# Honokea Surf Village

## DRAFT ENVIRONMENTAL ASSESSMENT

### KALAELOA, HONOULIULI AHUPUA'A, HAWAI'I

APPLICANT:

HONOKEA surf parks

PREPARED BY:

G70

SEPTEMBER 2022

# Honokea Surf Village

## DRAFT ENVIRONMENTAL ASSESSMENT

KALAELOA, HONOULIULI AHUPUA'A, DISTRICT OF 'EWA,
ISLAND OF O'AHU, HAWAI'I

TMK (1) 9-1-013:068

**APPLICANT:**

HONOKEA KALAELOA, LLC
74 KIHAPAI STREET
KAILUA, HI 96734

**PREPARED BY:**

G70

111 S. KING STREET, SUITE 170
HONOLULU, HI 96813

SEPTEMBER 2022

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# Abbreviations

| | |
|---|---|
| AC | Advisory Circular |
| ADA | American Disabilities Act |
| AIS | Archaeological Inventory Survey |
| ALRFI | Archaeological Literature Review and Field Inspection |
| ASEF | Aloha Solar Energy Fund |
| ASTM | ASTM International |
| BESS | Battery energy storage system |
| BMP | Best Management Practices |
| BPNAS | Barbers Point Naval Air Station |
| BRAC | Base Realignment and Closure |
| BWS | Board of Water Supply |
| CAB | Clean Air Branch |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CIA | Cultural Impact Assessment |
| City | City and County of Honolulu |
| CO | Carbon monoxide |
| CREC | Controlled Recognized Environmental Condition |
| CUP | Conditional Use Permit |
| CWRM | Commission on Water Resource Management |
| DAR | Division of Aquatic Resources |
| dBA | Decibel |
| DHHL | Department of Hawaiian Home Lands |
| DLNR | Department of Land and Natural Resources |
| DNL | Day-Night Average Sound Level |
| DOFAW | Division of Forestry and Wildlife |
| DOH | Department of Health |
| DOT | Department of Transportation |
| DOT-A | Department of Transportation Airports Division |
| DP | Development Permit |
| DPP | Department of Planning and Permitting |
| EA | Environmental Assessment |

| | |
|---|---|
| EPA | U.S. Environmental Protection Agency |
| ESA | Environmental Site Assessment |
| FAA | Federal Aviation Administration |
| FATO | Final Approach and Takeoff Area |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Map |
| FONSI | Finding of No Significant Impact |
| ft | Foot/feet |
| gpd | Gallons per day |
| gpm | Gallons per minute |
| GPS | Global Positioning System |
| HAR | Hawai‘i Administrative Rules |
| HART | Honolulu Authority for Rapid Transportation |
| HCDA | Hawaii Community Development Authority |
| HCM | Highway Capacity Manual 6th Edition |
| HE | Hawaiian Electric |
| HFD | Honolulu Fire Department |
| HICRIS | Hawaii Cultural Resource Information System |
| Honokea | Honokea Kalaeloa, LLC |
| HPD | Honolulu Police Department |
| HREC | Historical Recognized Environmental Conditions |
| HRS | Hawai‘i Revised Statutes |
| HWMO | Hawai‘i Wildfire Management Organization |
| HWS | Hawai‘i Water Service |
| IBC | International Building Code |
| ITE | Institute of Transportation Engineers |
| JRF NEM | John Rogers Field 2020 Noise Exposure Map |
| KCDD | Kalaeloa Community Development District |
| KHLFP | Kalaeloa Heritage and Legacy Foundation Park |
| kV | Kilovolt |
| kVA | Kilovolt-ampere |
| KHP | Kalaeloa Heritage Park |
| LBP | Lead-Based Paint |
| LBSP | Land-based Sources of Pollution |

| | |
|---|---|
| LID | Low Impact Design |
| LOS | Level of Service |
| M | Million |
| MAR | Mobility Analysis Report |
| MBTA | Migratory Bird Treaty Act |
| mgd | Million gallons per day |
| mg/L | Milligrams per liter |
| MPH | Miles per hour |
| msl | Mean sea level |
| MW | Megawatt |
| NAAQS | National Ambient Air Quality Standards |
| NAVFAC-HI | Naval Facilities Engineering Systems Command Hawai‘i |
| NB | Neighborhood Board |
| NCTAMS | Naval Computer and Telecommunications Area Master Station Pacific |
| NFA | No Further Action |
| NFPA | National Fire Protection Agency |
| NGA | National Governors Association |
| NOAA | National Oceanic and Atmospheric Administration |
| $NO_X$ | Nitrogen oxides |
| NOVO | Notice of Violation and Order |
| NPDES | National Pollution Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| $O_3$ | Ozone |
| OFA | Object Free Area |
| PEC | Potential Environmental Concerns |
| PER | Preliminary Engineering Report |
| PGA | Peak Ground Acceleration |
| $PM_{10}$ | Particulate matter smaller than 10 microns |
| $PM_{2.5}$ | Particulate matter smaller than 2.5 microns |
| psi | Per square inch |
| REC | Recognized Environmental Conditions |
| RPZ | Runway Protection Zone |
| SAAQS | State Ambient Air Quality Standards |
| sf | Square feet |

| | |
|---|---|
| SHPD | State Historic Preservation Division |
| SLR-XA | Sea Level Rise Exposure Area |
| $SO_X$ | Sulfur oxides |
| SORT | Save Oahu's Race Tracks |
| TMK | Tax Map Key |
| TRB | Transportation Review Branch |
| UH | University of Hawai'i |
| U.S. | United States |
| USCG | U.S. Coast Guard |
| USDA | U.S. Department of Agriculture |
| USGS | United State Geological Survey |
| VSI | Visual Site Inspection |
| WUI | Wildland-urban Interface |

Section 1

# Introduction

## Chapter 1

# Introduction

This Environmental Assessment (EA) has been prepared in accordance with the requirements of Chapter 343, Hawai'i Revised Statutes (HRS) and Hawai'i Administrative Rules (HAR), Title 11, Chapter 200.1, Department of Health, which establishes the requirements for an environmental review at the state and county levels to ensure that environmental concerns are given appropriate consideration in decision-making along with economic and technical considerations.

