendation.

The revisions adequately address the issues and concerns raised in our previous correspondence. The report provides sufficient discussion of the project, physical environment, cultural and historical background, previous archaeological studies, and the monitoring provisions specified in HAR §13-276-5. It is accepted by SHPD. Please send one hardcopy of the document, clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library.

SUZANNE D. CASE CHAIRPERSON BOARD OF LAND AND NATURAL RESOURCES COMMISSION ON WATER RESOURCE MANAGEMENT

> KEKOA KALUHIWA FIRST DEPUTY

JEFFREY T. PEARSON DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES BOATING AND OCEAN RECEDATION BUREAU OF CONVEYANCES COMMISSION ON WATER RESOURCE MANAGEMENT CONSERVATION AND CASTAL LANDS CONSERVATION AND RESOURCES ENFORCEMENT ENGNEERING ONSERVATION WILDLIFE HISTORIC PRESERVATION KAHOOLAWE ISLAND RESERVE COMMISSION LAND STATE PARKS Dr. Cleghorn July 5, 2016 Page 2

Please contact Kimi Matsushima at (808) 692-8027 or at <u>Kimi.R.Matsushima@hawaii.gov</u> if you have any concerns regarding this letter.

Aloha,

Susan A. Lebo

Susan A. Lebo, PhD Archaeology Branch Chief



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Business Office Bay Area Sierra/Central Valley

DRAFT

ARCHAEOLOGICAL ASSESSMENT FOR THE PROPOSED BEACHFRONT IMPROVEMENTS AT THE KAHALA HOTEL & RESORT, WAI'ALAE IKI AHUPUA'A, HONOLULU (KONA) DISTRICT, ISLAND OF O'AHU

[TMK (1) 3-5-023:001 por, 039 por, 041]

Prepared by: Caleb C. Fechner, B.A. Elizabeth L. Kahahane, B.A. James D. McIntosh, B.A. and Paul L. Cleghorn, Ph.D.

Pacific Legacy, Inc. 30 Aulike Street, Suite 301 Kailua, HI 96734 (808) 263-4800

Prepared for: PBR HAWAII & Associates, Inc. 1001 Bishop Street, Suite 650 Honolulu, HI 96813

ABSTRACT

At the request of PBR HAWAII & Associates, Inc., Pacific Legacy, Inc. conducted an archaeological inventory survey (AIS) of approximately 13.9 acres of The Kahala Hotel & Resort property, along Kāhala Avenue, located in the *aluupua*^{*}a of Wai^{*}alae Iki, Honolulu (Kona) District, Island of O^{*}ahu [TMK: (1) 3-5-023:001 por, 039 por, and 041].

The current archaeological investigation was conducted in order to determine if significant cultural resources were present in the area of the proposed project.

The Kahala Hotel & Resort is proposing several possible beach enhancements including rejuvenating the landscape architectural design of the areas currently maintained by the hotel; improving the lateral access along the shoreline; non-permanent improvements and operations to allow for outdoor weddings; dredging of the channel fronting the hotel to remove sand and silt; and sand replenishments of the beach.

The AIS consisted of hand excavating a total of nine test units throughout the proposed project area. Fragments of modern trash were observed in all nine of the excavated test units. In addition, existing subsurface utility lines were encountered in a total of six of the nine test units excavated. Both the presence of modern trash debris and existing subsurface utilities indicate that the majority of the current project area has been previously disturbed, most likely by construction activities related to several phases of development associated with The Kahala Hotel & Resort.

Not only does it appear that the majority of the current project area has been previously disturbed, but based upon the results of the test excavations, it appears that the area is also underlain by a relatively shallow coral shelf.

None of the test units excavated uncovered any traditional or historic cultural material, deposits, or remains. Given the lack of any historic properties found within the project area, the investigations reported upon in the present report are deemed an archaeological assessment.

Based upon the complete lack of archaeological findings, the previously disturbed nature of the project area, and the presence of a relatively shallow coral shelf, no further work is recommended for this project.

July 2016



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Frontispiece: Overview of the beach portion of the project area (view west).

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1.0 INTRODUCTION

Pacific Legacy, Inc., at the request of PBR HAWAII & Associates, Inc. (for Kahala Hotel and Resort), conducted an archaeological inventory survey (AIS) of approximately 13.9 acres of The Kahala Hotel & Resort property, along Kāhala Avenue, located in the *ahupua*^{*}a of Wai^{*}alae Iki, Honolulu (Kona) District, Island of O'ahu [TMK: (1) 3-5-023:001 por, 039 por, and 041] (Figure 1, also see Figure 5). Given that no historic properties were found in the project area, these investigations are deemed an archaeological assessment.

1.1 PROJECT AREA DESCRIPTION

The proposed project consists of approximately 13.9 acres of oceanfront property located in Kāhala along the *makai* side of The Kahala Hotel & Resort which is situated at the end of Kāhala Avenue in between the Kāhala Apartments to the west and the Waialae Country Club to the east (Figure 2). The Kahala Hotel & Resort is located entirely within TMK (1) 3-5-023:039 and *mauka* of the current certified shoreline. Between the hotel and the ocean is one parcel, TMK (1) 3-5-023 41, which is owned by the State of Hawai'i. A small portion of the eastern side of the project area is located within TMK (1) 3-5-023 001 which is owned by Kamehameha Schools and leased by the Waialae Country Club.

The Kahala Hotel & Resort is proposing the following possible beach enhancements: rejuvenating the landscape architectural design of the areas currently maintained by the hotel; improving the lateral access along the shoreline; non-permanent improvements and operations to allow for outdoor weddings; dredging of the channel fronting the hotel to remove sand and silt; and sand replenishments of the beach.

1.2 ENVIRONMENTAL SETTING

Rainfall in this portion of Kāhala is less than 30 inches per year with the wettest months being December through January and the driest being June through July. The prevailing winds originate in the northeast and are the typical trade winds for the State of Hawai'i (Juvik and Juvik 1998:55, 56; Giambelluca et al. 2015).

Vegetation within the project area is completely ornamental in nature and consists of common Bermuda grasses, decorative and ornamental shrubs, and trees, including coconut (*Cocos nucifera*).

1.2.1 Soils

The soils within the project area are derived from the Jaucas Series, consisting of Jaucas sand (JaC), and Beaches (BS) (Foote et al. 1972: Sheet No. 63). These soil types are described below:



Jaucas Series

Jaucas series consist of excessively drained, calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean. They develop in wind- and water-deposited sand from coral and seashells. They are nearly level to strongly sloping. Elevations range from sea level to 100 feet. These soils are used for pasture, sugarcane, truck crops, alfalfa, recreational areas, wildlife habitat, and urban development. The natural vegetation consists of kiawe, koa haole, bristly foxtail, bermudagrass, fingergrass, and Australian saltbrush (Foote et al. 1972:48).

Jaucas sand, 0 to 15 percent slopes (JaC)

In a representative profile the soil is single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. In many places the surface layer is dark brown as a result of accumulation of organic matter and alluvium. The soil is neutral to moderately alkaline throughout the profile. Permeability is rapid, and runoff is very slow to slow. The hazard of water erosion is slight, but wind erosion is a severe hazard where vegetation has been removed. The available water capacity is 0.5 to 1.0 inch per foot of soil. In places roots penetrate to a depth of 5 feet or more. Workability is slightly difficult because the soil is loose and lacks stability for use of equipment. This soil is used for pasture, sugarcane, truck crops, and urban development (Foote et al. 1972:48, 49).

Jaucas sand deposits are known to contain historically significant cultural deposits including subsurface cultural layers, as well as human burials.

Beaches

Beaches (BS) occur as sandy, gravelly, or cobbly areas on all the islands in the survey area. They are washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite. Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development (Foote et al. 1972:28).



Figure 1. USGS map with project location

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2.0 HISTORIC BACKGROUND

2.1 TRADITIONAL BACKGROUND

According to Mary Kawena Pukui (Pukui et al. 1974), Wai'alae literally means "mudhen water" (Pukui et al. 1974:220). There was a spring once located near the present day Kalaniana'ole Highway where the birds reportedly would live. J.K. Mokumaia, a resident of the area in 1920, recalled a story of the Wai'alae Iki spring:

Many people lived along the shores and they worked at farming and fishing. Plants grew. There were taro patches, tobacco, sweet potatoes, bananas and sugar cane. Paki was Waialae-nui's konohiki [manager] of fishing; Kamamalu was Waialae-iki's konohiki of fishing. There were ever so many people on the shore when these chiefs came to spend a while with the common people.

Here your scout looked at everything that he was told of. There was the pool that Kamamalu used to bathe in. I went to see its beauty for myself.

There are two springs, one is on the summit of Waialae-nui and the other is on Waialaeiki. These appear to be good sites, there is much water, but its beauty at the time of the konohikis is gone. Now the kapu [tabu] is freed and the kapu places are trodden underfoot (Mokumaia, *Ka Nupepa Kuokoa*, 18 June 1920; English translation in HEN n.cl. as cited in Sterling and Summers 1978:275).

Yet another story regarding a Wai'alae Spring:

Waialae Springs. From which Waialae derived its name. It supplied water for the chiefs from olden times. The location had been lost for many years. During a tour of the island by Kamehameha III, the King became thirsty and inquired of an old couple who were living at Waialae where he could get some water to drink. It happened that the ancestors of these old people were the keepers of this water hole, and the duty descended to them. They said that the only reason they stayed there was so that when the King stopped there they might carry out their duty and reveal the location to him. This hole was covered with pohuehue [morning glory] and under the pohuehue was a large slab of stone covering the water. [HEN n.d.: 1:1108 as cited in Sterling and Summers 1978:275].

Of Wai'alae, Handy writes:

The ahupua'a takes its name from the stone-incased spring, which may be seen today just above the highway. From the spring runs a stream which watered terraces that are now largely covered with grass raised for dairying and by the golf links. Three moderatesized gulches having streams of constant flow are included in this ahupua'a. In the lower portion of one of these gulches which was examined no terraces were seen. According to Mr. A. F. Judd, some seaward holdings in Waialae had inland plots (lele) located in Palolo" (Handy as cited in Sterling and Summers 1978:275).

Pukui also states that Wai'alae Iki translates as small Wai'alae (Pukui et al. 1974: 220) while the name Kāhala means literally the "amberjack fish" (Pukui et al. 1974: 62).



The coastal area of Wai'alae was reportedly well settled. In 1828, Chamberlain (1957) traveled along southeast O'ahu:

At a quarter before 9 o'clock we arrived at the pleasant settlement of Waialae, distant on a straight line from Waikiki in a N.E. direction, about 4 miles, but much farther following the circuitous path along the sea shore. This place is rendered agreeable by a grove of cocoanut [sic]trees and a number of branching kou trees, among which stand the grass huts of the natives, having a cool appearance, overshadowed by the waving tops of the cocoanuts, among which the trade winds sweep unobstructed [Chamberlain 1957:28-29].

An 1883 map from Jackson (Figure 3) shows a large coconut grove in the vicinity of Kapakahi Stream situated to the west of the current project area but doesn't show any structures or settlements in the vicinity mentioned above by Chamberlain.

[•]I⁺i (1959:93) shows a map of the greater east Honolulu area highlighting a number of trails that present near the current project (Figure 4). Although the current project area is located just off the edge of the map near Wai'alae Stream (also known as Kapakahi Stream), a single trail is shown on the map near the project area. At Wai'alae Stream the trail splits into three branches, one continuing along the coastline towards Lē'ahi (Diamond Head), one route moving slightly inland between Kaimuki and Lē'ahi and a third route further inland towards what is today Wai'alae Avenue in Kaimuki. The number of trails moving through this area indicates the importance of the area and its amount of use during the traditional and historic period.

2.2 LAND COMMISSION AWARDS

Private land ownership was established in Hawai'i with the Måhele 'Åina, also known as the Great Måhele of 1848. Crown and *ali'i* lands were awarded in 1848 and *kuleana* titles were awarded to the general populace in 1850 (Chinen 1958). Awarded lands in this process are referred to as Land Commission Awards (LCAs). Over time, government lands were sold off to pay government expenses. The purchasers of these lands were awarded Grants or Royal Patent Grants (Chinen 1958). LCAs offer the native and foreign testimonies recorded during the claiming process, which shed light on what the land use of the area was in the early historic period. This information can be used to predict the types of resources may still be present in the project area.

In Wai'alae Iki, 27 claims were made and awarded (Table 1, Figures 5 and 6). The claimants asserted that the lands included both *lo'i* lands (irrigated terraces) and *kula* lands (fields, dry land) along with house lots, mountain garden plots, various trees (*hala, kou*, and fruit) and fishery rights.



Figure 3. Registered Map. No 1293 from Jackson (1883) showing the coastline at Wai'alae. Map on file at the Hawai'i State Survey Office, Honolulu.

DRAFT — Archaeological Assessment The Kahala Hotel & Resort Wai'alae Iki Ahupua'a, Honolulu (Kona) District, Island of O'ahu July 2016







Figure 4. Trails near the project area. Map by Gerald Ober ($i\bar{1}i$ 1959:93). Note the current project area is located just to the east of Wai'alae Stream, off the map.

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Table 1. LCA Claims and Awards in the Ahupua'a of Wai'alae Iki

LCA No.	Claimant	Land Use/Claim	Awarded
1787	Pakai	1 loʻi, ditch, kula land, kalo, coconut tree	3 apana
1788	Рааоао	6 loʻi, 2 ditches, kula land, kalo, hala, house lot	2 apana
1790	Kaina	3 loʻi, kula land, kalo, house lot	2 apana
1791	Kuaha	3 lo'i, fishpond and orange, coffee, lemon, sisal, cherimoya trees	3 apana
1792	Koahou	3 loʻi, kula land, 3 fishponds, mountain kalo	1 apana
1803	Ohia	2 loʻi, kula land, house lot	2 apana
1989	Lulea	4 loʻi, house lot, kula land	2 apana
2124	Kaiwi	3 loʻi, kula land	1 apana
2285	Kaaikalo	4 loʻi, kula land, fishing right, house lot	3 apana
2355	Kehea	2 lo'i, 'auwai, kula land, house lot, hala tree, mountain kalo	2 apana
2365	Kailiuli	5 loʻi, kula land, house lot, fruit trees	2 apana
2366	Kahana	5 loʻi, ʻauwai, kula land, fishing rights	2 apana
2387	Kuilei	3 loʻi, kula land, mountain kalo, house lot	1 apana
2389	Kamanaohiwa	4 lo'i, 'auwai, kula land, mountain kalo, fishery, house lot	1 apana
2391	Киарии	Kula land, mountain kalo, fishery	2 apana
2516	Maula	2 loʻi, kula land, fishery, house lot, mountain garden	1 apana
2550	Waikui	1 lo'i, kula land, kopu and coconut trees	3 apana
3012	Makaweli	4 lo'i, kula land, 3 salt beds, 23 coconut and 2 breadfruit trees	1 apana
3100	Kupaniki	2 lo'i, 2 'auwai, house lot, 3 mala sweet potatoes, coconut and	2 apana
3216	Ahuai	1 lo'i, 'auwai, house lot, mountain garden and fishery rights	2 apana
3228	Opunui	Loʻi, kula, house lot	2 apana
3262	Lohiau	2 'auwai, mountain kalo, trees and fishery rights	1 apana
3437B	Kaheana	2 loʻi, house lot	2 apana
3579	Kahoowaha	2 loʻi, ʻauwai, house lot	1 apana
5625	Kauwahikaua	13 loʻi, house lot, kula land, 'auwai	2 apana
6749	Apolehua	4 lo'i, 2 'auwai, 9 mala, 2 hala trees, kula land, house lot	3 apana
10613	Abner Paki	-	1 apana



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Figure 5. Project Location on State Tax Map Key (courtesy of PBR Hawaii).

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Figure 6. A modified 1927 Land Court Application Map (No. 828) showing LCAs awarded in the project vicinity.



2.3 HISTORIC BACKGROUND

The late 1800s saw ranching and farming move into the Wai'alae area. Waialae Ranch began in the 1850s when Captain John Ross leased some 300 acres at Wai'alae for his ranch (Hammatt and Shideler 2015: 24). Daniel Rice Isenberg purchased the lease from Bishop Estate in 1887 and raised horses (Figure 7) and beef cattle on the land (Figure 8) (Hammatt and Shideler 2015: 24). This is highlighted in a biography of Mr. Isenberg:

Mr. Isenberg, who died in Honolulu, April 12, 1919, would have classified himself as a rancher, for the operation of his extensive holdings at Waialae, including a large dairy and stock farm, was his main interest and occupied the greater portion of his attention.

A sportsman and supporter of athletics, he organized the first baseball team in the islands, was president of the first baseball association, and inaugurated the practice of bringing baseball teams from the mainland to play here. He was an enthusiastic follower of horse racing, and for many years bred fine horses at his Waialae Ranch (USGenWeb Archives 1925).

WAIALAE BRE	EDING RANCH
Pedigrees of al	ll Horses Kept.
BREEDING DEPARTMENT	SALE DEPARTMENT.
The following Fine Animais will stand for Service at the Eanch. Wailake: Well-bred Stallion "MARIN." Norman Stallion "CAPTAIN GROWL." Thoretghbred Stal. "MIDNIGHT." To Native Stallions 'PILLAOAO" and "FRANK."	FOR SALE: Stallions of Various Breeds. Mares with or without Foal Horses for any Purpose. BREAKING DEPARTMENT A Stilled BREAKER and TRAINER to employed on the Banch. Satisfaction is guaranteed in Breaking

Figure 7. A period (no date) advertisement for Waialae Ranch and their pedigree horses, (University of Hawai'i at Mānoa Library 2015).

Figure 8 shows the layout of the ranch properties in 1927. The dairy stables and manager's house are clearly visible along with additional stables (horses), several water tanks, and structures marked 'poultry.' The photograph (Figure 9) shows what appears to be some of the same structures located adjacent to Waialae Country Club. Today, the former Waialae Ranch property is covered with residential structures located north of Waialae Country Club and south of Kalaniana'ole Highway.

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Figure 8. A 1927 map detailing the Waialae Ranch Co. property. Map on file at the Hawai'i State Archives.



By the 1920s, improvements were made to Wai'alae Road (Avenue) and residential development soon began to flourish in the area.

By the 1930s, the beachfront along Kåhala Avenue was being developed with homes, while farming continued in other areas. In 1938, more than 50 pig farms were operating in the vicinity of Farmers Road and Kåhala Avenues. Residents of the area, citing an increase in rats and mice at Kåhala, petitioned the territorial board of health to remove the pig farms (Honolulu Advertiser, December 20, 1938 cited in Dye and Jourdane 2007).

2.4 WAIALAE COUNTRY CLUB

Waialae Country Club was originally built in association with the Royal Hawaiian Hotel by the Territorial Hotel Co. as part of a program to influence luxury travel to the Hawaiian Islands. The golf course first opened in 1927 as the Waialae Golf Course (Waialae Country Club 2015). The hotel and golf course lands were leased from the Bernice P. Bishop Estate. The golf course was designed by Seth Raynor and Charles Banks, who oversaw the building of the Waialae Golf Course (Figure 9).

A number of local players were allowed to play at the Waialae Golf Course in its early years. During the depression of 1930, with finances stretched; Matson took over the running of the hotel and golf course. It was during this period that the local players formed the Waialae Country Club.

2.5 THE KAHALA HOTEL

Originally constructed in the early 1960s, the Kahala Hotel opened in January 1964 as a 10-story hotel/resort then known as The Kahala Hilton. Designed by architects Edward Killingsworth, Jules Brady, and Waugh Smith of Long Beach, California, The Kahala Hotel & Resort is situated on ca. 6.5 acres of beachfront land adjacent to the Waialae Country Club (Kahala Hotel 2015).

The Kahala was inspired by the great homes of the Hawaiian Monarchy Days and has a casual, yet elegant residential feel with its large open lobby and grand terrace, swirling staircases, and lush gardens. Its dolphin lagoon and its six resident dolphins is a unique feature of The Kahala (Kahala Hotel: 2015).

As part of the construction, two man-made peninsulas were created on each end of the resorts beach and 18,000 yards of fine sand were barged from Moloka'i island to pad the 800-foot stretch of beach (Kahala Hotel 2015). The man-made peninsulas and sand-filled beach are clearly visible in Figure 10, a 1966-1967 aerial photograph of the resort. A tennis court is also shown on the beach at the east end of the project area. In addition, approximately 100 coconut palms were planted as part of the resort's development.



Figure 9. An undated photo (post 1927) of Waialae Country Club showing what appears to be remnant structures of Waialae Ranch and the approximate area of the future location of The Kahala Hotel (Waialae Country Club 2015).

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Figure 10. A 1966-1967 aerial image of The Kahala Hotel. Notice the dredged area fronting the beach and the clean white sand spread over the project area. Image courtesy UH-SOEST.

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3.0 PREVIOUS ARCHAEOLOGY

Numerous archaeological studies have taken place in the vicinity of the current project area, within the Wai'alae Nui and Wai'alae Iki Ahupua'a. A review of available literature at the SHPD library in Kapolei, O'ahu, indicates that there have been at least 34 previous investigations, with several archaeological studies occurring near the current project area

Reference	SIHP No. 50-80-14-xxx	TMK / Location	Type of Survey	Findings		
Bishop Museum 1927	-	Waialae Golf Course	Human remains found during construction	Remains of 22 individuals were recovered during the original construction of the Waialae Golf Course.		
McAllister 1933	55*	Wiliwilinui Ridge	Island-wide archaeological reconnaissance survey.	Kaunua Kahekili Heiau (heiau destroyed before McAllister's survey).		
Bishop Museum 1960s	2281, 2282, 2283	Wai'alae Valleys	Hawaiian Archaeology Survey (HAS) Database. Report.	Report of burial finds.		
Bishop Museum 1963	-	Kāhala Hilton Hotel	Recovery of human skeletal remains/burial.	Inadvertent discovery of human skeletal remains/burial.		
Bowen and Soehren 1966	-	Beachfront property between Kāhala Hilton Hotel and Kāhala Beach Park.	Recovery of human skeletal remains/burial.	Exposure of an unrecorded historic-era cemetery led to disinterment of 24 coffin burials. Associated funerary items included: <i>pulu</i> fiber, buttons, coins, a basalt adze, and glass bottles.		
Soehren 1967	2503	East of Diamond Head.	Test excavation of a rock shelter.	Habitation site with a variety of traditional Hawaiian artifacts, including a fishhook, <i>lühe</i> 'e, and a coral file, as well as bottle glass fragments dating to 1880-1920.		
Griffin 1987	3725	(1) 3-5-004:011 / 4505 Kāhala Ave.	Recovery of human skeletal remains/burial.	Inadvertent discovery of human skeletal remains/burial. Douglas & Pietrusewsky (1988) analysis of human skeletal remains (2): primary burial of a female, with a second intrusive burial of a young adult male.		
Bath & Griffin 1988	3760	(1) 3-5-043:006 / 1013 Waiholo St.	Monitor excavation of a swimming pool.	Inadvertent discovery of human skeletal remains. Douglas & Pietrusewsky (1988) analysis of human skeletal remains: female, approx. 35 years old.		
Bath 1989	4126	(1) 3-5-007:023 / 4745 Aukai Ave.	Monitor excavation of a water main.	Inadvertent discovery of human skeletal remains/burial as well as two polished basalt fragments. Douglas & Pietrusewsky (1989a) analysis of human skeletal remains: single adult male, 40-45 years old.		
Kawachi 1989	4065	(1) 3-5-004:001 / 4585 Kāhala Ave.	Monitor excavation of a house foundation.	Inadvertent discovery of human skeletal remains/burial.		
Kennedy	-	(1) 3-5-017:002 por.	Archaeological Inventory	No archaeological sites identified.		
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Legacy

	1991			Survey.	
	Cleghorn &	-	Kapakahi Gulch, mauka end of	Pedestrian Survey.	No surface features identified.
	Anderson		Luinakoa Street		
	1992				
Ì	Table 2.				

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In 1927, the remains of 25 individuals were recovered during the original construction of the Waialae Golf Course (as cited in Hammatt and Shideler 2015:40).

Sterling and Summers (1978) report that only one site was noted in the Wai'alae Nui and Wai'alae Iki Ahupua'a by McAllister (1933) in his island-wide survey, the Kaunua Kahekili Heiau.

Site 55. Punahoa of Keahia says that Kaunua Kahekili was a very large heiau. It was located on the top of the ridge which divides Wailupe and Waialae, on the highest and most pronounced knoll. The site was formerly planted in pineapples, but now the heiau is overgrown with high grass and weeds and the pineapples are on the sloping ground which surrounds it. Many large rocks embedded in the earth are all that remain of the structure (McAllister as cited in Sterling and Summers 1978:275-276).

In 1963, Robert Bowen of the Bishop Museum recovered three human burials in the area of the current Kāhala Hotel (as cited in Hammatt and Shideler 2015:40).

In 1966, Robert Bowen and Lloyd Soehren of the Bishop Museum conducted archaeological excavations to recover human burials from an area informally referred to as the "Kahala Cemetery" that was located in the Waialae Golf Course in the area now having condominium buildings (Figure 11). A total of 26 burials were disinterred in January 1966. It was hypothesized that this burial area was in use from ca. 1825 to 1870 based on the presence of a coffin burial and glass bottles as grave goods. After the recovery of the 26 burials, Bishop Museum archaeologists were informed by previous residents of the area that the area was a private cemetery called Pu'u Makani or Waialae Private Cemetery and used by local residents and ranch workers as late as 1920. The Bishop Museum decided that since this area contained recent burials, their disinterment should be conducted by a mortuary service rather than by archaeologists. The Greenlawn Funeral Home disinterred 17 additional burials and planned to reinter the remains at a local cemetery. An unknown number of burials were left in place (as cited in Hammatt and Shideler 2015;42).

In 1967, Lloyd Soehren of the Bishop Museum test excavated in the Wai'alae Shelter Cave, State Site 50-80-14-2503. One test unit was excavated and found to contain marine shell midden and both traditional Hawaiian artifacts and historic artifacts, including a fishhook, a *lūhe'e* (octopus lure), a coral file, and bottle glass fragments dating to 1880-1920 (Dye and Jourdane 2007; Hammatt and Shideler 2015; Nakamura et al. 2010; O'Hare et al. 2009; Yucha et al. 2014).





Figure 11. Previous archaeological investigations in the vicinity of the project area.

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Pacific Legacy In 1987, Annie Griffin of the Department of Land and Natural Resources, Historic Sites Section, responded to a call regarding an inadvertent discovery at 4505 Kåhala Avenue. Construction activity had exposed a burial pit, State Site 50-80-14-3725, containing the skeletal remains of one individual in a semi-flexed position. The burial was disinterred and no associated artifacts were found (Dye and Jourdane 2007; Griffin 1987; Hammatt and Shideler 2015; Nakamura et al. 2010; Putzi and Dye 2003; Yucha et al. 2014).

In 1988, Bath and Griffin of the Department of Land and Natural Resources, Historic Sites Section documented an inadvertent discovery at 1013 Waiholo Street. The primary pit burial, State Site 50-80-14-3760, was impacted during excavation of a swimming pool. The individual was identified as a traditional Hawaiian (Dye and Jourdane 2007; Hammatt and Shideler 2015; Nakamura et al. 2010; Putzi and Dye 2003; Yucha et al. 2014).

In 1989, Carol Kawachi of the Department of Land and Natural Resources, Historic Sites Section, responded to a call regarding an inadvertent discovery at 4585 Aukai Avenue (Kawachi 1989). Construction activity had impacted human skeletal remains, State Site 50-80-14-4065, when excavating for a house foundation. The police removed the remains from the site to ascertain their age. According to the contractors, the long bones were on top of the vertebrae, suggesting the burial of a traditional Hawaiian individual in a semi-flexed position; and that there were some 'coffin remains' found. There were wood remnants in the pit profile, however they were limited to a 5 to 7 cm thick lens and as such could not be a full coffin. An inventory of the remains established that the skull and the entire upper third of the skeletal remains were missing. Analysis concluded that the remains were ancient and that of a Hawaiian female, aged 25-35 years old (Dye and Jourdane 2007; Hammatt and Shideler 2015; Kawachi 1989; Nakamura et al. 2010; Putzi and Dye 2003; Yucha et al. 2014).

In 1989, Annie Griffin and Joyce Bath of the Department of Land and Natural Resources, Historic Sites Section, responded to a call regarding an inadvertent discovery at 4745 Aukai Avenue (Bath 1989). Construction activity had impacted human skeletal remains, State Site 50-80-14-4126. It was determined from examining the stratigraphy of the excavated trench that the remains had been impacted before, when the water main was originally installed, and reinterred at that time. Two polished basalt flakes were found when screening the sediment, contributing to the determination that this burial was that of a traditional Hawaiian male (Bath 1989; Dye and Jourdane 2007; Hammatt and Shideler 2015; Nakamura et al. 2010; Putzi and Dye 2003; Yucha et al. 2014).

In 1991, Joseph Kennedy of Archaeological Consultants of Hawai'i Inc. conducted a surface survey of a 7.5 acre parcel of the Star of the Sea Church/School Complex during which six caves and two lava tubes were found. No other surface features were located (Hammatt and Shideler 2015; Haun and Henry 2003; Nakamura et al. 2010; O'Hare et al. 2009; Yucha et al. 2014).

In 1992, Paul Cleghorn and Lisa Anderson of the Bishop Museum performed a surface survey of a 6.4 acre parcel in Kapakahi Gulch, *mauka* of the end of Luinakoa Street. No surface features were located (Hammatt and Shideler 2015; Haun and Henry 2003; O'Hare et al. 2009:59; Yucha et al. 2014).



In 1994 and 2000, archaeological monitoring was conducted along Kalaniana'ole Highway through the Lands of Wai'alae Nui, Wai'alae Iki, and Wailupe. Widening of the highway was undertaken in two phases: Phase II was monitored by International Archaeological Research Institute, Inc. (Erklens and Athens 1994) and Phase III was monitored by Garcia and Associates (Putzi et al. 2000). Subsurface cultural deposits and human burials (in areas of Jaucus sand at depths of 3 to 6 feet) were identified during both phases of monitoring (Erklens and Athens 1994 and Putzi et al. 2000 as cited in Haun and Henry 2003:16).

In 1994, David Chaffee and Robert Spear of Scientific Consulting Services, Inc. conducted an assessment of the surface features along the Wiliwilinui Trail Alignment on Wai'alae Iki Ridge. The only feature recorded within the surveyed 1,100 meter long corridor was a World War II concrete and metal bunker. This bunker abuts what has been described as a "large retaining boulder and cobble wall 7 to 8 courses high that extends for 10 m" and has been interpreted as a soil retention wall. When superimposing the location of the bunker/retaining wall on to the *Sites of Oahu* map showing where McAllister plotted the Kaunua Kahekili Heiau, these structures overlap (Hammatt and Shideler 2015; Haun and Henry 2003; O'Hare et al. 2009; Yucha et al. 2014).

In 1995, Elaine Jourdane and Kai'iana Markell of the Department of Land and Natural Resources, examined inadvertently discovery discovered human skeletal remains impacted by construction at 4433 Kāhala Avenue. Conrad Erkelens and M. J. Tomonari-Tuggle of International Archaeological Research Institute, Inc. carried out the archaeological recovery of inadvertently discovered human skeletal remains, State Site 50-80-14-5320, from within the burial pit - Burial 1. Subsequently, additional remains were impacted (Burials 2 and 3) and removed. Analysis determined that Burial 1 was that of a 35-45 year old male of East Asian and/or mixed Hawaiian/East Asian ancestry; Burial 2 was that of a 20-24 year old female of East Asian and/or mixed Hawaiian/East Asian ancestry; and Burial 3 was that of a 3 year old child of possible traditional Hawaiian ancestry. The proximity of Burial 3 to Burial 2 suggests they may be mother and child and the in situ square-cut nail implies a 19th century date of interment (Erkelens and Tomonari-Tuggle 1997; Hammatt and Shideler 2015; Jourdane 1995 as cited in Haun and Henry 2003:15-16; Nakamura et al. 2010; Putzi and Dye 2003; Yucha et al. 2014).

In 1999, Collins and Jourdane recorded an inadvertent discovery of human skeletal remains on the western slope of Wai'alae Nui Ridge. One burial cave containing the remains of at least one individual, State Site 50-80-14-5743 (Collins and Jourdane 1999 as cited in Nakamura et al. 2010:11; Hammatt and Shideler 2015; Yucha et al. 2014).

In 2001 and 2002, Cultural Surveys Hawai'i monitored the installation of a gas main (Hammatt and Bush 2001) and a water main (Bush and Hammatt 2002) from 'Àinakoa Avenue to West Hind Drive. While pockets of sand were noted during the installation of the gas main, only modern trash was encountered. During the installation of the water main, one *poi* pounder fragment and one horseshoe were collected (Hammatt and Shideler 2015; Haun and Henry 2003; Nakamura et al. 2010; O'Hare et al. 2009; Yucha et al. 2014).

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In 2001, SCS carried out the archaeological recovery of inadvertently discovered human skeletal remains, State Site 50-80-14-6391, at 814 Keala'olu Avenue. Subsurface construction activities impacted the remains for four individuals, three adults and one child believed to be no more than 15 years old (Dye and Jourdane 2007; O'Hare et al. 2009)

In 2003, Alan Haun and Dave Henry of Haun & Associates conducted and archaeological inventory survey of ca. 8 acres for the Wai'alae 180 Reservoir Replacement project located at an elevation from 160 to 255 feet, near the base of the Wai'alae Iki Ridge. Two burial caves were located and thought to be from the pre-Contact period. One of the caves contained the remains of multiple individuals (previously identified State Site 50-80-14-5938), while the other contained only fragments of an infant skull (State Site 50-80-14-6531). No other cultural material was present (Hammatt and Shideler 2015; Haun and Henry 2003; Nakamura et al. 2010; Yucha et al. 2014).

In 2003, Jones and Hammatt of Cultural Surveys Hawai'i monitored excavations, located east of Diamond Head, for the Black Point Water System project. No cultural remains reported (Hammatt and Shideler 2015; Nakamura et al. 2010; O'Hare et al. 2009; Yucha et al. 2014).

In 2003, Jeff Putzi and Thomas Dye of T. S. Dye & Colleagues, Archaeologists, Inc. documented the recovery of inadvertently discovered human skeletal remains, State Site 50-80-14-6632, at 4773 Kāhala Avenue. Construction activities impacted the partial remains of four individuals and the complete remains of one individual, all likely of Hawaiian ancestry based on the presence of traditional Hawaiian artifacts and absence of historic-period materials associated with the remains. The artifacts recovered from the back dirt pile included: a basalt abrader fragment; drilled *pipipi* marine shell beads; basalt flakes; *kukui* nuts; and one iron nail (Dye and Jourdane 2007; Hammatt and Shideler 2015; Nakamura et al. 2010; Putzi and Dye 2003; Yucha et al. 2014).

In 2005, Thomas Dye of T. S. Dye & Colleagues (Dye 2005a, 2005b, 2006) carried out the archaeological recovery of inadvertently discovered human skeletal remains, State Site 50-80-14-6762, at 4577 Kähala Avenue. Construction activities impacted the remains from a minimum of two individuals and the complete remains of one individual, all likely of Hawaiian ancestry based on the presence of traditional Hawaiian artifacts and absence of historic-period materials associated with the remains. The artifacts recovered from the back dirt pile included: a basalt abrader fragment; drilled *pipipi* marine shell beads; basalt flakes; kukui nuts; and one iron nail (Dye 2005a, 2005b, 2006; Dye and Jourdane 2007; Hammatt and Shideler 2015; Nakamura et al. 2010; O'Hare et al. 2009; Yucha et al. 2014).

In 2007, Thomas Dye and Elaine Jourdane of T. S. Dye & Colleagues, Archaeologists, Inc. completed an archaeological inventory survey of a residential lot with three reburied, historicera burials (State Site 50-80-14-5320) that had been originally disturbed during construction activities in the 1990s (Dye and Jourdane 2007). Twenty shovel test units and 24 m² of aerial excavations, in combination with the 50 shovel test units previously excavated by Pacific Consultant Services, "yielded information on the stratigraphic history of the residential lot and identified historic-period activities including creation of small fires near the beach, a dump for construction trash, and disposal of small items associated with modern dwellings. The



excavations failed to find any evidence for traditional Hawaiian use of the area. Future construction at the residential lot will need to take into account the presence of human remains..." (Dye and Jourdane 2007:3). The cultural material unearthed in testing included a possible basalt flake and various historic artifacts: a glass bead, ceramic sherds, glass shards, metal fragments, etc. (Dye and Jourdane 2007; Nakamura et al. 2010; O'Hare et al. 2009; Yucha et al. 2014).

In 2007, Tulchin and Hammatt of Cultural Surveys Hawai'i carried out back-dirt screening and block excavations as a result of an inadvertent discovery of human skeletal remains, State Site 50-80-14-6927, during construction activities at 4565 Kähala Avenue. After the excavation of 25 test units in March 2007, the original location of the burial was still undetermined. From that point the construction activities were monitored by a CSH archaeologist. In July 2007, additional remains were impacted and it was determined to be the location of the original burial from March 2007 (Hammatt and Shideler 2015; Tulchin and Hammatt 2007 as cited in O'Hare et al. 2009;68-69; Yucha et al. 2014).

In 2008, Cultural Surveys Hawai'i (O'Hare et al. 2008) finished a literature search and field inspection report for the Waialae Country Club. The archival research showed that the area was used for traditional Hawaiian habitation and burials into the mid 19th century; by the 1850s-1870s, it had become home to Captain John Ross; and home to Paul Isenberg from 1880s to 1920 – each of which, at one time, owned and operated the Waialae Ranch. In the 1920s, it became the country club for one of the first golf courses built in the Hawaiian Islands, and a hub of the 20th century social scene (Hammatt and Shideler 2015; O'Hare et al. 2009; Spear 2013; Yucha et al. 2014).

In 2009, Wilson and Spear of Scientific Consulting Services, Inc. performed archaeological monitoring on two parcels of the Waialae Country Club property for an electrical switchgear installation/air conditioning replacement project. The "subsurface strata consisted of a single uniform stratigraphy, the vast majority of which was previously disturbed though [sic] landscaping and building construction. No cultural deposits or significant historic properties were identified" (Spear 2013;7) (Hammatt and Shideler 2015; Spear 2013; Wilson and Spear 2009; Yucha et al. 2014).

In 2010, Pacific Consulting Services, Inc. conducted archaeological monitoring in Support of Traffic Control Signalization Improvements along Kilauea Avenue in the Wai'alae Nui *ahupua*'a. Analysis of stratigraphy showed a concentration of historic artifacts made from glass, ceramics, and metal dating from ca. the mid-20th century to very recent times (Hammatt and Shideler 2015; Nakamura et al. 2010; Yucha et al. 2014).

In 2011, archaeologists from Scientific Consultant Services, Inc. conducted archaeological monitoring for the Wai'alae Country Club Clubhouse Upgrade Project. Construction activities resulted in the inadvertent discovery of two burials, State Sites 50-80-14-7206 and 50-80-14-7207. Burial 1 (Site 7206) was a partial set of skeletal remains and an associated, partially intact burial pit. Burial 2 (Site 7207) was an in situ human burial with a pit feature. Traditional-type artifacts, associated with the burials, were recovered from the backdirt (Dagher et al. 2011 as cited in Dagher and Spear 2012:12).

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In 2015, Cultural Surveys Hawai'i conducted a supplemental inventory survey of 30.59 acres, Wai'alae 180' Reservoir Lot A, located on the southern point of the Wai'alae Iki Ridge. A total of three sites were located: two burial caves had been previously recorded as State Sites 50-80-14-5938 and 50-80-14-6531; and one newly recorded site, the Board of Water Supply Wai'alae 180' Reservoir Complex (State Site 50-80-14-7590). The Complex was deemed significant as an "excellent example of the work of a master in the incorporation of cut basalt blocks into reservoir structure" (Hammatt and Shideler 2015:iii).