## 1.1 Project Information Summary

| | |
|---|---|
| **Type of Document:** | Environmental Assessment (EA) |
| **Project Name:** | Honokea Surf Village |
| **Recorded Fee Owner:** | Hawaii Community Development Authority (HCDA)<br>547 Queen Street, Honolulu, HI 96813<br>Contact: Craig Nakamoto, Interim Executive Director<br>Telephone: (808) 594-0300 |
| **Applicant:** | Honokea Kalaeloa, LLC<br>74 Kihapai Street, Kailua, HI 96734<br>Contact: Kenan Knieriem, Owner<br>Telephone: (808) 295-2146 |
| **Agent:** | G70<br>111 S. King Street, Suite 170, Honolulu, HI 96813<br>Contact: Kawika McKeague, Principal<br>Telephone: (808) 523-5866 |
| **Approving Agency:** | HCDA<br>547 Queen Street, Honolulu, HI 96813<br>Contact: Craig Nakamoto, Interim Executive Director<br>Telephone: (808) 594-0300 |
| **Ch. 343, HRS Triggers:** | Use of State Lands |
| **Project Location:** | Lot 13073-C Coral Sea Road<br>Kapolei, HI 96707 *(Figure 1.1)* |
| **Tax Map Keys (TMK):** | TMK: (1) 9-1-013:068 *(Figure 1.2)* |
| **Project Area:** | 19.361 acres |

| | |
|---|---|
| **State Land Use District:** | Urban *(Figure 1.3)* |
| **Kalaeloa Community Development District Designation** | T2 Rural/Open Space Zone *(Figure 1.4)* |
| **Special Management Area:** | Outside of SMA *(Figure 1.5)* |
| **City & County of Honolulu Zoning:** | F-1 Federal and Military *(Figure 1.6)* |
| **City Development Plan:** | ʻEwa Development Plan *(Figure 5.1)* |
| **Flood Zone:** | Zone D (Possible but Undetermined Hazard) *(Figure 1.7)* |
| **Anticipated Determination:** | Finding of No Significant Impact (FONSI) |

## 1.2 Overview and Background

The approximately 19-acre site for the Honokea Surf Village is located east of the Kalaeloa Airport northeast of runway 22L, on former Barbers Point Naval Air Station (BPNAS) lands. Lot 13073-C or TMK (1) 9-1-013:068, was previously the location of a United States (U.S.) Navy jet engine test cell site. These test cells were used to conduct stationary engine tests, which stimulate extreme environmental operating conditions and lengthy endurance tests. As a result of the Base Realignment and Closure (BRAC) process, the U.S. Department of Defense designated the BPNAS for closure in 1999 and conveyed portions of the property to the U.S. Navy, other Federal agencies and State and local government agencies. During the conveyance process, a removal action of the engine test cells and 9,000 cubic yards of soil mixed with asbestos-containing material was excavated from five acres of the site. A “no-further-action record of decision” for the site was signed by the U.S. Navy in 2001.

In 2002, the Hawaiʻi Community Development Authority (HCDA) took responsibility from the Barbers Point Redevelopment Commission for development of the former BPNAS, and in 2009, 77 acres of Kalaeloa land, including the subject property, were conveyed to HCDA as the landowner. Through the Kalaeloa Community Development District Rules, developed in 2012, the project site was designated T2 Rural/Open Space, allowing for open space, parks, and limited agricultural use. The property is fairly open with asphalt roads, historic military remnants of concrete and rebar, and scattered predominantly non-native vegetation. No ground disturbance has occurred on this property since removal of the test cells in 2000/2001.

HK Management, LLC worked extensively with HCDA during a four-year public RFP process after which it entered into an exclusive negotiating agreement with the HCDA in 2021 to lease the project site. HK Management, LLC is a local company founded by big-wave surfer and ocean safety expert Brian Keaulana and co-founder Keno Knieriem. HK Management is the managing member of Honokea Kalaeloa, LLC (Honokea) which is the operating entity of Honokea Surf Village. Honokea's vision is, through its parks, to strengthen communities wholistically, inspire change to its patrons, and to celebrate Hawaiʻi’s contributions to surfing and surf safety. The site and its underlying zoning provide the capacity that would permit Honokea to develop a Surf Village, which includes a comprehensive recreational, cultural, community and educational program.

The Honokea Surf Village will provide state of the art, professional level facilities for a variety of sports, specifically for the sport of surfing. Local surfers are already impacted by not having access to top tier training facilities even though Hawai‘i has some of the best waves in the world. These new top tier facilities are popping up all over the world and allow surfers to gain a training advantage especially at a young age, that allows for accelerated learning. These facilities and the training opportunity it affords surfers forces our aspiring surfers to travel to the mainland and abroad. This is an economic burden that the youth should not have to bear in the sport invented by Hawaiians. These top tier training facilities are allowing adaptive surfers opportunities to surf that have never been possible in the ocean. Blind surfers can now surf unassisted due to the machine-like repeatability of the waves and the controlled environment that cannot be replicated in the ocean. This technology can be seen as a new school classroom where the values of life, wellness, culture, and life safety can be shared and promoted.

HCDA’s master plan vision for Kalaeloa (Kalaeloa Master Plan, 2006) is centered on the premise that it is a wahi ho‘okela, a center for excellence and a place for Hawai‘i’s people to come together:

- to share knowledge,
- develop expertise, and
- advance themselves while remaining respectful of past and place.

Honokea Surf Village is a unique project that contributes to fulfilling the vision, core values, and guiding principles for Kalaeloa; and in doing so, also aligns with the local community’s aspirations and values as shared through the project’s current consultation process. The project creates a recreation area that propagates economic enterprises for Kalaeloa based on education, sports, and culture. It is fitting for a project like Honokea Surf Village, whose primary goal is the sharing of values, culture, and history through surf and surf culture, to find a home in Kalaeloa aligning with the following Kalaeloa Master Plan’s core values and guiding principles:

- Pursue a balance of preservation and restoration of cultural and natural resources, the creation of public and recreational areas, and the development of economic enterprises.
- Support the multiplicity of uses at Kalaeloa and encourage the achievement of excellence in many fields of endeavor, including education, research, technology, environment, defense, commercial, sports, culture, and the arts.
- Focus redevelopment resources to create both social and economic values by emphasizing community needs for education, open space, recreational facilities, and quality careers and jobs.