Table 2. Archaeological Investigations within the Wai'alae Nui and Wai'al	ae Iki Ahupua'a

Reference	SIHP No. 50-80-14- xxx	TMK / Location	Type of Survey	Findings
Bishop Museum 1927	-	Waialae Golf Course	Human remains found during construction	Remains of 22 individuals were recovered during the original construction of the Waialae Golf Course.
McAllister 1933	55*	Wiliwilinui Ridge	Island-wide archaeological reconnaissance survey.	Kaunua Kahekili Heiau (heiau destroyed before McAllister's survey).
Bishop Museum 1960s	2281, 2282, 2283	Wai'alae Valleys	Hawaiian Archaeology Survey (HAS) Database. Report.	Report of burial finds.
Bishop Museum 1963	-	Kähala Hilton Hotel	Recovery of human skeletal remains/burial.	Inadvertent discovery of human skeletal remains/burial.
Bowen and Soehren 1966	-	Beachfront property between Kähala Hilton Hotel and Kähala Beach Park.	Recovery of human skeletal remains/burial.	Exposure of an unrecorded historic-era cemetery led to disinterment of 24 coffin burials. Associated funerary items included: <i>pulu</i> fiber, buttons, coins, a basalt adze, and glass bottles.
Soehren 1967	2503	East of Diamond Head.	Test excavation of a rock shelter.	Habitation site with a variety of traditional Hawaiian artifacts, including a fishhook, <i>lühe</i> 'e, and a coral file, as well as bottle glass fragments dating to 1880-1920.
Griffin 1987	3725	(1) 3-5-004:011 / 4505 Kähala Ave.	Recovery of human skeletal remains/burial.	Inadvertent discovery of human skeletal remains/burial. Douglas & Pietrusewsky (1988) analysis of human skeletal remains (2): primary burial of a female, with a second intrusive burial of a young adult male.
Bath & Griffin 1988	3760	(1) 3-5-043:006 / 1013 Waiholo St.	Monitor excavation of a swimming pool.	Inadvertent discovery of human skeletal remains. Douglas & Pietrusewsky (1988) analysis of human skeletal remains: female, approx. 35 years old.
Bath 1989	4126	(1) 3-5-007:023 / 4745 Aukai Ave.	Monitor excavation of a water main.	Inadvertent discovery of human skeletal remains/burial as well as two polished basalt fragments. Douglas & Pietrusewsky (1989a) analysis of human skeletal remains: single adult male, 40-45 years old.
Kawachi 1989	4065	(1) 3-5-004:001 / 4585 Kähala Ave.	Monitor excavation of a house foundation.	Inadvertent discovery of human skeletal remains/burial.
Kennedy 1991	-	(1) 3-5-017:002 por.	Archaeological Inventory Survey.	No archaeological sites identified.
Cleghorn & Anderson 1992	-	Kapakahi Gulch, mauka end of Luinakoa Street	Pedestrian Survey.	No surface features identified.

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Reference	SIHP No. 50-80-14-xxx	TMK / Location	Type of Survey	Findings
Chaffee & Spear 1994	4811	Wiliwili Trail Alignment of Waiʻalae Iki Ridge.	Archaeological Assessment.	Recorded a World Warl I concrete and metal bunker. This bunker abuts was has been described as a "arger entaining boulder and cobble wall 7 to 8 courses high that extends for 10 m [*] and has been interpreted as a soil retention wall. When superimposing the location of the bunker/retaining wall on to the <i>Sites of Oahu</i> map showing where McAllister plotted the Kaunus Alakekii Heiau, these surcturers overlap.
Erkelens & Athens 1994	-	Kalanianaʻole Highway through the Lands of Waiʻalae Nui, Waiʻalae Iki, and Wailupe.	Report: Burials, Highways, and History: Archaeology along Kalaniana'ole Highway, East Honolulu, O'ahu, Hawai'i.	Archaeological monitoring of the highway widening – Phase II. Identified subsurface cultural deposits and human burials (in areas of Jaucas sand at depths of 3 to 6 feet).
Jourdane 1995	5320	(1) 3-5-003:008 / 4433 Kähala Ave.	Excavation for a residential elevator shaft.	Inadvertent discovery of human skeletal remains/burial and cultural layer.
Erkelens & Tomonari- Tuggle 1997	5320	(1) 3-5-003:008 / 4433 Kähala Ave.	Recovery of human skeletal remains/burial.	Analysis of human skeletal remains/burials: Burial 1 – adult male, 30-35 years old, found with a shell button and two porcelain beads; Burial 2 – adult female, 20-25 years old; Burial 3 – sub-adult, 3 years old, found with a square-cut nail.
Collins & Jourdane 1999	5743	 3-5-024:001 / Wai'alae Nui Ridge (western slope). 	Inadvertent discovery.	Identified one burial cave containing the remains of at least one individual.
Hammatt & Bush 2001	-	(1) 3-5-019, 021-023, 042, 044-047, 049, 058 / Kalaniana [•] ole Highway between [•] Āinakoa Ave. and West Hind Dr.	Archaeological Monitoring Report for 4-inch Gas Main.	No cultural material encountered.
Bush & Hammatt 2002	-	(1) 3-5-019, 021-023, 042, 044-047, 049, 058; 3-6-001, 009, 011 / Kalaniana`ole Highway between `Āinakoa Ave. and West Hind Dr.	Archaeological Monitoring Report for 16-inch Water Main.	Analysis of stratigraphy with two artifacts: one horseshoe (rusted) and one poi pounder handle fragment (coral).
Scientific Consultant Services 2002	6391	(1) 3-5-007:015 / 814 Kealaʻolu Ave.	Monitor excavation of a swimming pool.	Inadvertent discovery of four human skeletal remains/burials.
Haun & Henry 2003	5938, 6531	(1) 3-5-020:011	Archaeological Inventory Survey.	Identified two burial caves containing the remains of at least six individuals.
Jones & Hammatt 2003	-	East of Diamond Head.	Archaeological monitoring for the Black Point Water System.	No cultural materials were reported.

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Reference	SIHP No. 50-80-14-xxx	TMK / Location	Type of Survey	Findings
Putzi & Dye 2003	6632	(1) 3-5-006:006 / 4773 Kähala Ave.	Monitor excavation of a utility line.	Inadvertent discovery of five human skeletal remains; a cultural layer; several traditional-type artifacts including two drilled pipipi beads, a basalt abrader fragment, a possible marine shell fishhook blank, several basalt blanks, and at least 20 kukui nuts and nut shell fragments.
Dye 2005a, 2005b, 2006	6762	(1) 3-5-004:003 / 4577 Kāhala Ave.	Monitor excavation of a new sewer line.	Inadvertent discovery of two human skeletal remains/burials and cultural layer.
Collins & Clark 2006	-	(1) 3-5-003:008, 009, 010 / 4415 Kāhala Ave., 4423 Kāhala Ave., 4433 Kāhala Ave.	Subsurface testing.	51 test units, documented two cultural layers in sandy matrices.
Dye & Jourdane 2007	5320	 (1) 3-5-003:008, 009, 010 / 4415 Kåhala Ave., 4423 Kåhala Ave., 4433 Kåhala Ave. 	Archaeological Inventory Survey.	Study undertaken as due diligence for sale of property. Relocation of reinterment site of three post-Contact individuals. Three historic fire-pits observed. 49 artifacts were collected from the 20 shovel test-pits: except for one possible traditional Hawaian artifact (possible basalt flake), all artifacts are made of modern materials and are from the historic era.
Tulchin & Hammatt 2007	6927	4564 Kāhala Ave.	Recovery of human skeletal remains/burial.	Inadvertent discovery of human skeletal remains/burial within a disturbed context.
Park & Collins 2008	-	(1) 3-5-011, 016, 025, 026, 028, 029, 032 various; (1) 3- 2-056, 057, 058, 059, 063, 064 various / Kilauea Avenue	Addendum to the Archaeological Monitoring Plan.	Expanded project area along Kilauea Avenue.
O'Hare et al. 2008		(1) 3-5-023:001 / Waialae Country Club	Literature Search and Field Inspection.	Background material indicated the area was used for habitation, ranching, and recreation. No surface features were present.
Wilson & Spear 2009	-	(1) 3-5-023:003, 038 / Waialae Country Club	Archaeological monitoring of electrical switchgear installation / air conditioning replacement project.	No archaeological cultural deposits or historic properties identified.
Nakamura et al. 2010	-	(1) 3-5-011, 016, 025, 026, 028, 029, 032 (:various parcels); (1) 3-2-056 to 059, 063, 064 (:various parcels)	Archaeological Monitoring Report in Support of Traffic Control Signalization	Analysis of stratigraphy showed a concentration of historic artifacts dating from ca. the mid-20 th century to very recent times.

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Reference	SIHP No. 50-80-14-xxx	TMK / Location	Type of Survey	Findings
Dagher et al. 2011	7206, 7207	(1) 3-5-023:003 por., 038 por. / Waialae Country Club	Archaeological monitoring during ground altering activities.	Inadvertent discovery of two human skeletal remains/burials: Burial 1 – partial set of skeletal remains and an associated, partially intact burial pit; Burial 2 – in situ human burial with a pit feature; traditional-type artifacts, associated with the buriels, uncertainty and the sheletated buriels and the second buriels.
Yucha et al. 2014	7591	(1) 3-5-007:001 / southern toe of Waiʿalae Iki Ridge	Archaeological inventory survey of 2.9 acres.	Recorded a pre-Contact to historic rockshelter used for temporary habitation.
Hammatt & Shideler 2015	5938, 6531 (previously identified) and 7590	(1) 3-5-020:011 / southern toe of Waiʻalae Iki Ridge	Supplemental archaeological inventory survey report for Wai'alae 180' Reservoir Lot A (30.59 acres)	Mitigation recommendations for each significant historic property: Site 5938 (burial cave) = preservation to be addressed in a Burial Treatment Plan; Site 6531 (burial cave) = preservation to be addressed in a Burial Treatment Plan; and Site 7590 (BOW Reservoir Complex) = no further work.

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3.1 EXPECTATIONS

Background research has shown that the area was used for traditional Hawaiian habitation and burials into the mid 19th century; by the 1850s-1870s, it had become home to Captain John Ross; and home to Paul Isenberg from 1880s to 1920 – each of which, at one time, owned and operated the Waialae Ranch. In the 1920s, it became the country club for one of the first golf courses built in the Hawaiian Islands. The Kahala Hotel (aka the Kahala Hilton) was constructed in the early 1960s. As part of the construction, two man-made peninsulas were created on each end of the resorts beach and 18,000 yards of fine sand were barged from Moloka'i island to pad the 800-foot stretch of beach (Kahala Hotel 2015).

While most of the project area appears to have been extensively disturbed and altered in the course of its history, especially the construction of the Kahala Hotel, there is some probability, albeit very low, that test excavations may reveal evidence of pre-Contact, early post-Contact, and historic subsurface resources. In addition, given that large quantities of sand quarried form the sand dunes of West Moloka'i, there is the possibility of encountering scattered fragments of human remains.

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4.0 METHODS

The project area consists primarily of manicured lawns, ornamental plantings, and sidewalks. Part of the project area is composed of a sandy beach. All areas were thoroughly inspected for archaeological remains and none were observed.

The archaeological inventory survey (AIS) consisted of hand excavating test units within the current project area and was conducted between 3 and 7 August 2015. The project was under the overall supervision of Principal Investigator Paul L. Cleghorn, Ph.D. Pacific Legacy archaeologists James McIntosh, B.A. and Caleb Fechner, B.A. conducted the excavations for the project.

Due to the nature of the project area being within an active hotel and resort, it was determined that hand excavation would be both safer and more feasible than using a backhoe or mini track excavator to conduct excavations. Excavations were shovel test pits (STPs) that measured ca. $0.5 \times 0.5 \times 0.5 \times 1.0$ meters depending on how deep the excavations proceeded. The size of the STPs was adequate to reach the needed depth of the excavations and cause a minimum of disruption to Hotel visitors.

The location of each test excavation unit was evenly spaced to adequately sample and maximize coverage of the project area. The best effort was made to excavate away from existing subsurface utilities in order to identify any areas containing in situ deposits.

Excavation of test units began by edging and removing the surface grass with a square headed shovel (Figure 12). Once the grass was removed, careful hand excavation proceeded using a combination of pointed nose shovel, square headed shovel, rock hammer, hand clippers, trowel, and dust pan to remove soil from the unit. In several instances, a hand auger was also used to continued excavation to the maximum depth possible when the unit could no longer be excavated with a shovel (Figure 13). All soil removed from the unit was screened through nested 1/4 and 1/8 inch mesh screens in order to identify and isolate any cultural material encountered (Figure 14). Screening was conducted on top of a tarp to aid in site cleanliness and backfilling.

After excavation was complete the subsurface stratigraphy was recorded for each test unit by drawing a representative profile of the unit side wall using a line level and tape measure. Standard metric measurements were used in all aspects of recording. Depths were recorded using a datum which was set at 10 centimeters above the ground surface. A soil description was also completed for all soils encountered. Soils were recorded using standard United States Department of Agriculture nomenclature and Munsell Soil Color Charts designations (2000). Digital photographs of the project area, work in progress, and test unit wall profiles were also taken (the red-and-white photo scale in many of the photographs id 50 cm long in 10 cm intervals).



When all of the recording had been completed the test units were backfilled with the excavated soil and the grass replaced as carefully as possible (Figure 15). The location of each test unit was recorded using a hand held Trimble GeoXH global positioning system (GPS) unit. Its coordinates were recorded in Universal Transverse Mercator, North American Datum of 1983, Zone 4 (UTM NAD 83 Z4) projection and subsequently processed through ESRI GIS software.



Figure 12. Overview of excavation at Test Unit-9 (view southwest).



Figure 13. Overview of auguring at Test Unit-7 (view west).







Figure 14. Overview of screening at Test Unit-5 (view west).



Figure 15. Overview of Test Unit-4, post excavation with grass replaced (view north).

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5.0 FIELD INVESTIGATIONS

5.1 TEST EXCAVATIONS

A total of nine test units were excavated by hand within the current project area (Figures 16 and 17). Fragments of modern trash were observed in all nine of the excavated test units. Modern trash observed consisted of a variety of bottle glass, plastic, metal wire, and asphalt, which was mostly concentrated in the upper layers of the test units. Existing subsurface utility lines were encountered in six of the nine test units excavated. During excavation of the nine test units, the coral shelf was encountered in seven of the test units. None of the test units excavated uncovered any traditional or historic cultural material, deposits, or remains. The results of these test excavations are presented below.

5.1.1 Test Unit-1

Test Unit-1 was excavated by hand in a grassy area situated *makai* of the parking garage structure located within the western portion of the project are (Figures 16 and 17). The excavation consisted of a 1 meter by 0.5 meter test unit excavated down to the coral shelf which was encountered at a maximum depth of ca. 43 centimeters below datum (Figure 18 and Figure 19). Several fragments of modern trash including bottle glass, black plastic, and metal wire were observed in Layer I and Layer II. No traditional or historic cultural material or remains were observed during the excavation of Test Unit-1. Atop the basal coral shelf, is a ca. 10 cm thick in situ deposit of light yellowish brown sand. The four layers above this sand layer appear to be fills, given their mixed contents and abrupt and smooth boundaries.

The soils encountered during the excavation of Test Unit-1 are described below in Table 3, and a profile was recorded of the north unit wall (Figure 20).





Figure 16. Test units plotted on topographical map, project area in red.

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Figure 18. Test Unit-1, Base of Excavation (view north).



Figure 19. Test Unit-1, North Wall Profile (view north).

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Table 3. Soil Description for Test Unit-1

Layer	Depth (cm below datum)	Description
Layer I	9-19	Dark brown (10 YR 3/3) loam; weak, fine, granular structure; very friable, slightly sticky, slightly plastic consistency; abrupt, smooth boundary; topsoil for grass, contained modern trash framents. fill.
Layer II	16-22	Dark reddish brown (2.5 YR 3/3) clay loam; moderate, medium, crumb structure; firm, sticky, plastic consistency; very abrupt, smooth boundary; contained modern trash fragments, fill.
Layer III	22-29	Brown (10 YR 5/3) sand; structureless, very fine, single grain structure; loose, noncoherent, nonsticky, nonplastic consistency; very abrupt, smooth boundary <mark>; fill</mark> .
Layer IV	27-35	Reddish brown (5 YR 3/3) clay; weak, medium, platy structure; friable, very sticky, very plastic consistency; very abrupt, smooth boundary; fill.
Layer V	32-43	Light yellowish brown (10 YR 6/4) sand; structureless, fine, single grain structure; loose, noncoherent, nonsticky, nonplastic consistency, natural soil



Figure 20. Test Unit-1, North Wall Profile.



5.1.2 Test Unit-2

Test Unit-2 was excavated by hand in a grassy area located within the eastern portion of the project area (Figures 16 and 17). The excavation began as a 1 meter by 0.5 meter test unit. During excavation a 3/4 inch PVC electrical utility pipe was encountered running through the southeastern corner of the unit at ca. 15 centimeters below datum. Shortly after, a cut 4 inch vertical PVC pipe, possibly an irrigation valve cover, was encountered in the northern portion of the test unit at ca. 15 centimeters below datum. At this time, the unit was expanded 0.5 meter to the west and excavation continued down to the coral shelf which was encountered at a maximum depth of ca. 88 centimeters below datum (Figure 21 and Figure 22). The original portion of the test unit was abandoned due to the presence of subsurface utilities. Several fragments of modern trash including bottle glass and black plastic were observed in Layer I and Layer II. No traditional or historic cultural material or remains were observed during the excavation of Test Unit-2. The depositional history in the area of Test Unit -2 is similar to that of Test Unit-1. Atop the basal coral shelf, is a ca. 26 cm thick in situ deposit of pale brown sand. The three layers above this sand layer appear to be fills, given their mixed contents and abrupt and smooth boundaries.

The soils encountered during the excavation of Test Unit-2 are described below in Table 4, and a profile was recorded of the west unit wall (Figure 23).



Figure 21. Test Unit-2, Base of Excavation (view north).

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Figure 22. Test Unit-2, West Wall Profile (view west).

Table 4. Soil Description for Test Unit-2

Layer	Depth (cm below datum)	Description	
Layer I	10-17	Very dark grayish brown (10 YR 3/2) loamy sand; weak, very fine, granular structure; very friable, nonsticky, nonplastic consistency; abrupt, smooth boundary; topsoil for grass, contained modern trash fragments, fill.	
Layer II	20-61	Light yellowish brown (10 YR 6/4) sand; structureless, fine, single grain structure; loose, noncoherent, nonsticky, nonplastic consistency; very abrupt, smooth boundary; contained modern trash fragments, fill.	
Layer III	59-62	Dark brown (10 YR 3/3) clay loam; moderate, coarse, crumb structure; firm, slightly sticky, slightly plastic consistency; very abrupt, smooth boundary; fill.	
Layer IV	62-88	Very pale brown (10 YR 7/3) sand; structureless, fine, single grain structure; loose, noncoherent, nonsticky, nonplastic consistency, natural soil.	

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Figure 23. Test Unit-2, West Wall Profile.

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5.1.3 Test Unit-3

Test Unit-3 was excavated by hand in a grassy area located within the western portion of the project area (Figures 16 and 17). The excavation consisted of a 0.5 meter by 0.5 meter test unit excavated down to the coral shelf which was encountered at a maximum depth of ca. 58 centimeters below datum (Figure 24 and Figure 25). Several fragments of modern trash consisting of bottle glass were observed in Layer I and Layer II. No traditional or historic cultural material or remains were observed during the excavation of Test Units-3. The depositional history in the area of Test Unit-3 is similar to that of Test Units-1 and 2. Atop the basal coral shelf, is a ca. 26 cm thick in situ deposit of pale brown sand. The three layers above this sand layer appear to be fills, given their mixed contents and abrupt and smooth boundaries.

The soils encountered during the excavation of Test Unit-3 are described below in Table 5, and a profile was recorded of the north unit wall (Figure 26).



Figure 24. Test Unit-3, Base of Excavation (view north).





Figure 25. Test Unit-3, North Wall Profile (view north).

Table 5. Soil Description for Test Unit-3

Layer	Depth (cm below datum)	Description
Layer I	10-19	Very dark gravish brown (10 YR 3/2) loamy sand; weak, very fine, granular structure; very friable, nonsticky, nonplastic consistency; abrupt, smooth boundary: topsoil for grass, contained modern trash fragments, fill.
Layer II	19-32	Dark reddish brown (5 YR 3/3) sandy loam; moderate, medium, granular structure; friable, nonsticky, nonplastic consistency; very abrupt, smooth boundary; contained modern trash fragments, fill.
Layer III	31-33	Yellowish red (5 YR 5/6) sandy loam; moderate, medium, granular structure; friable, nonsticky, nonplastic consistency; very abrupt, smooth boundary; fill.
Layer IV	32-58	Very pale brown (10 YR 7/4) sand; structureless, fine, single grain structure; loose, noncoherent, nonsticky, nonplastic consistency; natural soil.



Figure 26. Test Unit-3, North Wall Profile.

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5.1.4 Test Unit-4

Test Unit-4 was excavated by hand in a grassy area situated *makai* of the eastern most side of the Dolphin Lagoon Wing located within the eastern portion of the project area (Figures 16 and 17). The excavation consisted of a 0.5 meter by 0.5 meter test unit excavated down to the coral shelf which was encountered at a maximum depth of ca. 78 centimeters below datum (Figure 27 and Figure 28). During excavation a 1 ½ inch PVC irrigation pipe was encountered in the west unit wall at ca. 30 centimeters below datum. The pipe was oriented roughly north to south, but because the pipe was located in the west wall of the unit, expansion of the excavation was not necessary. Several fragments of modern trash consisting of bottle glass were observed in Layer I, Layer II, and Layer III. No traditional or historic cultural material or remains were observed during the excavation of Test Unit-4. The depositional history in the area of Test Unit -4 is similar to that of Test Units 1-3. Atop the basal coral shelf, is an almost. 40 cm thick in situ deposit of pale brown sand. The three layers above this sand layer appear to be fills, given their mixed contents and abrupt and smooth boundaries.

The soils encountered during the excavation of Test Unit-4 are described below in Table 6, and a profile was recorded of the east unit wall (Figure 29).



Figure 27. Test Unit-4, Base of Excavation (view east).

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Figure 28. Test Unit-4, East Wall Profile (view east).



Table 6. Soil Description for Test Unit-4

Layer	Depth (cm below datum)	Description
Layer I	10-19	Very dark grayish brown (10 YR 3/2) loam; weak, very fine, granular structure; very friable, slightly sticky, slightly plastic consistency; abrupt, smooth boundary; topsoil for grass, contained modern trash fragments, fill.
Layer II	16-30	Pale brown (10 YR 6/3) loamy sand; weak, very fine, granular structure; very friable, nonsticky, nonplastic consistency; abrupt, smooth boundary contained modern trash fragments (PVC pipe at 30 cmbs), fill.
Layer III	28-41	Yellowish brown (10 YR 5/4) silt; strong, medium, granular structure; very firm, slightly sticky, slightly plastic consistency; very abrupt, smooth boundary, contained modern trash fragments, fill.
Layer IV	37-76	Very pale brown (10 YR 7/4) sand; structureless, fine, single grain structure; loose, noncoherent, nonsticky, nonplastic consistency, natural soil.



Figure 29. Test Unit-4, East Wall Profile.

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5.1.5 Test Unit-5

Test Unit-5 was excavated by hand in a grassy area situated *makai* of the Dolphin Lagoon Wing located within the central eastern portion of the project area (Figures 16 and 17). The excavation began as a 0.5 meter by 0.5 meter test unit. During excavation a 1 ½ inch PVC electrical utility pipe was encountered running roughly east to west through the unit at ca. 55 centimeters below datum. At this time the unit was expanded 0.5 meter to the north and excavation continued. A finished concrete slab was then encountered in the entire base of the excavation at a maximum depth of ca. 60 centimeters below datum preventing any further excavation (Figure 30 and Figure 31). The test unit was not expanded a second time due to the presence of the concrete. Several fragments of modern trash consisting of bottle glass, plastic, and asphalt were observed in Layer I and Layer II. No traditional or historic cultural material or remains were observed during the excavation of Test Unit-5. The two layers revealed in Test Unit-5 are disturbed fill layers, with modern trash found throughout.

The soils encountered during the excavation of Test Unit-5 are described below in Table 7, and a profile was recorded of the west unit wall (Figure 32).



Figure 30. Test Unit-5, Base of Excavation (view east).





Figure 31. Test Unit-5, East Wall Profile (view east).

Table 7. Soil Description for Test Unit-5

Layer	Depth (cm below datum)	Description
Layer I	10-56	Dark brown (10 YR 3/3) silty clay loam; moderate, medium, crumb structure; friable, sticky, plastic consistency; abrupt, smooth boundary <mark>; topsoil for grass, contained modern trash fragments and PVC pipe, fill.</mark>
Layer II	29-60	Dark yellowish brown (10 YR 3/4) silty clay loam; moderate, medium, crumb structure; friable, very sticky, very plastic consistency. Contained modern trash fragments and concrete at BOE, fill.



Figure 32. Test Unit-5, East Wall Profile.

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5.1.6 Test Unit-6

Test Unit-6 was excavated by hand in a sandy area situated *makai* of the parking garage structure and the Kåhala Apartments located within the western portion of the project area (Figures 16 and 17). The excavation consisted of a 0.5 meter by 0.5 meter test unit excavated down to the coral shelf which was encountered at a maximum depth of ca. 30 centimeters below datum (Figure 33 and Figure 34). Several fragments of modern trash consisting of bottle glass and plastic were observed in Layer I. Layer II contained no trash or evidence of disturbance and was terminated at 30cmbs atop a basal coral shelf. No traditional or historic cultural material or remains were observed during the excavation of Test Unit-6.

The soils encountered during the excavation of Test Unit-6 are described below in Table 8, and a profile was recorded of the north unit wall (Figure 35).



Figure 33. Test Unit-6, Base of Excavation (view north).



Figure 34. Test Unit-6, North Wall Profile (view north).

Table 8. Soil Description for Test Unit-6

Layer	Depth (cm below datum)	Description
Layer I	9-20	Light yellowish brown (10 YR 6/4) loamy sand; weak, very fine, granular structure; very friable, nonsticky, nonplastic consistency; abrupt, smooth boundary; contained modern trash fragments, fill.
Layer II	20-30	Brown (10 YR 4/3) sandy clay loam; weak, fine, subangular blocky structure; very firm, slightly sticky, slightly plastic consistency, natural.

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Figure 35. Test Unit-6, North Wall Profile.

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5.1.7 Test Unit-7

Test Unit-7 was excavated by hand in a grassy area situated east of the eastern most side of the Dolphin Lagoon Wing located within the eastern portion of the project area (Figures 16 and 17). The excavation began as a 0.5 meter by 0.5 meter test unit. During excavation a 1 inch PVC irrigation pipe was encountered running roughly northwest to southeast through the unit at ca. 30 centimeters below datum. At this time, the unit was expanded 0.5 meter to the west and excavation continued. The original portion of the test unit was abandoned due to the presence of subsurface utilities. As the depth of the expanded unit increased, it became difficult to excavate and remove the soil from the unit. At a depth of ca. 83 centimeters below datum a hand auger was used to continue the excavation. At a maximum depth of ca. 116 centimeters below datum the hand auger could not go any deeper due to the presence of medium basalt cobbles within the auger hole. No coral shelf was encountered during the excavation of Test Unit-7 (Figure 36 and Figure 37). Several fragments of modern trash including bottle glass, black plastic, and metal wire were observed in Layer I and Layer II. No traditional or historic cultural material or remains were observed. Layer I is the top soil for the grass in this area, and Layer II appears somewhat disturbed with inclusion of modern trash fragments and are likely fill layers while Layer III is natural soil.

The soils encountered during the excavation of Test Unit-7 are described below in Table 9, and a profile was recorded of the north unit wall (Figure 38).



Figure 36. Test Unit-7, Base of Excavation (view north)




Figure 37. Test Unit-7, North Wall Profile (view north).





Table 9. Soil Description for Test Unit-7

Layer	Depth (cm below datum)	Description
Layer I	10-20	Very dark grayish brown (10 YR 3/2) sandy clay loam; weak, fine, crumb structure; very friable, slightly sticky, plastic consistency; abrupt, smooth boundary; topsoil for grass, contained modern trash fragments, fill.
Layer II	18-86	Dark yellowish brown (10 YR 3/4) sandy loam; moderate, fine, crumb structure; very friable, nonsticky, slightly plastic consistency; abrupt, smooth boundary; contained modern trash fragments, PVC pipe at 30 cmbs, fill.
Layer III	86-116	Grayish brown (10 YR 5/2) loamy sand; weak, very fine, granular structure; very friable, nonsticky, nonplastic consistency, contains medium basalt cobbles at 116 cmbs, natural.



Figure 38. Test Unit-7, North Wall Profile.

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5.1.8 Test Unit-8

Test Unit-8 was excavated by hand in a grassy area situated *makai* of the hotel restaurant and pool located within the central portion of the project area (Figures 16 and 17). The excavation consisted of a 0.5 meter by 0.5 meter test unit excavated down to the coral shelf which was encountered at a maximum depth of ca. 80 centimeters below datum (Figure 39 and Figure 40). During excavation a previously cut 4 inch PVC waterline pipe was encountered running roughly east to west in the western portion of the unit at ca. 45 centimeters below datum. A 1 inch PVC electrical utility pipe was encountered running roughly northeast to southwest directly below the cut in the waterline pipe at ca. 55 centimeters below datum. It appeared that the abandoned waterline pipe was cut in order to install the new electrical pipe. As the depth of the unit increased, it became difficult to excavate and remove the soil from the unit. At a depth of ca. 55 centimeters below datum a hand auger was used to continue the excavation. Eventually, the hand auger encountered the coral shelf and the excavation was terminated. Several fragments of modern trash including bottle glass and metal wire were observed in Layer I and Layer II. No traditional or historic cultural material or remains were observed during the excavation of Test Unit-8. Atop the coral shelf are two apparently in silty developed soil layers, both of which show evidence of disturbance by the inclusion of modern trash fragments.

The soils encountered during the excavation of Test Unit-8 are described below in Table 10, and a profile was recorded of the west unit wall (Figure 41).



Figure 39. Test Unit-8, Base of Excavation (view west).

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Figure 40. Test Unit-8, West Wall Profile (view west).

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Table 10. Soil Description for Test Unit-8

Layer	Depth (cm below datum)	Description
Layer I	10-24	Very dark grayish brown (10 YR 3/2) sandy clay loam; weak, very fine, granular structure; very friable, nonsticky, slightly plastic consistency; abrupt, smooth boundary; topsoil for grass, contained modern trash fragments, fill.
Layer II	23-80	Brown (10 YR 5/3) loamy sand; weak, fine, granular structure; very friable, nonsticky, nonplastic consistency. Contained modern trash fragments, fill.



Figure 41. Test Unit-8, West Wall Profile.

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5.1.9 Test Unit-9

Test Unit-9 was excavated by hand in a grassy area situated *makai* of the hotel pool located within the central portion of the project area (Figures 16 and 17). The excavation consisted of a 0.5 meter by 0.5 meter test unit excavated down to the coral shelf which was encountered at a maximum depth of ca. 95 centimeters below datum. During excavation a 1-inch PVC irrigation pipe was encountered running roughly east to west through the center of the unit at ca 52 centimeters below datum. As the depth of the unit increased, it became difficult to excavate and remove the soil from the unit. At a depth of ca. 65 centimeters below datum a hand auger was used to continue the excavation. Eventually, the hand auger encountered the coral shelf and the excavation was terminated (Figure 42 and Figure 43). Several fragments of modern trash including bottle glass and plastic were observed in Layer I. No traditional or historic cultural material or remains were observed during the excavation of Test Unit-9. Atop the coral shelf is an in situ ca. 66 m thick sand deposit that is overlain by about 20 cm of loam that contains modern trash fragments.

The soils encountered during the excavation of Test Unit-9 are described below in Table 11, and a profile was recorded of the east unit wall (Figure 44).



Figure 42. Test Unit-9, Base of Excavation (view east).

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Figure 43. Test Unit-9, East Wall Profile (view east).

Table 11. Soil Description for Test Unit-9

Layer	Depth (cm below datum)	Description
Layer I	9-30	Very dark grayish brown (10 YR 3/2) loam; weak, fine, granular structure; very friable, nonsticky, slightly plastic consistency; abrupt, smooth boundary; contained modern trash fragments, fill.
Layer II	29-95	Pale yellow (2.5 Y 7/3) sand; structureless, fine, single grain structure; loose, noncoherent, nonsticky, nonplastic consistency; PVC pipe at 52 cmbs, natural soil.



Figure 44. Test Unit-9, East Wall Profile.

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6.0 DISCUSSION AND RECOMMENDATIONS

Pacific Legacy, Inc., at the request of PBR HAWAII & Associates, Inc., conducted an archaeological inventory survey (AIS) of approximately 13.9 acres of The Kahala Hotel & Resort property located in Kāhala along the southern coast of the island of O'ahu. The current archaeological investigation was conducted in order to determine if significant cultural resources were present in the area of the proposed project.

The Kahala Hotel & Resort is proposing several possible beach enhancements including rejuvenating the landscape architectural design of the areas currently maintained by the hotel; improving the lateral access along the shoreline; non-permanent improvements and operations to allow for outdoor weddings; dredging of the channel fronting the hotel to remove sand and silt; and sand replenishments of the beach.

The current AIS consisted of hand excavating nine shovel test units spread evenly throughout the project area. Due to the nature of the project area being within an active hotel and resort, it was determined that hand excavation would be both safer and more feasible than using a backhoe or mini track excavator to conduct excavations.

Fragments of modern trash were observed in all nine of the excavated test units. Modern trash consisted of a variety of bottle glass, plastic, metal wire, and asphalt, which was mostly concentrated in the upper layers of the test units. In addition, existing subsurface utility lines were encountered in a total of six of the nine test units excavated. Both the presence of modern trash debris and existing subsurface utilities indicate that the majority of the current project area has been previously disturbed, most likely by construction activities related to several phases of development associated with The Kahala Hotel & Resort.

None of the shovel test units excavated uncovered any traditional or historic cultural material, deposits, or remains. The investigations reported upon in this report are considered an archaeological assessment based on the lack of findings – no historic properties were found in the project area.

Not only does it appear that the majority of the current project area has been previously disturbed, but based upon the results of the test excavations, it appears that the area is also underlain by a relatively shallow coral shelf. During excavation of the nine test units, the coral shelf was encountered in a total of seven of the test units.

Based upon the complete lack of archaeological findings, the previously disturbed nature of the project area, and the presence of a relatively shallow coral shelf, no further work is recommended for this project.

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Appendix E

Flora and Fauna Survey

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BIOLOGICAL RESOURCES SURVEY

for the

KAHALA HOTEL AND RESORT

BEACHFRONT IMPROVEMENTS PROJECT

KAHALA, HONOLULU

by

Robert W. Hobdy Environmental Consultant Kokomo, Maui July 2015

> Prepared for: PBR Hawaii

BIOLOGICAL RESOURCES SURVEY KAHALA HOTEL AND RESORT BEACHFRONT IMPROVEMENTS PROJECT

INTRODUCTION

The Kahala Hotel and Resort Beachfront Improvements project is located along the shoreline at the east end of Kahala Avenue and adjacent to the Waialae Country Club in east Honolulu, Oahu (TMKs 3-5-23:001 por., 039 por., 041) (see Figure 1). This biological resources study was initiated by the owners in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The project area fronts the Hotel facilities along the shoreline and includes lawns, pathways, shade trees, ornamental landscaping and a sandy beach. Elevations range from sea level to ten feet. Soils consist of beach sands (BS), and Jaucas sand (JaC) which is made up of unconsolidated sand mixed with silty soil and has moderate amounts of salt content (Foote et al, 1972). Annual rainfall averages about 25 inches with most occurring during the winter months (Armstrong, 1983).

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Kahala Hotel and Resort Beachfront Improvements project which was conducted in July 2015. The objectives of the survey were to:

- 1. Document what plant and animal species occur on the property or may likely occur in the existing habitat.
- 2. Document the status and abundance of each species.
- 3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.
- 4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used selecting routes to cover the entire area and all habitat types. Areas most likely to harbor native or rare plants were more intensively examined. Notes were made on plant species, distribution and abundance as well as on terrain and substrate.

DESCRIPTION OF THE VEGETATION

The vegetation in the project area is a well-manicured landscape with a spreading lawn and an assortment shade trees and ornamental hedges and borders. On grass species, centipede grass (*Eremochloa ophiuroides*), was abundant and was the primary lawn grass fronting the resort. Other common species in the landscape included coconut (*Cocos nucifera*), hau (*Hibiscus tiliaceus*) and Natal plum (*Carissa macrocarpa*). Three native plant species were found during the survey, naupaka kahakai (*Scaevola taccada*), manawanawa (*Vitex rotundifolia*) and pohuehue (*Ipomoea pes-caprae* subsp. *brasiliensis*). In addition, three plant species of Polynesian origin were found, the coconut, the hau and the kamani (*Calophyllm inophyllum*).

The total count for the entire project area was fifty-two plant species.

DISCUSSION AND RECOMMENDATIONS

The vegetation within the project area is dominated by non-native plants. The three native plant species recorded are all widespread and common in Hawaii, and all of them had been planted here as components of the landscaping. The three plants of Polynesian origin were, likewise, common and had been purposely introduced into the landscape.

No federally listed Endangered or Threatened plant species (USFWS, 2015) were found in the project. No special habitats were identified within the project area. This project area lies within urban Honolulu, distant from any natural habitats other than the ocean.

Because of the above existing conditions it has been determined that there is little of botanical concern in the project area, and that the anticipated disturbances associated with the proposed beachfront improvements are not expected to have a significant negative impact on the botanical resources in this part of O'ahu.

It is recommended, however, that coastal and lowland native plant species continue to be incorporated into future landscape designs.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within three groups: Ferns, Monocots and Dicots. Taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999) and Staples & Herbst (2005).

For each species, the following information is provided:

1. Scientific name with author citation.

- 2. Common English or Hawaiian name.
- 3. Bio-geographical status. The following symbols are used:

endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.

indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

Polynesian introduction = plants introduced to Hawai'i in the course of Polynesian migrations and prior to western contact.

non-native = all those plants brought to the islands intentionally or accidentally after western contact.

4. Abundance of each species within the project area:

abundant = forming a major part of the vegetation within the project area.

common = widely scattered throughout the area or locally abundant within a portion of it.

uncommon = scattered sparsely throughout the area or occurring in a few small patches.

rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE	BORAGINACEAE (Borage Family)	tree heliotrope	non-native	uncommon
POLYPODIACEAE (Polypody Fern Family)				CLUSIACEAE (Clusia Family)	tree nenotrope	non-native	uncommon
Phymatosorus grossus (Langsd & Fisch) Brownley	laua'e	non-native	rare	Calophyllum inophyllum I	kamani	Polynesian	rare
MONOCOTS	uuu c	non-native	iaie	Clusia rosea Isca	autograph tree	non-native	rare
AMARYLI IDACEAE (Amaryllis Family)				COMBRETACEAE (Indian Almond Family)	autographitice	non-native	iare
Crinun asiaticum I	giant lily	non-native	uncommon	Conocarpus erectus I	hutton mangrove	non-native	rare
$\Delta R \Delta C F \Delta F$ (Aroid Family)	giant my	non-native	uncommon	Terminalia catappa I	Indian almond	non-native	rare
Eninger pinnetum (L.) Engler	nothes	non nativa	r0r0	CONVOLVUL ACEAE (Morning Clory Family)	mutan annonu	non-native	Tare
A DECACEAE (Dalm Family)	poulos	non-nauve	Tale	(L) P. Parashar (L) Costa	n āku aku a	indiaanaua	2020
ARECACEAE (Faini Fainity)				<i>Ipomoea pes-caprae</i> (L.) K. Br. subsp. <i>brasulensis</i> (L.) Oostr.	ponuenue	margenous	Tale
Cocos nucifera L.	thus, coconut	non-native	common	Continue and the second			
Dypsis accaryl (Jumene) Beenijie & J. Dransneid	inree-angled paim	non-native	rare	<i>Coaldeum variegatum</i> (L.) Blume	croton	non-native	uncommon
Dypsis lutescens (H. wendl.) Beentjie & J. Dransfield	golden-truited paim	non-native	uncommon	Euphorbia hypericifolia L.	graceful spurge	non-native	rare
Ptychosperma elegans (R.Br.) Blume	solitaire palm	non-native	uncommon	FABACEAE (Pea Family)			
Ptychosperma macarthuri (Veitch) J.D Hooker	Macarthur palm	non-native	uncommon	Alysicarpus vaginalis (L.) DC.	alyce clover	non-native	rare
Rhapis excelsa (Thunb.) Rehder	bamboo palm	non-native	rare	Desmanthus pernambucanus (L.) Thellung	slender mimosa	non-native	rare
CYPERACEAE (Sedge Family)				Desmodium incanum DC.	Spanish clover	non-native	rare
Cyperus rotundus L.	nut sedge	non-native	rare	Leucaena leucocephala (Lam.) de Wit	koa haole	non-native	rare
POACEAE (Grass Family)				Macroptilium lathyroides (L.) Urb.	wild bean	non-native	rare
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	rare	GOODENIACEAE (Goodenia Family)			
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	uncommon	Scaevola taccada (Gaertn.) Roxb.	naupaka kahakai	indigenous	uncommon
Digitaria violascens Link	kukae pua'a	non-native	rare	MALVACEAE (Mallow Family)			
Eleusine indica (L.) Gaertn.	wiregrass	non-native	rare	Hibiscus tileaceus L.	hau	Polynesian	common
Eremochloa ophiuroides (Munro) Hackel	centipede grass	non-native	abundant	Sida ciliaris L.	bracted fanpetals	non-native	rare
Paspalum conjugatum Bergius	Hilo grass	non-native	rare	MORACEAE (Fig Family)			
Sporobolus diander (Retz.) P. Beauv.	Indian dropseed	non-native	rare	Ficus microcarpa L. fil.	Chinese banyan	non-native	rare
Stenotaphrum secundatum (Walter) Kuntze	St. Augustine grass	non-native	rare	Ficus sp.	dwarf ficus	non-native	rare
Zoysia matrella (L.) Merr.	zoysia grass	non-native	uncommon	PHYLLANTHACEAE (Phyllanthus Family)			
ZINGIBERACEAE (Ginger Family)				Phyllanthus debilis Klein ex Willd.	niruri	non-native	rare
Alpinia pupurata (Veill.) K. Schumann	red ginger	non-native	rare	POLYGONACEAE (Buckwheat Family)			
DICOTS	0.0			Coccoloba uvifera P. Br.	sea grape	non-native	rare
ACANTHACEAE (Acanthus Family)				ROSACEAE (Rose Family)	0 1		
Barleria repens Nees	pink ruellia	non-native	rare	Rhaphiolepis x delacourii Andre	Indian hawthorn	non-native	rare
<i>r</i>	yellow-veined false			RUBIACEAE (Coffee Family)			
Pseuderanthemum carruthersii W. Bull var.reticulatum Fosberg	eranthemum	non-native	uncommon	<i>Gardenia taitensis</i> A P de Candolle	<i>tiare</i> Tahitian gardenia	non-native	uncommon
APOCYNACEAE (Dogbane Family)				VERBENACEAE (Verbena Family)	nure, runnun gardeniu	non nutre	uncommon
Carissa macrocarpa (Eklon) A.DC.	Natal plum	non-native	common	Viter rotundifolia I fil	manawanawa	indigenous	uncommon
Plumeria obtusa L.	Singapore plumeria	non-native	uncommon	Vitex Volunaijona E. III.	manawa	margenous	uncommon
ASTERACEAE (Sunflower Family)							
Emilia sonchifolia (L.) DC.	Flora's paintbrush	non-native	rare				
Erigeron bellioides DC.	fleabane	non-native	rare				
Sonchus oleraceus L.	sow thistle	non-native	rare				
Sphagneticola trilobata (L.) Pruski	wedelia	non-native	rare				
Youngia japoncia (L.) DC.	Oriental hawksbeard	non-native	rare				
SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE				
5				(5		

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through fauna survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails, tracks, scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

MAMMALS

Just one species of a non-native mammal was observed in the project area during three site visits. Taxonomy and nomenclature follow Tomich (1986). Domestic dogs (*Canis familiaris*) are occasional visitors as leashed animals with their owners who are resort guests. Other mammal species one might expect to see on the resort grounds include the occasional domestic cat (*Felis catus*), mice (*Mus domesticus*), rats (*Rattus spp.*) and mongoose (*Herpestes auropunctatus*).