Honokea Surf Village is about two things; 1) it is all about surfing and the underlying Hawaiian culture that brought surfing into existence; and 2) it is about a village, a place of community that allows visitors, residents, and patrons the opportunity to experience living with great connections to place, to culture, and to each other. In many respects, surfing allows the opportunity to experience an authentic Hawaiian lifestyle translated to any location: informal, outgoing, social, outdoor oriented, and instilled with Aloha.

Honokea secured a $95 million revenue bond authority from the State of Hawai‘i for the Honokea Surf Village. The bill was approved by the Legislature and signed into law in June 2021. This bond bill authorizes State of Hawai‘i tax free revenue bond authority as a financing tool for the project. The bonds require no capital from the State as this is private capital and poses no financial risk to

taxpayers (the returns are guaranteed by the project). It demonstrates the State of Hawai'i's commitment to see this project happen from the highest level.

The entire project is designed to maximize social and community impact by creating over 200 local jobs, and by being a platform for local retailers, the local surf manufacturing industry, and local film industries. It encourages healthy living through food, activity, family, and sports. The project will partner with local educational organizations to encourage progressive educational opportunities in engineering, sustainability, wellness, medicine, entertainment, and Hawaiian surf history.

## 1.3 Purpose of the Environmental Assessment

This EA will comply with Hawai'i's Environmental Review process, under HRS Chapter 343 and HAR §11-200.1. The property is owned by HCDA, which constitutes utilization of State land, providing the basis for the preparation of this document. HCDA is also the approving agency. The EA examines the potential environmental impacts of the planned improvements at Honokea Surf Village and seeks agency and public comment on subject areas that should be addressed.

## 1.4 Agencies, Organizations and Individuals Contacted in Early Consultation

Agencies, elected officials, and members of the community were consulted in the preparation of this EA. As the recorded fee owner and approving agency, HCDA was consulted for this proposed action.

Informal consultation and discussion with area elected officials resulted with positive feedback for the project Specifically, there was general support for the project's commitment to community enrichment and youth outreach, cultural preservation and promotion of traditional Hawaiian cultural practices, economic revenue generation and job creation, the project's positive support for adaptive surf opportunities, and training and support for life guards and first responders.

The Honokea Surf Village project was presented to the 'Ewa Neighborhood Board (NB) #23 on March 10, 2022, and the Makakilo/Kapolei/Honokai Hale NB #34 on March 23, 2022. Recommendations made at the 'Ewa NB meeting on March 10, 2022 included:

- Senator Fevella noted there will be traffic associated with the project, and that should be looked at as a part of the environmental assessment.
- Senator Fevella also noted that affordability will be an important aspect to consider. If the cost to access the facility is too expensive, local families cannot use it. He also wants to make sure the project is thinking about helping the community long term.
- Senators, Representatives, and Board Members also emphasized the importance of life guards and supporting life guard programs.
- Councilmember Tulba appreciated the presentation, and emphasized the national/ international possibilities, opportunities to train local youth, and opportunity for the 'Ewa region in general.

During the Makakilo/Kapolei/Honokai Hale NB Meeting March 23, 2022, questions included:

- Board Member Lidstone asked if the project team had spoken to Shad Kane and the Kalaeloa Heritage Park to the south of the project.
- Board Member Lidstone also asked if there was a difference between this project and other "wave projects" in development in the area.
- Board Member Lidstone also asked who/what organization would be running the project.
- Board Member Lidstone asked if the project would provide Olympic training opportunities.

Individuals were also interviewed about their knowledge of the area and whether or not the Surf Village improvements would have an effect on any historically or culturally significant sites in the area. Additional information is located in *Chapter 3.9, Historical and Cultural Resources.*

Parties contacted in early consultation are listed below. Further information is detailed in *Chapter 7.*

Federal

- U.S. Army Corps of Engineers
- U.S. Coast Guard – Air Station Barbers Point
- U.S. Department of the Interior, Fish and Wildlife Service
- U.S. Department of the Interior, United States Geological Survey
- U.S. DOT Federal Aviation Administration – Honolulu Airports District Office
- U.S. Environmental Protection Agency
- U.S. Navy

State

- Department of Business, Economic Development & Tourism
- Department of Hawaiian Home Lands
- Department of Health (DOH), Hazard Evaluation and Emergency Response Office
- DOH, Clean Water Branch
- DOH, Wastewater Branch
- Department of Land and Natural Resources
- Department of Transportation (DOT), Airports Division
- DOT, Highways Division
- Office of Hawaiian Affairs
- Office of Planning and Sustainable Development
- Senator Kurt Fevella, District 19
- Senator Mike Gabbard, District 20
- Senator Maile Shimabukuro, District 21

- Representative Stacelynn Eli, District 43
- Representative Sharon Har, District 42
- Representative Matthey LoPresti, District 41
- Representative Bob McDermott, District 40

City and County

- Department of Facility Maintenance
- Department of Parks & Recreation
- Department of Planning and Permitting
- Department of Transportation Services
- Honolulu Board of Water Supply
- Honolulu Fire Department
- Honolulu Police Department
- Councilmember Andria Tupola, District 1
- Councilmember Augie Tulba, District 9
- Makakilo/ Kapolei/Honokai Hale Neighborhood Board No. 34
- ʻEwa Neighborhood Board No. 23

Organizations and Individuals

- ʻAhahui Siwila Hawaiʻi o Kapolei
- Kalaeloa Heritage and Legacy Foundation
- Kanehili Cultural Hui
- Hunt Development Group