An evening survey was conducted at three locations within the project area using a bat detecting device (Batbox IIID), set to the frequency of 27,000 Hertz that the Hawaiian hoary bats are known to use for echolocation in their pursuit of nocturnal flying insects. No bats were detected at any of these locations with the use of this device.

BIRDS

Bird life was modest in the diversity of species observed but fairly well represented in total numbers. Taxonomy and nomenclature follow American Ornithologists' Union (2014). A total of ten bird species were observed during three site visits. Two non-native bird species were quite abundant in the project area, the common myna (*Acridotheres tristis*) and the house sparrow (*Passer domesticus*).

One indigenous seabird, the white tern (*Gygis alba rothschildi*) was an occasional visitor around large trees where they may roost, lay eggs and raise young. These white terns are common in colonies in the Papahānaumokuākea Marine National Monument and in other tropical Pacific islands, but they have been declared Endangered on O'ahu where there is an incipient but growing population.

INSECTS

Insect life was sparse throughout the project area due primarily to the lack of habitat diversity one encounters in well managed resort properties. Four non-native insect species were observed during three site visits. Taxonomy and nomenclature follow Nishida et al (1992). No species were found to be common, but one uncommon species was the honey bee (*Apis mellifera*). Three other insect species were rare. No native insect species were found.

CRUSTACEANS

Two common indigenous crab species were observed in the supra-tidal splash zone. The 'ohiki or ghost sand crabs (*Ocypode ceratopthalmus*) had a few of their burrows on the sandy beach. Several black 'a'ama crabs (*Grapsus tenuicrustatus*) were seen on lava boulders on the points on either side of the lagoon.

MOLLUSKS

Three native mollusk species were observed on the lava boulders in the splash zones of the two points. The pipipi snail (*Nerita picea*), the periwinkle (*Littoraria pintado*) and the black-foot 'opihi (*Cellana exarata*) all are adapted to clinging to boulders where they are periodically inundated by ocean waves.

DISCUSSION AND RECOMMENDATIONS

The Kahala Resort is heavily used by guests, especially along the beachfront portion of the property. This usage discourages many forms of wild life from using the habitat. Occurrences of mammals, birds and insects was sparse to moderate and only one native bird the indigenous and endangered white tern was present. Other common native crustacean and mollusk species frequent the sand beach or the rocky shoreline above the waters edge.

The white tern population on Oahu has been growing slowly since its first discovery in 1981. They are becoming increasingly common around trees in parks between Koko Head and Honolulu Harbor. Habitat for these terns is not highly specialized. Any tree species with suitable forking branches that will hold an egg will do. It is recommended that any tree pruning or removal work within the Kahala Resort be preceded by inspections to ensure that no white tern nesting perches with eggs or chicks are present or will be affected.

The endemic and protected Hawaiian hoary bat was not detected during the survey. These bats are not known from urban Honolulu and are not expected to occur in the project area.

No Endangered nēnē or Hawaiian goose are known from Oahu except in captivity and are not expected in the project area.

No Blackburn's sphinx moths (*Manduca blackburni*) were found during the survey. They are not presently known from Oahu and none of their special host plants were found either.

No protected waterbirds, the ae'o or Hawaiian stilt (*Himantopus mexicanus knudseni*), 'alae ke'oke'o or Hawaiian coot (*Fulica alai*), 'alae'ula or common moorhen (*Gallinula chloropus sandvicensis*) or the koloa or Hawaiian duck (*Anas wyvilliana*) were seen during the survey and no suitable undisturbed wetland habitat occurs on or near to the project area.

Hawaiian petrels (*Pterodroma phaeopygia sandwichensis*) and Newell's shearwaters (*Puffinus auricularis newellii*), (collectively known as seabirds) may transit over the project area when flying between the ocean and nesting sites in the mountains during their breeding season (March through November). Fatalities to these seabirds resulting from collisions with artificial structures that extend above the surrounding vegetation have been documented in Hawaii where high densities of transiting seabirds occur. Additionally, artificial lighting such as floodlighting for construction work can adversely impact seabirds by causing disorientation which may result in collision with utility lines, buildings, fences and vehicles. Fledgling seabirds are especially affected by artificial lighting and have a tendency to exhaust themselves while circling the light sources and become grounded. Too weak to fly, these birds become vulnerable to predation by predators such as mongoose, cats and dogs . These threats can be minimized by the shielding of any outdoor lighting so that the light is visible only from below.

No other recommendations regarding wildlife are deemed necessary.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within five groups: Mammals, Birds, Insects, Crustaceans and Mollusks. For each species the following information is provided:

1. Common name.

- 2. Scientific name.
- 3. Bio-geographical status. The following symbols are used:

endemic = native only to Hawaii; not naturally occurring anywhere else in the world.

- indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
- non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.
- migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.
- 4. Abundance of each species within the project area:

abundant = many flocks or individuals seen throughout the area at all times of day.

common = a few flocks or well scattered individuals throughout the area.

uncommon = only one flock or several individuals seen within the project area.

rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS			
Canis familiaris L.	domestic dog	non-native	rare
BIRDS			
Passer domesticus L.	house sparrow	non-native	abundant
Acridotheres tristis L.	common myna	non-native	common
Geopelia striata L.	zebra dove	non-native	uncommon
Bubulcus ibis L.	cattle egret	non-native	uncommon
Estrilda astrild L.	common waxbill	non-native	uncommon
Columba livia Gmelin	rock pigeon	non-native	uncommon
Gygis alba rothschildii Sparrman	manu o ku, white tern	indigenous	uncommon
Paroaria coronata Miller	red-crested cardinal	non-native	uncommon
Streptopelia chinensis Scopoli	spotted dove	non-native	rare
Pycnonotus cafer L.	red-vented bulbul	non-native	rare
INSECTS			
Order DIPTERA - flies			
MUSCIDAE (House Fly Family)			
Musca domestica L.	housefly	non-native	rare
Musca domestica L.	housefly	non-native	rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants	housefly	non-native	rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family)	housefly	non-native	rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L.	housefly honey bee	non-native	rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith	housefly honey bee Sonoran carpenter bee	non-native non-native non-native	rare uncommon rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family)	housefly honey bee Sonoran carpenter bee	non-native non-native non-native	uncommon rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius	housefly honey bee Sonoran carpenter bee big-headed ant	non-native non-native non-native	rare uncommon rare rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius	housefly honey bee Sonoran carpenter bee big-headed ant	non-native non-native non-native	uncommon rare rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS	housefly honey bee Sonoran carpenter bee big-headed ant	non-native non-native non-native	rare uncommon rare rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS Ocypode ceratopthalma Pallas	housefly honey bee Sonoran carpenter bee big-headed ant 'ohiki, ghost crab	non-native non-native non-native indigenous	rare uncommon rare rare rare
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS Ocypode ceratopthalma Pallas Grapsus tenuicrustatus Herbst	housefly honey bee Sonoran carpenter bee big-headed ant <i>'ohiki</i> , ghost crab <i>'a'ama</i> crab	non-native non-native non-native indigenous indigenous	rare uncommon rare rare uncommon
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS Ocypode ceratopthalma Pallas Grapsus tenuicrustatus Herbst	housefly honey bee Sonoran carpenter bee big-headed ant 'ohiki, ghost crab 'a'ama crab	non-native non-native non-native indigenous indigenous	rare uncommon rare rare rare uncommon
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS Ocypode ceratopthalma Pallas Grapsus tenuicrustatus Herbst MOLLUSKS	housefly honey bee Sonoran carpenter bee big-headed ant <i>'ohiki</i> , ghost crab <i>'a'ama</i> crab	non-native non-native non-native indigenous indigenous	rare uncommon rare rare uncommon
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS Ocypode ceratopthalma Pallas Grapsus tenuicrustatus Herbst MOLLUSKS Nerita picea Recluz	housefly honey bee Sonoran carpenter bee big-headed ant <i>'ohiki</i> , ghost crab <i>'a'ama</i> crab	non-native non-native non-native indigenous indigenous	rare uncommon rare rare uncommon uncommon
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS Ocypode ceratopthalma Pallas Grapsus tenuicrustatus Herbst MOLLUSKS Nerita picea Recluz Littoraria pintado Wood	housefly honey bee Sonoran carpenter bee big-headed ant <i>'ohiki</i> , ghost crab <i>'a'ama</i> crab <i>pipipi</i> snail periwinkle snail	non-native non-native non-native indigenous indigenous indigenous	rare uncommon rare rare uncommon uncommon
Musca domestica L. Order HYMENOPTERA - bees, wasps, ants APIDAE (Honey Bee Family) Apis mellifera L. Xylocopa sonorina Smith FORMICIDAE (Ant Family) Pheidole megacephala Fabricius CRUSTACEANS Ocypode ceratopthalma Pallas Grapsus tenuicrustatus Herbst MOLLUSKS Nerita picea Recluz Littoraria pintado Wood Cellana exarata Reeve	housefly honey bee Sonoran carpenter bee big-headed ant <i>'ohiki</i> , ghost crab <i>'a'ama</i> crab <i>pipipi</i> snail periwinkle snail black foot <i>'opihi</i>	non-native non-native non-native indigenous indigenous indigenous endemic	rare uncommon rare rare uncommon uncommon rare



Figure 1. Project Area outlined in yellow

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Appendix F

Marine Biology Survey

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BASELINE ASSESSMENT OF MARINE WATER CHEMISTRY AND MARINE BIOTIC COMMUNITIES KAHALA HOTEL AND RESORT LAGOON OAHU, HAWAII

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I. INTRODUCTION AND PURPOSE

The Kahala Hotel and Resort is located on the south shore of Maunalua Bay, Oahu, Hawaii. In 1963, an agreement was recorded between the State of Hawaii Department of Transportation Harbors Division, State Board of Land and Natural Resources, the Kahala Hilton Hotel Company, Inc., Charles Pietsch, Jr., David Pietsch, Bernice P. Bishop Estate, Waialae Country Club and Sheraton Hawaii Corporation) to improve the beach frontage carrying out a plan entitled "Beach Improvement at Waialae-Kahala." The plan included dredging and filling operations to create a beach and swimming area (lagoon) out of the existing fringing reef off the shoreline. In addition, two small islets and two groins were constructed. For approximately the last 50 years, these structures have remained in place, providing a safe beach and swimming environment for hotel visitors and local residents.

The current owners and operators of the Kahala Hotel and Resort propose to rejuvenate the area, which includes replenishing sand on the beach and renovating the swimming raft anchored in the lagoon. At present, the project does not involve dredging the lagoon floor to remove sand and silt. Sand sources for beach replenishment will not be from marine sources adjacent to the Kahala property. A Draft EA will be prepared to accompany the concept design report during coordination with the permitting agencies.

The purpose of this document is provide the results of ecological assessments of two aspects of the marine ecosystem fronting the Kahala Hotel and Resort. Water chemistry was assessed by collecting a set of samples extending from the shoreline to the open coastal ocean directly fronting the Kahala Lagoon. Marine community structure, primarily in terms of coral/algae reef assemblages was also described based on rapid surveys. The purpose of these assessments is to provide a description of the existing condition of the marine environment. Evaluation of the existing condition of the water chemistry and marine communities provides an insight into the physical and chemical factors that influence the marine setting. Understanding the existing physical, chemical and biological conditions of the marine environment that presently occur provides a basis for reducing potential affects that might occur as a result of the proposed shoreline changes.

II. METHODS

A. Water Quality/Chemistry

The majority of fieldwork was conducted on July 16, 2015 by consultant's staff working or diving from shore. Water chemistry was assessed along four survey transects that extended perpendicular to the shoreline from the highest wash of waves at the shoreline to approximately 150 meters off shore. Water samples were collected at six to eight locations along each transect (Figure 1). Such a sampling scheme is designed to span the greatest range of salinity with respect to potential freshwater efflux at the shoreline. Sampling was more concentrated in the nearshore zone because this area receives the majority of groundwater discharge, and hence is most important with respect to identifying the effects of shoreline modification. Samples were also collected in the Dolphin Lagoon, from a drainage pipe at the shoreline near the center of the lagoon, and from a drainage outlet on the reef off the eastern edge of the lagoon. This drainage is the subject of NPDES Permit No. HI0021300 issued March 31, 2010 for discharge of noncontact cooling water through two outfalls.

Owing to the shallow depth of the near-shore shelf, at stations where water depth was less than one meter (~3 feet), a single sample was collected within 20 cm of the sea surface. At stations where water depth exceeded one meter, samples were collected at two depths; a surface sample was collected within approximately 20 (cm) of the sea surface, and a bottom sample was collected within 20 cm of the sea floor.

Water quality parameters evaluated included the all specific criteria designated for open coastal waters in Chapter 11-54, Section 06 (b) (Open Coastal waters) of the State of Hawaii Department of Health (DOH) Water Quality Standards. These criteria include: total nitrogen (TN), nitrate + nitrite nitrogen (NO₃⁻ + NO₂⁻, hereafter referred to as NO₃⁻), ammonium nitrogen (NH₄⁺), total phosphorus (TP), Chlorophyll a (Chl <u>a</u>), turbidity, temperature, pH and salinity. In addition, silica (Si) and orthophosphate phosphorus (PO₄⁻³) were also reported because these parameters are sensitive indicators of biological activity and the degree of groundwater mixing.

Subsamples for nutrient analyses were immediately placed in 125-milliliter (ml) acid-washed, triple rinsed, polyethylene bottles and stored on ice. Analyses for Si, NH₄⁺, PO₄³⁻, and NO₃⁻ were performed on filtered subsamples with a Technicon Autoanalyzer using standard methods for seawater analysis (Strickland and Parsons 1968, Grasshoff 1983). TN and TP were analyzed in a similar fashion following digestion. Total organic nitrogen (TON) and total organic phosphorus (TOP) were calculated as the difference between TN and dissolved inorganic N and TP and dissolved inorganic P, respectively.

Water for other analyses was subsampled from 1-liter polyethylene bottles and kept chilled until analysis. Chl *a* was measured by filtering 300 ml of water through glass-fiber filters; pigments on filters were extracted in 90% acetone in the dark at -20° C for 12-24 hours. Fluorescence before and after acidification of the extract was measured with a Turner Designs fluorometer. Salinity was determined using an AGE Model 2100 laboratory salinometer with a readability of 0.00011 (ppt). Turbidity was determined using a 90-degree nephelometer, and reported in nephelometric turbidity units (NTU) (precision of 0.01 NTU). Vertical profiles of salinity, temperature and depth were acquired using a RBR-620 CTD calibrated to factory standards.

All fieldwork was conducted by Dr. Steven Dollar and Ms. Andrea Millan. All laboratory analyses were conducted by Marine Analytical Specialists located in Honolulu, HI (Labcode: HI 00009). This analytical laboratory possesses acceptable ratings from EPA-compliant proficiency and quality control testing.

B. Marine Biotic Community Structure

Physical and biotic composition of the survey area was assessed by divers conducting zigzag swims from the shoreline across the lagoon and adjoining reef to a distance of approximately 100 meters offshore. These surveys covered the entirety of the dredged swimming lagoon and neighboring areas adjacent to the islets. During these survey these underwater investigations, notes on species composition were recorded, and numerous digital photographs recorded the existing conditions of the area.

III. RESULTS

A. Water Quality/Chemistry

1. Distribution of Chemical Constituents

Tables 1 and 2 show results of all water chemistry analyses on samples collected off the Kahala Resort in July 2015. Table 1 shows concentrations of dissolved nutrients in micromolar (μ M) units; Table 2 shows concentrations in micrograms per liter (μ g/L). Concentrations of six dissolved nutrient constituents in surface and deep samples are plotted as functions of distance from the shoreline in Figure 2. Values of salinity, Chl *a* and turbidity as functions of distance from shore are shown in Figure 3.

Several patterns of distribution are evident in Tables 1 and 2 and Figures 2 and 3. The most striking feature is that for all dissolved nutrients shown in Figure 2, the concentrations in samples taken directly over the two discharge pipes off Transects 1 and 3 are orders of magnitude higher than all other samples in the lagoon (Figure 1 shows points of discharge for the two drains). However, while the nutrient concentrations at the points of discharge are substantially elevated, there are virtually no gradients of decreasing values at adjacent sampling points. In other words, the pipe discharge is mixed and diluted so rapidly following discharge that the effect is very localized, and does not spread throughout the lagoon or surrounding reef areas. Such an observation is likely a result of both relatively small discharge from the pipes, and rapid mixing of the water column by the predominant eastward flowing current that typifies the lagoon.

Another pattern that is evident in the data is the dissolved nutrients Si, NO_{3} and PO_{4} display slightly elevated concentrations in the samples collected within about 5 m from the shoreline, with decreasing values with distance from shore (Tables 1-2, Figure 2). Salinity displays the opposite trend, with lower concentrations in the nearshore samples (Tables 1-2, Figure 3). While these gradients are detectable, they are considered small in magnitude, with changes of less than 2-3 μ M NO₃⁻ and 2‰ over the entire sampling range (not counting the drain discharge samples).

These small horizontal gradients of Si, NO₃⁻, PO₄³⁻ and salinity reflect input of groundwater to the ocean near the shoreline. Low salinity groundwater, which typically contains high concentrations of Si, NO₃⁻ and PO₄³⁻ relative to oceanic water percolates to the ocean at the shoreline, resulting in a nearshore zone of mixing. In many areas of the Hawaiian Islands, such groundwater percolation results in steep horizontal gradients of increasing salinity and decreasing nutrients moving seaward. However, in the Kahala Resort Lagoon such input is relatively small. Horizontal gradients of TN and TP, generally reflect the patterns of NO₃⁻ and PO₄³⁻, respectively.

As the sampling site off the Kahala Resort consist of a semi-enclosed lagoon, circulation within the excavated area is restricted to long-shore currents. Seaward of the lagoon, over the surface of the intact reef platform, mixing of water is more affected by wind and wave action as well long-shore currents. Hence, on all transects, the lowest concentrations of nutrients occurs at the stations farthest from the shoreline.

Water chemistry parameters that are not associated with groundwater input (NH₄⁺, TON) also show the same gradients of decreasing concentration with respect to distance from the shoreline although TOP does not display such a pattern (Tables 1, 2). Rather, TOP shows a weak horizontal pattern of lower concentrations near the shoreline with higher values at the greatest distances from shore.