**Figure 1.1** **Project Location**


**Figure 1.2** **Tax Map Key**

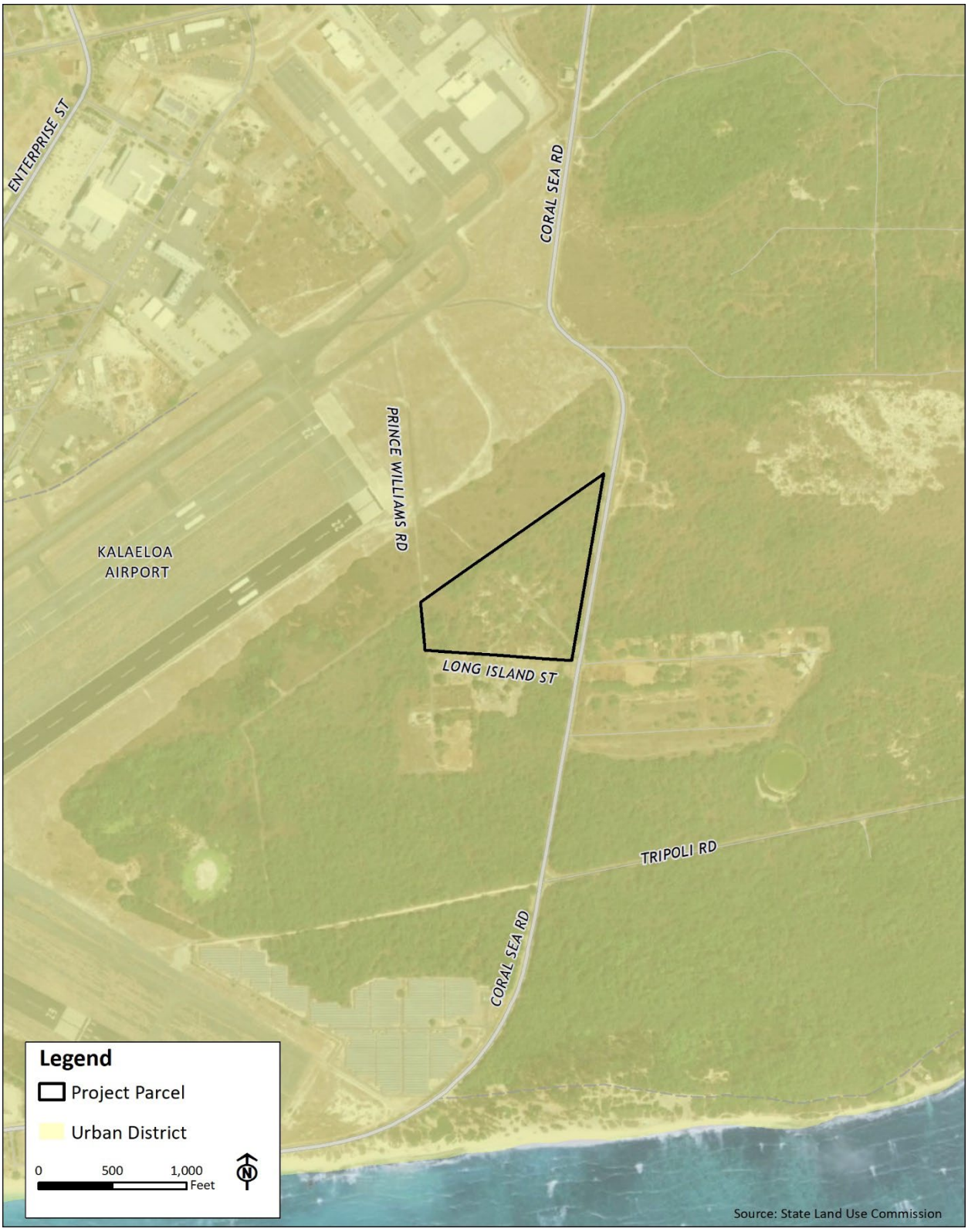



**Figure 1.3** **State Land Use Classification**

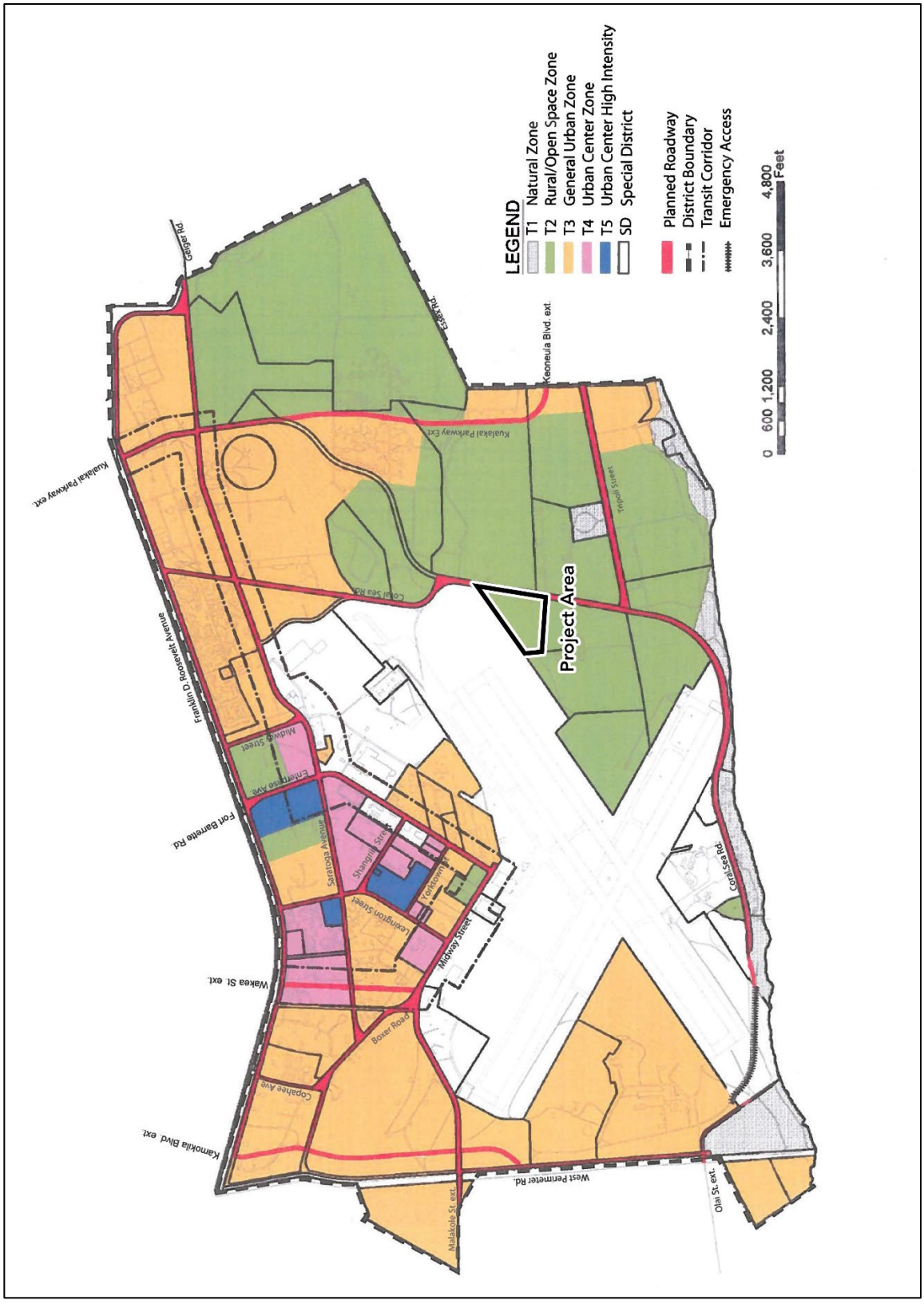



**Figure 1.4** **Kalaeloa Community Development District Designation**


**Figure 1.5** **City and County of Honolulu Special Management Area**

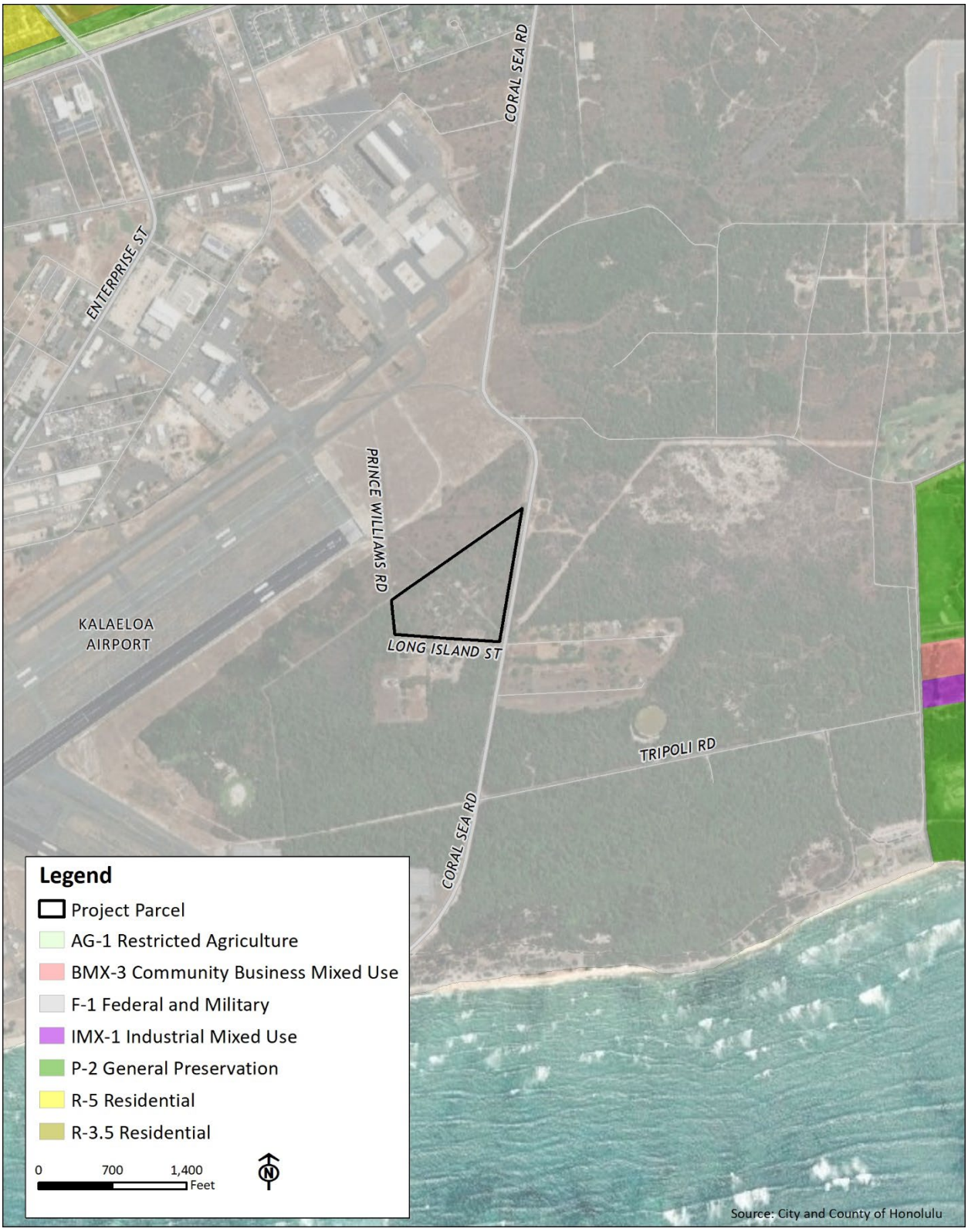



**Figure 1.6** **City and County of Honolulu Zoning Districts**

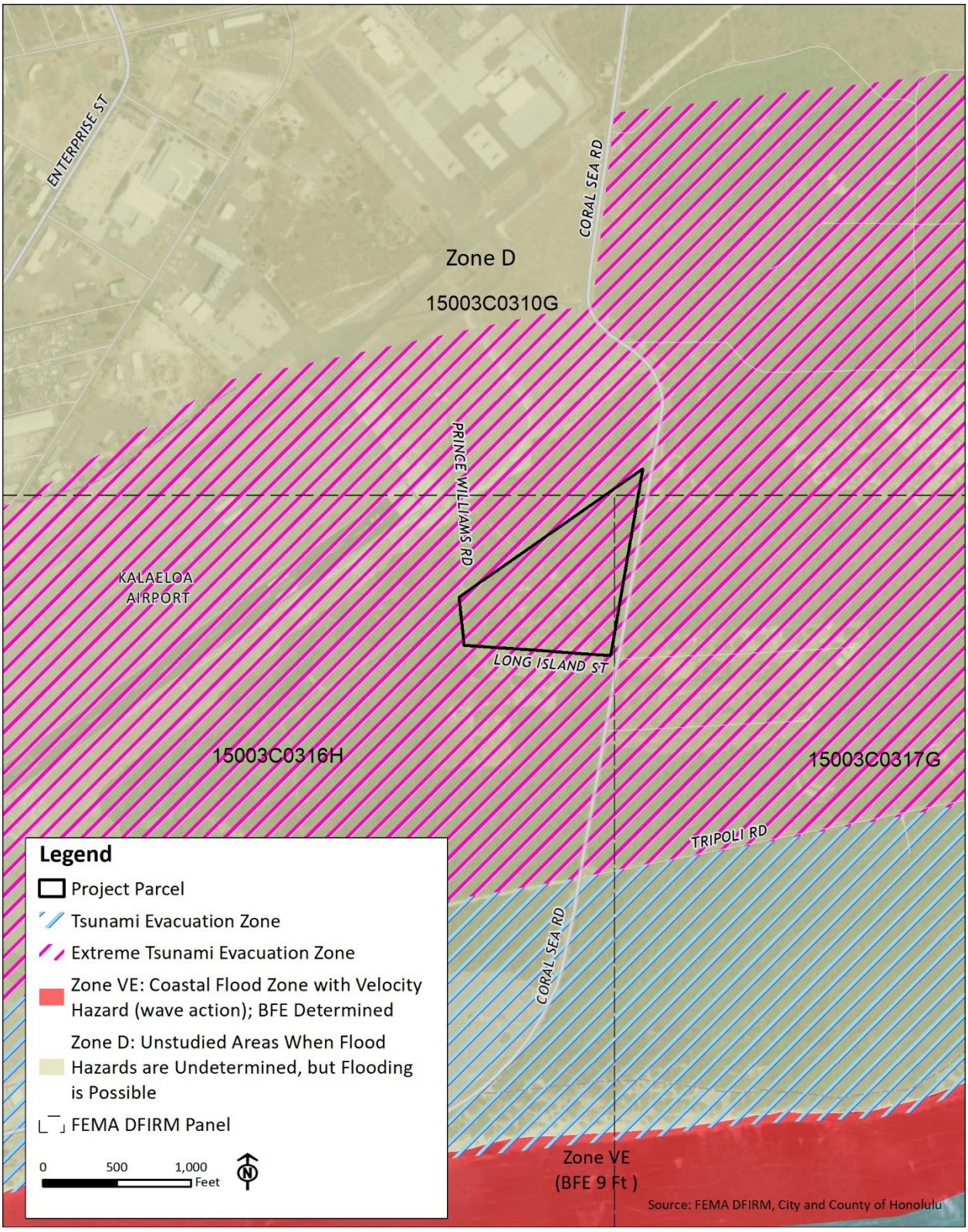



**Figure 1.7** **Flood and Tsunami Evacuation Zones**

Section 2

# Project Description

Chapter 2

# Project Description

This chapter provides the history and existing uses of the property and surrounding areas. An overview of the planned improvements is provided.

## 2.1 History of the Area

The project area is within the ahupua‘a of Honouliuli, the largest of ‘Ewa’s ahupua‘a *(Figure 2.1).* Translated, Honouliuli means “dark bay”, likely referring to the deep waters of what is now called West Loch of Pearl Harbor, located on the eastern perimeter of Honouliuli Ahupua‘a. Known for its bountiful