Similar to the patterns of dissolved inorganic nutrients, the distribution of Chl a and turbidity also display peaks near the shoreline, with diminishing values moving seaward from the shoreline (Tables 1-2, Figure 3). Plots of turbidity and Chl a do not show the same peak values directly over the drain discharges, as was the case for nutrients and salinity (Figure 3). Overall, values of Chl a within the lagoon are considered high for open ocean marine systems with values in excess of 1 µg/L (Figure 3). The progressive decrease in values of turbidity with distance from shore is likely a response to resuspension of fine-grained particulate material stirred by currents in the nearshore zone (Figure 3).

In addition to horizontal gradients extending from the shoreline offshore, vertical gradients through the water column are often encountered. As groundwater has a salinity of essentially zero, it is far more buoyant than seawater with a salinity of 35‰ (35 parts of dissolved salt to per thousand parts of seawater). Hence, in areas where mixing processes are not sufficient to homogenize the water column surface layers of low-salinity, high-nutrient are often found overlying layers of higher salinity, lower nutrient water. Inspection of Tables 1-2, and Figure 2 indicates that there was no such distinct vertical stratification of nutrient concentrations or salinity at the Kahala Resort site. The lack of such vertical stratification is likely a result of a combination of shallow water throughout the sampling regime and substantial stirring by currents.

2. Conservative Mixing Analyses

A useful treatment of water chemistry data for interpreting the extent of material inputs from land is application of a hydrographic mixing model. In the simplest form, such a model consists of plotting the concentration of a dissolved chemical species as a function of salinity. It is possible to evaluate the extent of nutrient input from sources other than groundwater efflux by plotting the concentration of the dissolved material as a function of salinity (Officer 1979, Smith and Atkinson 1992, Dollar and Atkinson 1992).

Comparison of the curves produced by such plots with conservative mixing lines provides an indication of the origin and fate of the material in question. Figure 4 shows the concentrations of four dissolved nutrient constituents (Si, NO₃-, NH₄+, and PO₄³-) at all four sampling transect sites collected during the July 2015 survey plotted as functions of salinity. Each mixing plot also shows two conservative mixing lines that were constructed by connecting the endpoint concentrations of open ocean water and groundwater from two different regions. The dashed mixing lines show nutrient concentrations from the drain discharge at the shoreline of the lagoon near Transect 3, while the solid mixing lines show nutrient concentrations from the drain discharge at the shoreline of the dolphin pool directly mauka of the ocean sampling sites.

If the parameter in question displays purely conservative behavior (no input or removal from any process other than physical mixing), and the only source of groundwater is from the aquifer where the endpoint well is located, data points should fall on the conservative mixing line. If, however, external material is added to the system, data points will fall above the mixing line. If material is being removed from the system by processes such as biological uptake, data points will fall below the mixing line.

Dissolved Si represents a check on assumptions of the method, as it is present in high concentration in groundwater, but is not a major component of sewage or fertilizer, and is not generally utilized rapidly within the nearshore marine environment by biological processes. For the Kahala Resort sampling, most of the data points from all four transects fall on the mixing line created from the shoreline drain endpoint (dashed line). None fall on the mixing line created from the dolphin pool water. The sample collected from the offshore drain on Transect 1 lies far above both mixing lines, indicating it originates from a distinctly different water source on land (Figure 4). As mentioned in the Methods section, this discharge is noncontact cooling water Of note is that the data points prescribe a linear pattern, indicating that there is no uptake within the marine setting which would be reflected as upward concavity.

NO₃⁻ is the form of nitrogen most common in landscaping fertilizer mixes as well as treated sewage effluent, and is the most mobile form of nitrogen within soils and groundwater. Similar to Si, data points from the July 2015 sampling fall on the drain water mixing line and not the dolphin pool. As with Si, the sample from the drain on transect 1 lies far from either mixing line, indicating a distinctly different water source (Figure 4).

The other form of dissolved nitrogen, NH₄⁺, shows a somewhat different relationship with salinity than both Si and NO₃⁻. While the data points for the latter inorganic nutrients prescribe fairly linear distribution, the plots of NH₄⁺ as a function of salinity reveal little indication of linear patterns at any of the transects. Rather, most of the concentrations of NH₄⁺ in the nearshore ocean samples occurred in a randomly scattered pattern with concentrations lower than samples collected at the most seaward sampling points with the highest salinities (Figure 4).

 $PO_{4^{3-}}$ is also a component of fertilizer, but because a high absorptive affinity in soils is usually not found to leach to groundwater to the extent of $NO_{3^{-}}$. Examination of the distribution of data points for the scaling of $PO_{4^{3-}}$ versus salinity for the Kahala data shows a pattern nearly identical to that of Si and $NO_{3^{-}}$ (Figure 4).

The overall outcome of plotting nutrient concentrations as functions of salinity for the Kahala Resort data is that water in the lagoon is a mixture of ocean water and groundwater with composition similar to that discharging from the pipe at the shoreline in the vicinity of transect 3. There does not appear to be any input of water that might be discharged from the dolphin pool, or the water emanating from the discharge pipe on the reef at the eastern end of the lagoon.

3. Compliance with DOH Criteria

Water Quality Standards for that apply to the areas offshore of the Kahala Resort are listed as "open coastal water" in HRS Chapter §11-54-6(b). Two sets of standards are listed depending on whether an area receives more than 3 million gallons per day (mgd) of freshwater input per shoreline mile ("wet standards"), or less than 3 mgd of freshwater input per shoreline mile ("dry"). As the Kahala shoreline area probably receives less than 3 mgd per mile, dry criteria were used for this evaluation.

It can be seen in Tables 1 and 2 that the only nutrient constituents to exceed State of Hawaii water quality standards at the not to exceed more than 2% of the time criterion are nitrate-

nitrogen (NO₃⁻) at a single sampling station at the shoreline of Control transect 4 (not including the two pipe discharges), and ammonium-nitrogen (NH₄⁺). Ammonium exceeded the 2% criterion (9 μ g/L) in most of the samples within the lagoon at transect sites 2, 3 and 4. As there were similar numbers of samples with concentrations above 9 μ g/L at Transect 4, which is considered a control, it appears that this level of NH₄⁺ is not related to a distinct input of contaminants from the Kahala Resort. Rather, as NH₄⁺ is a product of biotic metabolism, it is likely that the measured concentrations are a result on natural metabolic processes within the lagoon

Values of turbidity consistently exceeded the "not to exceed more than 2% of the time" at all stations from the shoreline to the offshore limits of the sampling. This results is likely a reflection of resuspension of fine-grained naturally occurring sediment that forms the floor of the lagoon. Beyond the seaward boundary of the dredged lagoon, values of turbidity were well below the values within the lagoon. Similarly, values of ChI a that exceeded the 2% criteria were primarily located within the inner areas of the lagoon (Tables 1 and 2).

B. Physical Structure of the Marine Environment

Physical composition of the survey area fronting the Kahala Hotel and Resort consists of a sand beach that extends through the intertidal area of the dredged swimming lagoon (Figures 1 and 5). The lagoon consists of a shallow rectangular area bounded on the seaward side by a vertical face excavated from the fringing reef (Figure 6). Seaward of the dredged lagoon margin, the reef consists of a shallow eroded limestone platform interspersed with sand channels (Figure 7). Water depth on the reef is less than one meter (3 feet) out to the limits of the survey. Composition of the floor of the lagoon is primarily fine-grained white/grey sand with scattered rubble fragments. As discussed above, there are two pipes discharging water from land onto the reef (Figure 8). Of note is that a raft in the center of the lagoon is anchored with several hollow tiles tethered to the raft by ropes (Figure 9).

The baseline survey was conducted during a period of moderate south swell, and waves of 2-3 feet in face height were breaking on the outer edge of the reef platform. Breaking waves resulted in a substantial longshore current flowing from east to west through the length of the lagoon. As such a current regime is the typical condition, there appears to be circulation through the lagoon sufficient to rapidly exchange water within the lagoon, thus preventing stagnant conditions.

C. Biotic Community Structure

Composition of the biotic communities within the Kahala Resort marine community are relatively limited. Corals are rare within the lagoon setting, restricted to small isolated colonies of the branching species *Pocillopora damicornis* on rubble fragments on the lagoon floor. The same species occurs sporadically on the vertical edge of the dredge cut at the seaward edge of the lagoon (Figures 6 and 10).

The predominant biotic components of the lagoon floor are benthic algae, and seagrass. Of particular importance is the widespread occurrence of two species of Hawaiian seagrass, the native species *Halophila hawaiiana* and the introduced species *H. decipiens.* Based on reconnaissance swims through the entire lagoon, it is apparent that there are extensive meadows of seagrass throughout the lagoon, although the density distribution is patchy. Figure

11 shows typical views of areas of highest abundance of seagrass. The highest seagrass density was in the center of the lagoon in the vicinity of the float platform, and the lowest density was in the vicinity of the eastern (Kokohead) jetty where the water is shallowest.

Most of the observed seagrass was of a single species of the introduced form *H. decipiens*. However, while the descriptions of both species render the differentiation between the two somewhat ambiguous, some plants have been identified as the native *H. hawaiiana* by USFS biologist Kevin Foster. While the endemic gastropod (*Smaragdia bryanae*), is known to feed on the native seagrasses, none were observed during the field surveys within the project footprint.

Dominant motile macrobiota within the lagoon consisted of schools of yellowstripe goatfish (weke) (*Mulloidichthys* spp.) foraging on the sand floor of the lagoon. While Green Sea Turtles (*Chelonia mydas*) have also been known to occur within the project area, none were observed during field surveys for the present project.

IV. DISCUSSION and CONCLUSIONS

The purpose of this assessment is to assemble the information to make valid evaluations of the potential for impact to the marine environment from the proposed beach and shoreline improvements fronting the Kahala Hotel and Resort. The information collected in this study provides the basis to understand the processes that are operating in the nearshore ocean, so as to be able to address any concerns that might be raised in the planning process for the beach improvement. At present, plans to deepen the lagoon by dredging have been eliminated. Thus, the predominant concern from the project is evaluating impacts from replenishing the beach with sand from external sources.

Results of this baseline study reveal that water chemistry of the nearshore area is influenced primarily by the mixing of open coastal water and groundwater emanating from the shoreline. While water emanating from a permitted point source is discernable at the point of entry to the ocean, there appears to be limited effects to other areas. Long-shore currents flowing in an east to west direction result in short residence time of water within the semi-enclosed Kahala lagoon resulting in surprisingly good water quality. None of these factors are likely to be affected to a noticeable extent beyond the range of natural variability by the proposed beach improvement.

Biotic community structure within the lagoon is clearly in response to the degree of sediment deposition and resuspension. The sand floor of the lagoon is not suited for coral settlement and growth. However, the habitat is apparently ideally suited for colonization by two species of seagrass, which occur abundantly throughout the lagoon floor. While the more common of the grasses may not be a native species, the owner of the Kahala Hotel and Resort has decided not to pursue the dredging of sediments on the lagoon floor given the unclear status of the *Halophila* seagrass meadows at the present time. There were no observations of any aggregations of species of nuisance algae that have been reported to occur at other areas of Oahu. As the lagoon is heavily used by swimmers, it is apparent that such human activities do not seem to introduce a negative influence on the abundance of seagrass.

All of these considerations indicate that the proposed on-land, beach improvements at the Kahala Hotel and Resort will not have any significant negative or likely even measurable, effect on water quality or marine biota in the coastal ocean offshore of the property. Sand placement on the beach, though well above the mean high water mark (MHWM), will be engineered to remain on the beach to the greatest extent possible, thus maintaining the present condition of the offshore areas. Replacement of the anchoring system of the raft to a method that is more stable than the existing hollow tiles may lessen the effects of dragging of the blocks across the bottom during periods of high winds. As long as reasonable Best Management project, it is not likely that there will be any negative effects to the existing condition of the marine environment.

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FIGURE 1. Aerial view of Kahala Hotel and Resort beach and swimming lagoon showing location of water sampling transects and sample collection sites (yellow circles). Purple circles mark locations of pipes entering water where leaks were sampled. Sampling conducted on July 16, 2015.

TABLE 1. Results of water chemistry analyses from ocean sampling stations in the Kahala Hotel and Resort Lagoon collected on July 16, 2015. Samples were collected along four transects that extended from the shoreline to the reef beyond the excavated lagoon. Concentrations of dissolved nutrients are shown in micromolar units (µM). Samples marked in yellow was collected from discharge pipe on the reef; the "PIPE" sample was collected from a pipe discharging to the lagoon at the shoreline between transects 2 and 3. Also shown are DOH WQS for "open coastal waters" under "dry" conditions, "not to exceed more than 10% and 2% of the time" criteria. Green shaded values indicate value greater than DOH WQS for 2% criteria. See Figure 1 for locations of sampling stations.