resources, the ‘Ewa area was a sought-after land for the ali‘i, and as a result, numerous battles ensued. One such example is the unfought battle of the Keahumoa Plain which involved Kuali‘i (ca. 1650) who was a celebrated chief, skilled, and victorious in the art of warfare. This bloodless “battle” instigated by brothers Kapa‘ahulani and Kamaka‘aulani resulted in Kuali‘i uniting all the islands.

During the Māhele (1845), majority of the land of Honouliuli, 43,250 acres, was granted to Kekau‘onohi, granddaughter of Kamehameha I, within LCA 11216. Land changed hands when Kekau‘onohi’s widower, Ha‘alele‘a died, and his second wife, Anadelia Amoe deeded the land to her sister’s husband, John H. Coney. In 1877 Coney subsequently sold Honouliuli to James Campbell. For approximately 43,640 acres of land, Campbell paid a sum of $95,000. During the initial years of his ownership, Campbell utilized about 10,000 acres as a cattle ranch and also leased out land for rice cultivation, fishing rights to Pearl Harbor, as well as a lime quarry.

In 1889, Campbell leased Honouliuli for 50 years to Benjamin Dillingham, who established the Ewa Sugar Plantation in the lower portion of the ahupua‘a, and Oahu Sugar Company’s cane fields in the upper reaches of Honouliuli. Dillingham also built the Oahu Railway and Land Company railroad in Honouliuli which extended out to Wai‘anae. In 1893, the first sisal was brought to Hawai‘i from Florida and was grown in Honouliuli. The sisal plantation can be seen on a 1902 map of O‘ahu *(Figure 2.2).* The land of the project area is labeled as “coral plain,” and the sisal plantation is just to the north of the project area. The presence of government structures in Kalaeloa began in 1888 with the construction of the Barbers Point Lighthouse by the Hawaiian Government. Following work in the area consisted of construction of the United States Coast and Geodetic Survey Magnetic Station, where the project area is located within a large region of grazing lands (yellow outline) that extends to Kahe in the west and Pearl Harbor in the east. The Oahu Railroad line runs to the north of the project area through the sisal plantation with the Ewa Mill sitting along the rail line.

In the 1930s the military leased a 3,000 square foot area from the Campbell Estate. This period brought much development to the area’s infrastructure and capital improvements and included the creation of approximately 18 miles of road built between 1935 and 1937. When the military’s lease expired in 1940, the Navy acquired a lease of 3,500 acres on which the ‘Ewa Marine Corps Air Station, and later, Barbers Point Naval Air Station would be built. Following the Japanese bombing of Pearl Harbor on December 7, 1941, construction at the Air Station dramatically increased after the ‘Ewa airstrip and a majority of the planes were destroyed in the attack.

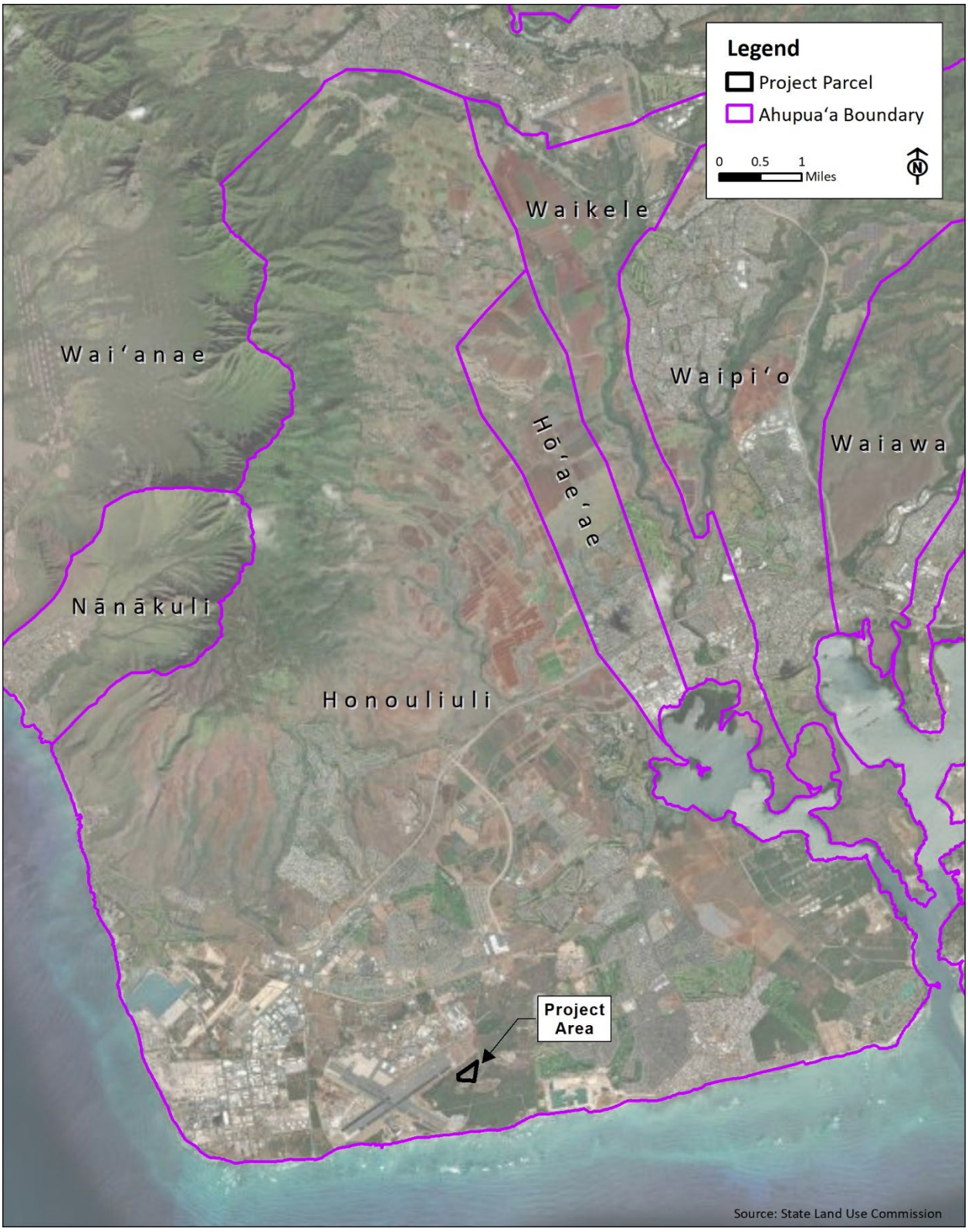



**Figure 2.1** **Ahupua'a of Honouiluli**

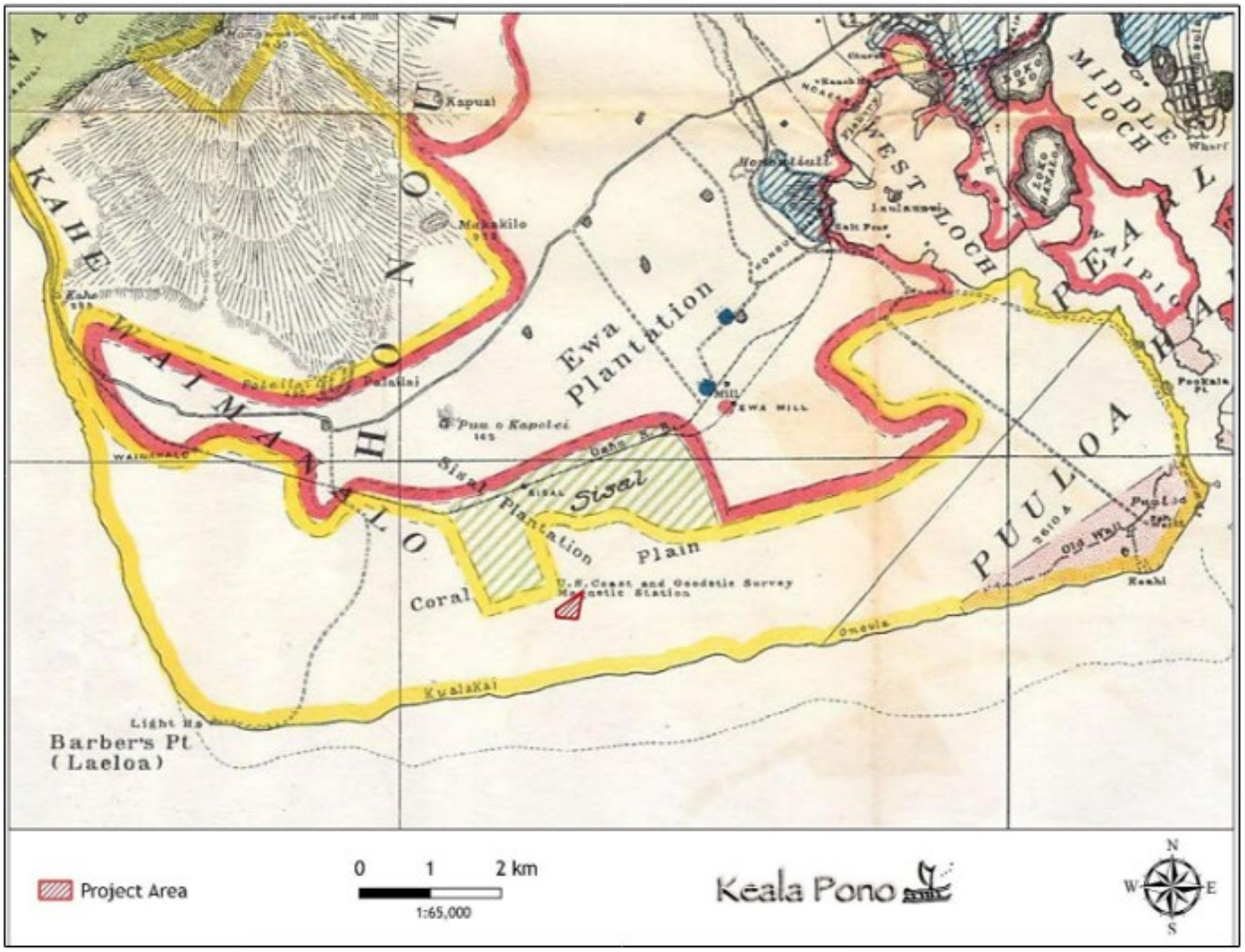



**Figure 2.2** **Portion of a 1902 map of O'ahu (Alexander 1902)**

Construction of the Naval Air Station at Barbers Point was completed on April 15, 1942 with an increase in the station's capacity from its original 2,000 enlisted members, 250 officers, and 800 civilians to facilities for 4,000 enlisted members, 450 officers, and 1,200 civilians.

Since World War II, BPNAS played an integral role as a strategic military base and has provided a diverse range of functions, including an antisubmarine patrol, headquarters of the Pacific Airborne Barrier Command (1958–1965), guided missile units, and the Pacific Sound Surveillance System. Over the course of time, activities associated with construction and the execution of these functions have had a major impact on cultural and natural resources. Some of these impacts include blasting and jackhammering of coral outcrop, filling of sinkholes, infrastructure developments of roads, sewers, water systems, electricity, gas, housing units, and general bulldozing and grading in surrounding areas.

An aerial photograph of the project area from 1951 *(Figure 2.3)* shows that both Coral Sea and Prince Williams Roads are already in place by this time with a smaller road extending into the center of the project area for access to a large building with smaller adjacent structures. There are also several buildings along Prince Williams Road, one of which falls within the current study lands. This portion of the Naval Air Station was the location of a former jet engine test cell site, which was used to conduct stationary engine tests including lengthy endurance tests.


**Figure 2.3** **Aerial Photograph of Kalaeloa (USGS 1951)**

In 1999 the Naval Air Station was closed by Base Realignment and Closure (BRAC) and was turned over to the State of Hawai'i. It is currently named the Kalaeloa Community Development District (KCDD) (Hawai'i Community Development Authority 2012).