	DFS	DEPTH	PO4 3-	NO3 ⁺ +NO2 ⁺	NH_4^+	Si	TP	TOP	TN	TON	TURB	SALT	pН	Chl-a	TEMP	Diss. O ₂
LOCATION	(m)	(feet)	(µM)	(µM)	(µM)	(µM)	(µM)	(µM)	(µM)	(µM)	(ntu)	(0/00)	(std. units)	(µg/L)	deg. C	% sat.
	0	1	0.18	1.29	0.56	30.84	0.29	0.11	9.63	7.77	2.41	33.73	8.20	1.62	29.06	108.8
	8	1	0.11	0.33	1.00	20.05	0.29	0.18	9.93	8.60	2.71	34.29	8.22	1.63	28.06	128.3
ST	25	1	0.07	0.19	0.54	11.10	0.29	0.23	8.34	7.61	0.60	34.50	8.25	0.25	27.71	140.2
- EA	50	1	0.07	0.20	0.42	2.15	0.31	0.24	7.19	6.57	0.76	35.03	8.37	0.17	27.71	124.7
1.	50	4	0.07	0.25	0.52	1.84	0.28	0.21	7.34	6.56	0.47	35.00	8.38	0.19	27.74	132.1
C E	67	4	1.51	7.75	4.10	335.53	1.52	0.01	16.16	4.32	0.68	31.21	8.12	0.47	27.23	112.8
ANS	75	1	0.07	0.18	0.41	1.66	0.30	0.24	7.02	6.43	0.46	35.05	8.38	0.16	27.64	130.3
TR	75	4	0.07	0.21	0.43	1.66	0.35	0.28	7.33	6.69	0.47	35.02	8.39	0.17	27.66	135.6
	115	1	0.07	0.17	0.37	1.58	0.33	0.26	7.28	6.74	0.50	35.31	No data	0.15	27.19	124.6
	115	5	0.06	0.16	0.49	1.58	0.33	0.26	7.79	7.14	1.14	35.06	No data	0.23	27.53	131.3
	0	1	0.16	0.40	0.50	32.29	0.54	0.38	8.37	7.47	2.31	34.22	8.36	0.30	28.65	126.9
~	10	1	0.10	0.31	0.94	16.26	0.29	0.18	9.61	8.36	2.61	34.36	8.34	0.29	28.24	123.3
Ē	30	1	0.13	0.36	0.80	20.58	0.31	0.18	8.90	7.73	2.34	34.39	8.32	0.23	27.83	117.3
E N	30	5	0.18	0.35	1.06	23.46	0.39	0.20	9.70	8.28	0.05	34.37	8.30	0.90	27.69	121.2
2 - (50	1	0.18	0.44	0.97	27.97	0.34	0.17	8.51	7.10	6.69	34.41	8.29	0.36	27.60	107.3
L C	50	5	0.18	0.43	0.84	27.88	0.42	0.24	8.76	7.49	4.03	34.42	8.28	0.59	27.62	108.2
NSE	80	1	0.11	0.34	0.66	15.96	0.39	0.27	8.39	7.38	1.05	34.85	8.49	0.24	28.29	134.1
RAI	80	3	0.10	0.30	0.61	13.40	0.46	0.36	8.03	7.11	0.56	34.81	8.49	0.15	28.36	146.3
F	125	1	0.07	0.15	0.60	1.80	0.34	0.28	7.53	6.78	0.77	35.06	8.46	0.13	28.04	138.2
	125	4	0.06	0.15	0.56	1.88	0.28	0.22	7.74	7.03	0.40	35.05	8.47	0.13	28.07	142.3
PIPE	0	1	1.34	6.10	3.82	352.44	1.35	0.01	16.20	6.27	1.54	24.12	No data	2.31	27.90	117.8
	1	1	0.22	0.50	0.86	55.08	0.44	0.22	11.96	10.60	12.40	33.26	8.32	2.21	30.50	140.4
	1 5	1 1	0.22 0.22	0.50 0.60	0.86 0.88	55.08 64.00	0.44 0.39	0.22 0.17	11.96 10.13	10.60 8.65	12.40 9.26	33.26 33.49	8.32 8.22	2.21 1.42	30.50 29.43	140.4 132.7
EST	1 5 15	1 1 1	0.22 0.22 0.16	0.50 0.60 0.50	0.86 0.88 0.90	55.08 64.00 39.08	0.44 0.39 0.32	0.22 0.17 0.16	11.96 10.13 9.24	10.60 8.65 7.84	12.40 9.26 2.65	33.26 33.49 33.94	8.32 8.22 8.16	2.21 1.42 1.07	30.50 29.43 28.09	140.4 132.7 106.6
- WEST	1 5 15 15	1 1 1 5	0.22 0.22 0.16 0.11	0.50 0.60 0.50 0.46	0.86 0.88 0.90 0.91	55.08 64.00 39.08 38.45	0.44 0.39 0.32 0.19	0.22 0.17 0.16 0.08	11.96 10.13 9.24 9.34	10.60 8.65 7.84 7.97	12.40 9.26 2.65 3.14	33.26 33.49 33.94 33.85	8.32 8.22 8.16 8.15	2.21 1.42 1.07 1.40	30.50 29.43 28.09 28.24	140.4 132.7 106.6 107.0
T 3 - WEST	1 5 15 15 45	1 1 1 5 1	0.22 0.22 0.16 0.11 0.13	0.50 0.60 0.50 0.46 0.34	0.86 0.88 0.90 0.91 0.88	55.08 64.00 39.08 38.45 26.40	0.44 0.39 0.32 0.19 0.26	0.22 0.17 0.16 0.08 0.12	11.96 10.13 9.24 9.34 8.54	10.60 8.65 7.84 7.97 7.32	12.40 9.26 2.65 3.14 1.43	33.26 33.49 33.94 33.85 34.43	8.32 8.22 8.16 8.15 8.28	2.21 1.42 1.07 1.40 0.48	30.50 29.43 28.09 28.24 28.09	140.4 132.7 106.6 107.0 117.8
SECT 3 - WEST	1 5 15 15 45 45	1 1 5 1 6	0.22 0.22 0.16 0.11 0.13 0.16	0.50 0.60 0.50 0.46 0.34 0.36	0.86 0.88 0.90 0.91 0.88 1.02	55.08 64.00 39.08 38.45 26.40 26.52	0.44 0.39 0.32 0.19 0.26 0.35	0.22 0.17 0.16 0.08 0.12 0.19	11.96 10.13 9.24 9.34 8.54 9.23	10.60 8.65 7.84 7.97 7.32 7.85	12.40 9.26 2.65 3.14 1.43 4.15	33.26 33.49 33.94 33.85 34.43 34.38	8.32 8.22 8.16 8.15 8.28 8.21	2.21 1.42 1.07 1.40 0.48 0.27	30.50 29.43 28.09 28.24 28.09 27.81	140.4 132.7 106.6 107.0 117.8 116.8
ANSECT 3 - WEST	1 5 15 15 45 45 65	1 1 5 1 6 1	0.22 0.22 0.16 0.11 0.13 0.16 0.16	0.50 0.60 0.50 0.46 0.34 0.36 0.34	0.86 0.88 0.90 0.91 0.88 1.02 0.64	55.08 64.00 39.08 38.45 26.40 26.52 23.02	0.44 0.39 0.32 0.19 0.26 0.35 0.25	0.22 0.17 0.16 0.08 0.12 0.19 0.10	11.96 10.13 9.24 9.34 8.54 9.23 10.20	10.60 8.65 7.84 7.97 7.32 7.85 9.22	12.40 9.26 2.65 3.14 1.43 4.15 4.62	33.26 33.49 33.94 33.85 34.43 34.38 34.63	8.32 8.22 8.16 8.15 8.28 8.21 8.48	2.21 1.42 1.07 1.40 0.48 0.27 0.66	30.50 29.43 28.09 28.24 28.09 27.81 28.81	140.4 132.7 106.6 107.0 117.8 116.8 150.4
TRANSECT 3 - WEST	1 5 15 15 45 45 65 85	1 1 5 1 6 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.16 0.08	0.50 0.60 0.50 0.46 0.34 0.36 0.34 0.24	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9
TRANSECT 3 - WEST	1 5 15 45 45 65 85 110	1 1 5 1 6 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.16 0.08 0.05	0.50 0.60 0.50 0.46 0.34 0.36 0.34 0.24 0.14	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.63 34.84 35.05	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.83 28.57	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1
TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150	1 1 5 1 6 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.16 0.08 0.05 0.03	0.50 0.60 0.50 0.46 0.34 0.36 0.34 0.24 0.14 0.14	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84 35.05 35.05	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.52	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2
TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0	1 1 5 1 6 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.16 0.08 0.05 0.03 0.32	0.50 0.60 0.50 0.46 0.34 0.36 0.34 0.24 0.14 0.14 2.03	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70	33.26 33.49 33.94 33.85 34.43 34.63 34.84 35.05 35.05 32.42	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.52 8.00	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9
OL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5	1 1 5 1 6 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.16 0.08 0.05 0.03 0.32 0.15	0.50 0.60 0.50 0.46 0.34 0.36 0.34 0.24 0.14 0.14 2.03 0.74	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.63 34.84 35.05 35.05 32.42 34.18	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.52 8.00 8.04	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6
ITROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.32 0.15 0.13	0.50 0.60 0.50 0.46 0.34 0.36 0.34 0.24 0.14 0.14 2.03 0.74 0.42	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.52 8.00 8.04 7.99	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3
CONTROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20 50	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.32 0.15 0.13 0.14	0.50 0.60 0.50 0.46 0.34 0.34 0.34 0.24 0.14 0.14 2.03 0.74 0.42 0.38	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.27	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.81 11.18 11.89 9.85 8.00	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.81 28.57 28.44 27.59 26.97 26.91 26.45	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2
14- CONTROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20 50 50	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 6	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.03 0.32 0.15 0.13 0.14 0.13	0.50 0.60 0.50 0.46 0.34 0.34 0.34 0.24 0.14 0.14 2.03 0.74 0.42 0.38 0.15	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90 1.08	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.44	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.27 0.31	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29 9.14	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84 35.05 35.05 35.05 32.42 34.18 34.26 34.21 34.70	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08 8.13	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45 26.27	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7
CT 14- CONTROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.03 0.03 0.03 0.15 0.13 0.14 0.13 0.08	0.50 0.60 0.50 0.46 0.34 0.34 0.24 0.14 2.03 0.74 0.42 0.38 0.15 0.22	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90 1.08 0.67	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04 12.11	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.44 0.34	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.27 0.31 0.26	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.96 13.61 11.21 9.29 9.14 9.79	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91 8.90	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84 35.05 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45 26.27 26.92	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3
ISECT 14- CONTROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75 75	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.05 0.03 0.32 0.15 0.13 0.14 0.13 0.08 0.12	0.50 0.60 0.50 0.46 0.34 0.34 0.24 0.14 2.03 0.74 0.42 0.38 0.15 0.22 0.17	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.52 0.50 0.75 0.99 0.93 0.90 1.08 0.67 0.91	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04 12.11 11.65	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.44 0.34 0.43	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.27 0.31 0.26 0.30	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29 9.14 9.79 9.41	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91 8.90 8.33	12.40 9.26 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.97 26.91 26.45 26.27 26.92 26.86	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6
RANSECT 14- CONTROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75 75 100	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.03 0.03 0.15 0.13 0.14 0.13 0.08 0.12 0.06	0.50 0.60 0.50 0.46 0.34 0.34 0.34 0.24 0.14 0.14 2.03 0.74 0.42 0.38 0.15 0.22 0.17 0.15	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90 1.08 0.67 0.91 0.40	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04 12.11 11.65 3.85	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.44 0.34 0.30	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.25 0.25 0.25 0.27 0.31 0.26 0.30 0.24	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29 9.14 9.79 9.41 8.01	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91 8.90 8.33 7.45	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63 34.63	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22 8.27	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45 26.97 26.92 26.92 26.86 26.95	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4
TRANSECT 14- CONTROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20 50 50 50 50 75 75 100 100	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.05 0.03 0.32 0.15 0.13 0.14 0.13 0.14 0.13 0.08 0.12 0.06 0.06	0.50 0.60 0.50 0.46 0.34 0.34 0.24 0.14 0.14 2.03 0.74 0.42 0.38 0.15 0.22 0.17 0.15 0.16	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90 1.08 0.67 0.91 0.40 0.62	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04 12.11 11.65 3.85 1.78	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.44 0.34 0.30 0.30	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.27 0.31 0.26 0.30 0.24 0.24	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29 9.14 9.79 9.41 8.01 8.52	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91 8.90 8.33 7.45 7.74	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02 0.65	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63 34.63 34.63	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22 8.27 8.29	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24 0.29	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45 26.27 26.92 26.86 26.95 27.09	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4 121.9
TRANSECT 14- CONTROL TRANSECT 3 - WEST	1 5 15 45 45 65 85 110 150 0 5 20 50 50 50 50 75 75 100 100 120	1 1 5 1 6 1 1 1 1 1 1 1 1 6 1 1 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.03 0.32 0.15 0.13 0.14 0.13 0.14 0.13 0.12 0.06 0.06 0.07	0.50 0.60 0.50 0.46 0.34 0.34 0.24 0.14 0.14 0.14 0.74 0.42 0.38 0.15 0.22 0.17 0.15 0.16 0.09	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90 1.08 0.67 0.91 0.40 0.62 0.42	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04 12.11 11.65 3.85 1.78 1.49	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.44 0.34 0.34 0.30 0.30 0.30 0.27	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.25 0.27 0.31 0.26 0.30 0.24 0.24 0.20	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29 9.14 9.79 9.41 8.52 7.78	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91 8.90 8.33 7.45 7.74 7.27	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02 0.65 1.02	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63 34.63 34.63 35.03	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.00 8.04 7.99 8.08 8.13 8.20 8.22 8.27 8.29 8.33	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24 0.29 0.28	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45 26.27 26.92 26.86 26.95 27.09 26.98	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4 121.9 128.7
00 iuidiui TRANSECT 14- CONTROL 100	1 5 15 45 45 65 85 110 150 0 5 20 50 50 75 100 100 120 0	1 1 5 1 6 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.05 0.03 0.32 0.15 0.13 0.14 0.13 0.14 0.13 0.08 0.12 0.06 0.06 0.07 1.32	0.50 0.60 0.50 0.46 0.34 0.36 0.34 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.16 0.09 5.55	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90 1.08 0.67 0.91 0.40 0.62 0.42 4.09	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04 12.11 11.65 3.85 1.78 1.49 337.36	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.44 0.34 0.30 0.30 0.30 0.27 1.33	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.25 0.27 0.31 0.26 0.30 0.24 0.24 0.20 0.01	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29 9.14 9.79 9.41 8.52 7.78 10.96	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91 8.90 8.33 7.45 7.74 7.27 1.32	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02 0.65 1.02 0.20	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63 34.63 35.03 34.95 35.04 28.54	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22 8.27 8.29 8.33 No data	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24 0.29 0.28 0.23	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.97 26.45 26.45 26.45 26.27 26.92 26.86 26.95 27.09 26.98 22.25	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4 121.9 128.7 91.0
HOD TRANSECT 14- CONTROL TRANSECT 3- WEST 200	1 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75 75 100 100 120 0 10%	1 1 5 1 6 1 1 1 1 1 1 1 6 1 1 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	0.22 0.22 0.16 0.11 0.13 0.16 0.08 0.05 0.03 0.05 0.03 0.32 0.15 0.13 0.13 0.13 0.13 0.08 0.12 0.06 0.07 1.32 -	0.50 0.60 0.50 0.46 0.34 0.34 0.24 0.14 0.14 2.03 0.74 0.42 0.38 0.15 0.22 0.17 0.15 0.16 0.09 5.55 0.71	0.86 0.88 0.90 0.91 0.88 1.02 0.64 0.69 0.52 0.50 0.75 0.99 0.93 0.90 1.08 0.67 0.91 0.40 0.62 0.42 4.09 0.36	55.08 64.00 39.08 38.45 26.40 26.52 23.02 12.04 1.68 1.53 49.15 19.72 16.89 23.25 10.04 12.11 11.65 3.85 1.78 1.49 337.36	0.44 0.39 0.32 0.19 0.26 0.35 0.25 0.23 0.27 0.24 0.69 0.40 0.39 0.41 0.34 0.34 0.34 0.30 0.30 0.27 1.33 0.97	0.22 0.17 0.16 0.08 0.12 0.19 0.10 0.15 0.22 0.21 0.36 0.25 0.25 0.27 0.31 0.26 0.30 0.24 0.20 0.01	11.96 10.13 9.24 9.34 8.54 9.23 10.20 7.99 7.55 7.76 13.96 13.61 11.21 9.29 9.14 9.79 9.41 8.52 7.78 10.96 12.86	10.60 8.65 7.84 7.97 7.32 7.85 9.22 7.06 6.89 7.11 11.18 11.89 9.85 8.00 7.91 8.90 8.33 7.45 7.74 7.27 1.32	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02 0.65 1.02 0.20 0.50	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.26 34.63 34.63 34.63 35.03 34.95 35.04 28.54 *	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22 8.27 8.29 8.33 No data	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24 0.29 0.28 0.23 0.50	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.97 26.91 26.45 26.27 26.92 26.86 26.95 27.09 26.98 22.25	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4 121.9 128.7 91.0

Notes:

= Salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

** = pH shall not deviate more than 0.5 units from a value of 8.1.

*** = Temperature shall not vary more than one degree C. from ambient conditions.

**** = Dissolved Oxygen not less than 75% saturation

DOH = Department of WQS = water quality standards ntu = nephelometric turbidity units

TABLE 2. Results of water chemistry analyses from ocean sampling stations in the Kahala Resort Lagoon collected on July 16, 2015. Samples were collected along four transects that extended from the shoreline to the reef beyond the excavated lagoon. Concentrations of dissolved nutrients are shown in units of micrograms per liter (µg/L). Sample marked in yellow was collected from discharge pipe on the reef; the "PIPE" sample was collected from a pipe discharging to the lagoon at the shoreline between transects 2 and 3. Also shown are DOH WQS for "open coastal waters" under "dry" conditions, "not to exceed more than 10% and 2% of the time" criteria. Green shaded values indicate value greater than DOH WQS for 2% criteria. See Figure 1 for locations of sampling stations.

	DFS	DEPTH	PO4 3-	NO3 ⁺ +NO2 ⁺	NH_4^+	Si	TP	TOP	TN	TON	TURB	SALT	pН	Chl-a	TEMP	Diss. O ₂
LOCATION	(m)	(feet)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ntu)	(0/00)	(std. units)	(µg/L)	deg. C	% sat.
	0	1	5.47	18.13	7.91	863.45	8.93	3.46	134.78	108.74	2.41	33.73	8.20	1.62	29.06	108.8
	8	1	3.42	4.64	13.93	561.54	8.88	5.45	139.04	120.47	2.71	34.29	8.22	1.63	28.06	128.3
ST	25	1	2.03	2.69	7.52	310.91	9.11	7.09	116.69	106.49	0.60	34.50	8.25	0.25	27.71	140.2
ĒA	50	1	2.20	2.81	5.84	60.17	9.52	7.32	100.64	92.00	0.76	35.03	8.37	0.17	27.71	124.7
1	50	4	2.31	3.54	7.33	51.60	8.73	6.43	102.73	91.86	0.47	35.00	8.38	0.19	27.74	132.1
L	67	4	46.73	108.49	57.35	9394.74	47.12	0.39	226.28	60.44	0.68	31.21	8.12	0.47	27.23	112.8
ANS	75	1	2.08	2.55	5.75	46.49	9.38	7.30	98.30	90.01	0.46	35.05	8.38	0.16	27.64	130.3
TR	75	4	2.26	2.88	6.07	46.58	11.00	8.74	102.64	93.69	0.47	35.02	8.39	0.17	27.66	135.6
	115	1	2.12	2.38	5.22	44.12	10.27	8.15	101.97	94.37	0.50	35.31	No data	0.15	27.19	124.6
	115	5	1.94	2.30	6.83	44.25	10.15	8.21	109.13	100.00	1.14	35.06	No data	0.23	27.53	131.3
	0	1	4.83	5.56	7.05	904.02	16.72	11.89	117.24	104.63	2.31	34.22	8.36	0.30	28.65	126.9
~	10	1	3.25	4.36	13.16	455.33	8.84	5.59	134.50	116.98	2.61	34.36	8.34	0.29	28.24	123.3
III	30	1	4.09	5.11	11.26	576.30	9.64	5.55	124.56	108.18	2.34	34.39	8.32	0.23	27.83	117.3
GE	30	5	5.70	4.92	14.86	657.02	12.05	6.35	135.73	115.95	0.05	34.37	8.30	0.90	27.69	121.2
2 - 0	50	1	5.45	6.16	13.60	783.26	10.65	5.20	119.11	99.35	6.69	34.41	8.29	0.36	27.60	107.3
L.	50	5	5.54	6.06	11.70	780.75	13.09	7.55	122.62	104.87	4.03	34.42	8.28	0.59	27.62	108.2
NSE	80	1	3.54	4.81	9.25	446.95	11.99	8.46	117.42	103.36	1.05	34.85	8.49	0.24	28.29	134.1
RA	80	3	3.01	4.23	8.60	375.08	14.29	11.27	112.38	99.55	0.56	34.81	8.49	0.15	28.36	146.3
F	125	1	2.10	2.03	8.40	50.52	10.64	8.53	105.40	94.97	0.77	35.06	8.46	0.13	28.04	138.2
	125	4	1.87	2.10	7.78	52.71	8.56	6.69	108.30	98.42	0.40	35.05	8.47	0.13	28.07	142.3
PIPE	0	1	41.55	85.43	53.52	9868.31	41.85	0.30	226.76	87.81	1.54	24.12	No data	2.31	27.90	117.8
	0	1	6.94	6.96	12.10	1542.29	13.65	6.71	167.41	148.35	12.40	33.26	8.32	2.21	30.50	140.4
	0 5	1 1	6.94 6.77	6.96 8.44	12.10 12.32	1542.29 1792.13	13.65 12.02	6.71 5.24	167.41 141.80	148.35 121.04	12.40 9.26	33.26 33.49	8.32 8.22	2.21 1.42	30.50 29.43	140.4 132.7
EST	0 5 15	1 1 1	6.94 6.77 4.88	6.96 8.44 7.01	12.10 12.32 12.65	1542.29 1792.13 1094.12	13.65 12.02 9.83	6.71 5.24 4.96	167.41 141.80 129.36	148.35 121.04 109.70	12.40 9.26 2.65	33.26 33.49 33.94	8.32 8.22 8.16	2.21 1.42 1.07	30.50 29.43 28.09	140.4 132.7 106.6
- WEST	0 5 15 15	1 1 1 5	6.94 6.77 4.88 3.51	6.96 8.44 7.01 6.41	12.10 12.32 12.65 12.75	1542.29 1792.13 1094.12 1076.64	13.65 12.02 9.83 5.91	6.71 5.24 4.96 2.40	167.41 141.80 129.36 130.79	148.35 121.04 109.70 111.63	12.40 9.26 2.65 3.14	33.26 33.49 33.94 33.85	8.32 8.22 8.16 8.15	2.21 1.42 1.07 1.40	30.50 29.43 28.09 28.24	140.4 132.7 106.6 107.0
T 3 - WEST	0 5 15 15 45	1 1 1 5 1	6.94 6.77 4.88 3.51 4.13	6.96 8.44 7.01 6.41 4.70	12.10 12.32 12.65 12.75 12.32	1542.29 1792.13 1094.12 1076.64 739.16	13.65 12.02 9.83 5.91 7.97	6.71 5.24 4.96 2.40 3.85	167.41 141.80 129.36 130.79 119.52	148.35 121.04 109.70 111.63 102.50	12.40 9.26 2.65 3.14 1.43	33.26 33.49 33.94 33.85 34.43	8.32 8.22 8.16 8.15 8.28	2.21 1.42 1.07 1.40 0.48	30.50 29.43 28.09 28.24 28.09	140.4 132.7 106.6 107.0 117.8
SECT 3 - WEST	0 5 15 15 45 45	1 1 5 1 6	6.94 6.77 4.88 3.51 4.13 5.04	6.96 8.44 7.01 6.41 4.70 5.01	12.10 12.32 12.65 12.75 12.32 14.21	1542.29 1792.13 1094.12 1076.64 739.16 742.48	13.65 12.02 9.83 5.91 7.97 10.96	6.71 5.24 4.96 2.40 3.85 5.92	167.41 141.80 129.36 130.79 119.52 129.17	148.35 121.04 109.70 111.63 102.50 109.95	12.40 9.26 2.65 3.14 1.43 4.15	33.26 33.49 33.94 33.85 34.43 34.38	8.32 8.22 8.16 8.15 8.28 8.21	2.21 1.42 1.07 1.40 0.48 0.27	30.50 29.43 28.09 28.24 28.09 27.81	140.4 132.7 106.6 107.0 117.8 116.8
ANSECT 3 - WEST	0 5 15 15 45 45 65	1 1 5 1 6 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85	6.96 8.44 7.01 6.41 4.70 5.01 4.75	12.10 12.32 12.65 12.75 12.32 14.21 8.91	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60	13.65 12.02 9.83 5.91 7.97 10.96 7.80	6.71 5.24 4.96 2.40 3.85 5.92 2.95	167.41 141.80 129.36 130.79 119.52 129.17 142.80	148.35 121.04 109.70 111.63 102.50 109.95 129.14	12.40 9.26 2.65 3.14 1.43 4.15 4.62	33.26 33.49 33.94 33.85 34.43 34.38 34.38	8.32 8.22 8.16 8.15 8.28 8.21 8.48	2.21 1.42 1.07 1.40 0.48 0.27 0.66	30.50 29.43 28.09 28.24 28.09 27.81 28.81	140.4 132.7 106.6 107.0 117.8 116.8 150.4
TRANSECT 3 - WEST	0 5 15 15 45 45 65 85	1 1 5 1 6 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9
TRANSECT 3 - WEST	0 5 15 45 45 65 85 110	1 1 5 1 6 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84 35.05	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1
TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150	1 1 5 1 6 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 1.04	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84 35.05 35.05	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.47 8.52	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2
TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0	1 1 5 1 6 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 1.04 10.03	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02 28.45	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.63 34.84 35.05 35.05 35.05 32.42	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9
OL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5	1 1 5 1 6 1 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 1.04 10.03 4.76	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02 28.45 10.29	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52 13.80	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.63 34.84 35.05 35.05 35.05 32.42 34.18	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6
VITROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 1.04 10.03 4.76 4.09	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02 28.45 10.29 5.91	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52 13.80 13.03	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 35.05 32.42 34.18 34.26	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.52 8.00 8.04 7.99	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3
CONTROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20 50	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.04 10.03 4.76 4.09 4.25	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02 28.45 10.29 5.91 5.37	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52 13.80 13.03 12.64	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05 651.08	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98 12.60	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89 8.34	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90 130.03	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96 112.02	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84 35.05 35.05 35.05 32.42 34.18 34.26 34.21	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.52 8.00 8.04 7.99 8.08	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2
14- CONTROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20 50 50	1 1 5 1 6 1 1 1 1 1 1 1 1 1 6	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 10.03 4.76 4.09 4.25 4.12	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02 28.45 10.29 5.91 5.37 2.08	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.33 7.02 10.52 13.80 13.03 12.64 15.11	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05 651.08 281.00	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98 12.60 13.61	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89 8.34 9.49	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90 130.03 127.90	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96 112.02 110.70	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.52 8.00 8.04 7.99 8.08 8.13	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.81 28.57 28.44 27.59 26.97 26.91 26.45 26.27	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7
CT 14- CONTROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 6 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 10.03 4.76 4.09 4.25 4.12 2.54	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02 28.45 10.29 5.91 5.37 2.08 3.13	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.33 7.02 10.52 13.80 13.03 12.64 15.11 9.34	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05 651.08 281.00 339.12	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98 12.60 13.61 10.59	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89 8.34 9.49 8.05	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90 130.03 127.90 137.01	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96 112.02 110.70 124.54	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.63 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.47 8.00 8.00 8.04 7.99 8.08 8.13 8.20	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45 26.27 26.92	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3
NSECT 14- CONTROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75 75	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 10.03 4.76 4.09 4.25 4.12 2.54 3.84	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 2.02 28.45 10.29 5.91 5.37 2.08 3.13 2.35	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52 13.80 13.03 12.64 15.11 9.34 12.75	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05 651.08 281.00 339.12 326.26	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98 12.60 13.61 10.59 13.23	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89 8.34 9.49 8.05 9.39	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90 130.03 127.90 137.01 131.77	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96 112.02 110.70 124.54 116.68	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.63 34.84 35.05 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.45 26.27 26.92 26.86	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6
RANSECT 14- CONTROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75 75 100	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 1.04 10.03 4.76 4.09 4.25 4.12 2.54 3.84 1.81	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 28.45 10.29 5.91 5.37 2.08 3.13 2.35 2.13	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52 13.80 13.03 12.64 15.11 9.34 12.75 5.64	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05 651.08 281.00 339.12 326.26 107.67	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98 12.60 13.61 10.59 13.23 9.27	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89 8.34 9.49 8.05 9.39 7.46	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90 130.03 127.90 131.77 112.12	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96 112.02 110.70 124.54 116.68 104.35	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63 35.03	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 7.99 8.08 8.13 8.20 8.22 8.27	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.97 26.91 26.45 26.97 26.92 26.86 26.95	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4
TRANSECT 14- CONTROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20 50 50 50 75 75 75 100 100	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 1.04 10.03 4.76 4.09 4.25 4.12 2.54 3.84 1.81 1.80	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 28.45 10.29 5.91 5.37 2.08 3.13 2.35 2.13 2.22	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52 13.80 13.03 12.64 15.11 9.34 12.75 5.64 8.71	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05 651.08 281.00 339.12 326.26 107.67 49.76	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98 12.60 13.61 10.59 13.23 9.27 9.30	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89 8.34 9.49 8.05 9.39 7.46 7.50	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90 130.03 127.90 137.01 131.77 112.12 119.34	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96 112.02 110.70 124.54 116.68 104.35 108.41	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02 0.65	33.26 33.49 33.94 33.85 34.43 34.38 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63 34.63 35.03 34.95	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.47 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22 8.27 8.29	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24 0.29 0.59 0.24 0.24 0.31 0.24 0.25 0.35 0.31 0.31 0.32 0.24 0.35 0.31 0.35 0.31 0.35 0.31 0.35 0.24 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.24 0.35 0.35 0.35 0.35 0.24 0.35 0.35 0.35 0.35 0.24 0.35 0.35 0.35 0.24 0.35 0.35 0.35 0.24 0.35 0.35 0.35 0.24 0.35 0.35 0.24 0.35 0.35 0.24 0.35 0.35 0.24 0.35 0.24 0.35 0.24 0.35 0.24 0.35 0.24 0.24 0.35 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.25 0.25 0.25 0.24 0.25 0.25 0.25 0.25 0.24 0.25	30.50 29.43 28.09 28.24 28.09 27.81 28.81 28.83 28.57 28.44 27.59 26.97 26.91 26.91 26.45 26.97 26.92 26.86 26.95 27.09	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4 121.9
TRANSECT 14- CONTROL TRANSECT 3 - WEST	0 5 15 45 45 65 85 110 150 0 5 20 50 50 50 50 75 75 100 100 120	1 1 5 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	6.94 6.77 4.88 3.51 4.13 5.04 4.85 2.45 1.49 1.04 10.03 4.76 4.25 4.12 2.54 3.84 1.81 1.80 2.31	6.96 8.44 7.01 6.41 4.70 5.01 4.75 3.37 2.00 28.45 10.29 5.91 5.37 2.08 3.13 2.35 2.13 2.22 1.30	12.10 12.32 12.65 12.75 12.32 14.21 8.91 9.63 7.33 7.02 10.52 13.80 13.03 12.64 15.11 9.34 12.75 5.64 8.71 5.84	1542.29 1792.13 1094.12 1076.64 739.16 742.48 644.60 337.24 46.98 42.90 1376.08 552.27 473.05 651.08 281.00 339.12 326.26 107.67 49.76 41.63	13.65 12.02 9.83 5.91 7.97 10.96 7.80 7.07 8.24 7.40 21.33 12.43 11.98 12.60 13.61 10.59 13.23 9.27 9.30 8.41	6.71 5.24 4.96 2.40 3.85 5.92 2.95 4.62 6.75 6.36 11.30 7.67 7.89 8.34 9.49 8.05 9.39 7.46 7.50 6.10	167.41 141.80 129.36 130.79 119.52 129.17 142.80 111.83 105.71 108.57 195.43 190.61 156.90 130.03 127.90 137.01 131.77 112.12 119.34 108.95	148.35 121.04 109.70 111.63 102.50 109.95 129.14 98.82 96.39 99.53 156.46 166.51 137.96 112.02 110.70 124.54 116.68 104.35 108.41 101.81	12.40 9.26 2.65 3.14 1.43 4.15 4.62 0.48 0.51 1.44 4.70 2.97 5.62 2.60 3.32 1.70 3.88 1.02 0.65 1.02	33.26 33.49 33.94 33.85 34.43 34.63 34.63 34.84 35.05 35.05 32.42 34.18 34.26 34.21 34.70 34.63 34.63 34.63 35.03 34.95 35.04	8.32 8.22 8.16 8.15 8.28 8.21 8.48 8.47 8.52 8.00 8.04 7.99 8.08 8.13 8.20 8.22 8.27 8.29 8.33	2.21 1.42 1.07 1.40 0.48 0.27 0.66 0.24 0.14 0.15 2.00 1.19 0.92 0.35 1.08 0.31 1.36 0.24 0.29 0.28	30.50 29.43 28.09 28.24 28.09 27.81 28.83 28.57 28.44 27.59 26.91 26.45 26.91 26.45 26.92 26.92 26.86 26.95 27.09 26.98	140.4 132.7 106.6 107.0 117.8 116.8 150.4 163.9 155.1 160.2 99.9 83.6 74.3 80.2 66.7 105.3 111.6 117.4 121.9 128.7
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Notes:

= Salinity shall not vary more than 10% from natural or seasonal changes considering hydrologic input and oceanographic factors.

** = pH shall not deviate more than 0.5 units from a value of 8.1.

*** = Temperature shall not vary more than one degree C. from ambient conditions.

**** = Dissolved Oxygen not less than 75% saturation

DOH = Department of WQS = water quality standards ntu = nephelometric turbidity units



FIGURE 2. Plots of dissolved nutrients in surface (S) and deep (D) samples collected along four transects in the Kahala Hotel and Resort Lagoon collected on July 16, 2015 as functions of distance from the shoreline. Elevate concentrations on transects 1 and 3 are from points of discharge of drain pipes. For transect locations, see Figure



FIGURE 3. Plots of salinity, turbidity and Chlorophyll a in surface (S) and deep (D) samples collected along three transects off the Kahala Hotel and Resort shoreline in July 2015 as functions of distance offshore. For transect locations, see Figure 1.



FIGURE 4. Mixing diagram showing concentration of dissolved nutrients from samples collected along four transects offshore of the Kahala Hotel and Resort on July 16, 2015 as functions of salinity. Straight lines in each plot are conservative mixing lines constructed by connecting the concentrations in open ocean water with water from a pipe discharging to the ocean at the shoreline of the lagoon (dashed line), and from the dolphin lagoon (solid line). For locations of sampling transects, see Figure 1.



FIGURE 5. Beachfront of the Kahala Hotel and Resort dredged lagoon (top). Intertidal area of inner lagoon showing wave-rippled coarse sand (bottom).


FIGURE 6. Two views of edge of dredged edge at outer boundary of Kahala Hotel and Resort lagoon. Corals in lower photo growing on vertical face as *Pocillopora damicornis*.



FIGURE 7. Two views of undredged reef surface seaward of the Kahala Hotel and Resort dredged lagoon. Reef surface consists primarily of coral rubble and coarse sand. Water depth is approximately 1-2 feet.



FIGURE 8. Offshore pipe discharges off the Kahala Hotel and Resort. Upper photo shows concrete block housing discharge pipe located on the reef in the center of transect 1. Bottom photo shows point of shoreline discharge from break in pipe (center of photo) near the origin of transect 3.



FIGURE 9. Upper photo shows raft anchored in center of Kahala Hotel and Resort lagoon. Lower photo shows hollow tiles and rope used to anchor the raft.



FIGURE 10. Colonies of the branching coral *Pocillopora damicornis* growing on rubble fragments on the floor of the lagoon fronting the Kahala Hotel and Resort.



FIGURE 11. Floor of center of dredged lagoon fronting the Kahala Hotel and Resort showing dense meadows of seagrass *Halophila decipens*.

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Appendix G

Traffic Management Plan

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THE KAHALA HOTEL & RESORT TRAFFIC MANAGEMENT PLAN

AUGUST 17, 2015

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Central to The Kahala Hotel & Resort ("Hotel")'s responsibility as a conscientious and considerate neighbor and community member is the execution of safe and efficient traffic and parking management procedures, a sustained effort to minimize the impact of cars on Kahala Avenue from its intersection with Kealaolu Avenue, to the Hotel (Figure 1, Location Map).

Existing Conditions

This portion of Kahala Avenue, northeast of the intersection with Kealaolu Avenue, dead ends, with the final destination being the Hotel. Other than the Hotel, this portion of Kahala Avenue services approximately nine single-family residences, the City and County of Honolulu's Waialae Beach Park, the Waialae Country Club (and Golf Course) and the 196-unit Kahala Beach Apartment complex (Figure 1). The Kahala Beach Apartment has an off-street parking capacity of 273 stalls, and is currently not meeting the County's Land Use Ordinance off-street parking requirement of 412 stalls (therefore there is significantly less traffic volume that would be generated by development of this size). There is no on-street parking provided along this portion of Kahala Avenue. There is one raised crosswalk on this section of Kahala Avenue (connecting the Waialae Country Club clubhouse and the golf course) and a speed bump at the driveway to the Waialae Country Club overflow parking lot (Figure 2).

Sidewalks are provided along the makai side of Kahala Avenue, between Kealaolu Avenue and the Kahala Hotel (Figure 2). The sidewalk is interrupted by several driveways, and the majority of the sidewalks at these driveways do not have curb cuts, rendering them less safe to access via bicycles or wheelchairs. The only sidewalk on the mauka portion of this stretch of Kahala Avenue is at the bridge over Waialae Stream. For those employees who bicycle to and from work, bicycle parking is provided at the entrance to the parking garage within the hotel property. While sidewalk conditions are not ideal on Kahala Avenue, between Kealaolu Avenue and the Kahala Hotel, it is actually better than the vast majority of Kahala Avenue (Figure 1), which generally lacks sidewalks on either side of the road (between Black Point Road and Kealaolu Avenue), and higher motor vehicle speeds (because of wider travel ways and lack of speed bumps).

1



LEGEND

Approximate Project Limits

Figure 1 Location Map

The Kāhala Hotel & Resort Traffic Management Plan

The Kāhala Hotel & Resort North Linear Scale (feet) 0 600 1,200



Island of O'ahu



Figure 2 Kahala Avenue

The Kāhala Hotel & Resort Traffic Management Plan

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The Kāhala Hotel & Resort North Linear Scale (feet)



PBRHAWAH

Island of O'ahu

Source: Pictometry Online (2013). Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis. According to the owners of the Hotel, Resorttrust Company, approximately 100% of hotel and restaurant guests and 40% of the Hotel staff arrive by car. Of the staff members who walk, approximately 40% are employees who include a bus ride as part of their commute to and/or from Hotel.

Bus Service

TheBus is a public transportation service provided by the City and County of Honolulu. There are presently no bus routes that directly serve the Hotel, but there are two bus routes along Kahala Avenue, including Bus Routes: 14 and 22 (Figure 3). The closest bus stops are located near the intersection Kahala Avenue and Pueo Street, which is approximately half a mile from the Hotel. Bus Route 14 provides convenient transportation for employees living on Saint Louis Heights, in Kaimuki, Kapahulu, and Maunalani. Bus Route 22 connects much of Waikiki (as far west as Olohana Street), Diamond Head Road/Kahala Avenue and Kalanianaole Highway up to Sea Life Park.

Carpooling

The Hotel management estimates that approximately 20% of its employees carpool.

Parking

The Hotel currently provides 192 parking stalls on-site. Strategies currently employed by the Hotel to optimize the efficiency of on-site parking include:

- With valet parking, the parking capacity on-site increases to approximately 341 parking stalls.
- On high traffic days or for larger events, the Hotel provides two traffic officers, one on the porte cochere, and the other, at the Hotel's intersection of the separate driveways to the parking structure, porte cochere, and loading dock area.
- Also on high traffic days or for larger events, Hotel employees are asked not to use the parking structure, or to leave by a certain time, to provide more parking capacity for guests coming to the Hotel.
- For those rare events where parking cannot be accommodated on site, the Hotel seeks to arrange off-street parking capacity from Kahala Mall (with shuttle service provided).

4



LEGEND

Approximate Project Limits

- **Bus Routes**
- **Bus Stops**

Figure 3 **Public Transit Routes**

The Kāhala Hotel & Resort **Traffic Management Plan**





Island of O'ahu

Special Event Parking

For events that need to accommodate more parking than can be accommodated on-site, the Hotel coordinates with Kahala Mall (with shuttle service provided). During those events, traffic control is provided by hotel security personnel.

Morning Congestion / Staggered Start Times

The Hotel has employed measures to ensure the safety of its employees and reduce congestion on Kahala Avenue, between Kealaolu Avenue and the Kahala Hotel during morning drop-offs. A daily traffic officer is posted at the Hotel's intersection of the separate driveways to the parking structure, porte cochere, and loading dock area between 9 am to 6 pm. Often employees are dropped off at Hotel loading dock area (which has a separate driveway from the Hotel parking structure and the Hotel porte cochere.

Construction-Related Traffic

On occasion, construction at the Hotel has the potential to disrupt vehicular traffic along Kahala Avenue, between Kealaolu Avenue and the Kahala Hotel. A specific Traffic Control Plan will be developed for each construction project. In addition, the area Neighborhood Board will be kept appraised of the details of a construction project, and the impacts, if any, that project may have on the adjoining local street area network.

Traffic cones and other directional devices should be placed in affected roadways to safely guide vehicles around work areas. Contractors will be required to implement measures to provide access past work sites and to minimize the inconvenience to the community. These measures may include the following:

- Posting flagmen for traffic control around work sites.
- Backfilling/covering all trenches at the end of the work day.
- Posting safety devices and signs for the duration of construction.
- Scheduling construction and material deliveries during non-peak traffic hours (8:30 a.m. to 3:30 p.m.).

Emergency Evacuations

According to the Flood Insurance Rate Map, part of the Hotel site falls within the coastal flood zone with a Base Flood Elevation of 12 feet above mean sea level. Additionally, according to the Honolulu Land Information System (HoLIS), the Tsunami Evacuation Zone, in the immediate vicinity of the Hotel (Figure 4), extends

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mauka from the shoreline to Waiholo Street (and Farmers Road via Kealaolu Avenue). Since prior experience during tsunami warnings has shown that Honolulu's street network cannot accommodate a mass exodus by personal automobiles mauka of the Tsunami Evacuation Zone, the Hotel will direct all guests, employees and others to do vertical evacuation by going to floors (4th floor and above) of the hotel above the Base Flood Elevation, until the all-clear signal is given.

Oʻahu Bike Plan

The O'ahu Bike Plan guides the Department of Transportation Service (DTS)'s bikeway planning for the entire island of O'ahu and includes provisions to ensure that the proposed high capacity rail transit stations are integrated into the regional bikeway network. The Plan builds on DTS's 1999 Honolulu Bicycle Master Plan (that focused on the Kāhala to Pearl City Corridor). The O'ahu Bike Plan was prepared with broad public input via workshops, website questionnaires and draft reviews. It is a comprehensive plan addressing the five "E's" of transportation planning (i.e., encouragement, engineering, education, enforcement and evaluation), considered vital to achieve the end state of a truly bicycle-friendly island. In Appendix A, the table and map from the O'ahu Bike Plan show a "Priority 1 Project" for the Kahala Avenue bike route from Diamond Head Road to Kealaolu Avenue, near the Hotel. As previously noted, for those employees who bicycle to and from work, bicycle parking is provided at the entrance to the parking garage within the hotel property. In addition, the Hotel has available four bicycles that guests can use complimentary for maximum three hour periods.



LEGEND



Approximate Project Limits

Tsunami Evacuation Zone

Figure 4 Tsunami Evacuation Zone

The Kāhala Hotel & Resort Traffic Management Plan





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Appendix A:

Oʻahu Bike Plan

Table 5: Priority 1 Projects (continued)

Code	Name	Description	Type	Owner	Length (miles)	Cost** (1000s)	DP Area
1-26*	18th Avenue	Diamond Head Road to Kīlauea Avenue	L	С	0.33	UC	PUC
1-27	Ala Moana Beach Park (Extension)	Connect existing mauka and makai bike paths, extend path to Kewalo Basin	Ρ	S	0.15		PUC
1-28*	Ala Moana Boulevard Path	Atkinson Drive to Ala Wai Canal	Р	С	0.10	UC	PUC
1-29*	Ala Wai Boulevard	Keoniana Street to Kalākaua Avenue	R	С	0.29	\$15	PUC
1-30	Aloha Tower Path	Aloha Tower to Waterfront Park	Р	S	0.99		PUC
1-31*	Alohea Avenue	10th Avenue to Makapu'u Avenue	R	С	0.34	\$17	PUC
1-32	Beretania St. (Middle Section)	McCully Street to Alapa'i Street	L	С	1.43	\$164	PUC
1-33*	Beretania St. (Southern Section)	University Avenue to McCully Street	L	С	0.78	\$89	PUC
1-34*	Civic Center Bike Path	Alapa'i Street to Richards Street	Р	С	0.46	UC	PUC
1-35*	Cooke Street	Ilalo Street to South King Street	L	С	0.76	\$88	PUC
1-36*	Coyne Street	University Avenue to Isenberg Street	R	С	0.28	UC	PUC
1-37*	Diamond Head Road	Pākī Avenue to Fort Ruger Park	L	С	1.47	\$909	PUC
1-38	Dillingham Boulevard (Southern Section)	Pu'uhale Road to N. King Street	R	С	1.44	\$72	PUC
1-39*	'Ena Road	Kalākaua Avenue to Ala Moana Boulevard	R	С	0.21	\$10	PUC
1-40*	Fort Street Mall	Nimitz Highway to Beretania Street	R	С	0.38	\$15	PUC
1-41*	Harding Avenue	Kapahulu Avenue to 16th Avenue	R	С	1.31	\$65	PUC
1-42*	Honomanū Street	Moanalua Road to Kamehameha Highway	L	С	0.16	\$19	PUC
1-43*	Isenberg St (Northern Section)	Coyne Street to South King Street	R	С	0.17	\$8	PUC
1-44*	Kaʻahumanu Street	Kamehameha Highway to Komo Mai Drive	L	С	1.01	\$117	PUC
1-45*	Kāhala Avenue	Diamond Head Road to Keala'olu Avenue	R	С	1.51	\$75	PUC
1-46*	Kalākaua Avenue (Northern Section)	Beretania Street to Ala Moana Boulevard	R	С	0.98	\$49	PUC
1-47*	Kalākaua Avenue (Southern Section)	Saratoga Road to Kapahulu Avenue	L	С	0.95	UC	PUC
1-48	Kalākaua Ave. Signal/Crosswalk	Ala Wai Promenade	XW	С	0.00	\$200	PUC
1-49*	Kālia Road	Ala Moana Boulevard to Saratoga Road	R	С	0.49	\$25	PUC
1-50*	Kapahulu Avenue	Kalākaua Avenue to Old Waiʻalae Road	R	С	1.56	UC	PUC
1-51	Kapahulu Avenue Bike Path (Extension)	Extend existing Kapahulu Avenue Path to Ala Wai Bike Lane	Ρ	S	0.11		PUC
1-52	Kapiʻolani Boulevard	Waiaka Road to South King Street	L	С	0.21	\$130	PUC
1-53*	Kīlauea Avenue	Wai'alae Avenue to Makapu'u Avenue	R	С	1.56	\$78	PUC
1-54*	King Street (Southern Section)	South Street to Kapi'olani Boulevard	L	С	2.84	\$326	PUC
1-55*	Kuala Street	Kamehameha Hwy to Waimano Home Road	L	С	1.02	\$117	PUC
1-56*	Kūhiō Avenue	Kalākaua Avenue to Kapahulu Avenue	R	С	1.17	\$59	PUC







Oahu Bike Network

The Kāhala Hotel & Resort Traffic Management Plan





Island of O'ahu

Source: City and County of Honolulu Oahu Bike Plan (2012).

Disclaimer: This graphic has been prepared for general planning purposes only and should not be used for boundary interpretations or other spatial analysis.