In 2002, the HCDA took responsibility from the Barbers Point Redevelopment Commission for development of the former BPNAS, and in 2009, 77 acres of Kalaeloa land, including the subject property, were conveyed to HCDA. The project site was designated T2 Rural/Open Space, allowing for open space, parks and limited agricultural use. The property is fairly open with asphalt roads, historic military remnants, and scattered vegetation.

***History of Surfing in Hawai'i***

Hawaiians are credited for inventing *he'e nalu*, or what is now called the sport of surfing (UH Mānoa, 2022). The first documentation *(Figure 2.4)* containing a description of surfing is from a journal entry by Lieutenant King, Captain Cook's successor, in 1779:

> *...The men sometimes 20 or 30 go without the Swell of the Surf, & lay themselves at upon an oval piece of plan about their size and breadth, they keep their legs close on top of it, and their Arms are used to guide the plank, they wait the time of the greatest Swell that sets on Shore, & altogether push forward with their Arms to keep on its top, it sends them in with a most astonishing Velocity, & the great art is to guide the plan so as always to keep it in a proper direction on the top of the Swell, & as it alters its direct. If the Swell drives him close to the rocks before he is overtaken by its break, he is much praised...*


**Figure 2.4** **An Image Taken from Captain Cook's Voyages Around the World (1779)**

A surfboard's length and wood construction type differentiated ali'i from commoners. It is said the sacred aspect of Hawaiian culture entered into the practice of surfing through board selection and construction. Per an excerpt from the University of Hawai'i at Mānoa:

> *The creation of a surfboard was sacred. Before chopping down a tree, a surfboard maker would place a kūmū, or ritualistic fish, in a hole near the roots of the tree and pray. After the tree was cut down and hauled away, it would be roughly shaped using bone or adze. The board would then be taken to a halau, or canoe house, where coral and stone would be used to further refine the shape of the board. Burned kukui nuts, roots from the ti plant, hili (pounded bark), or banana bud stains were used to blacken the board. Kukui nut oil was then applied to give the board a smooth and shiny finish. Before its first use the finished surfboard would be dedicated. After every use, the surfboard was rubbed with coconut oil, and wrapped with tapa cloth to preserve its finish.*

Because of the effort and care required to create and maintain surfboards, they were highly treasured possessions to ancient Hawaiians.

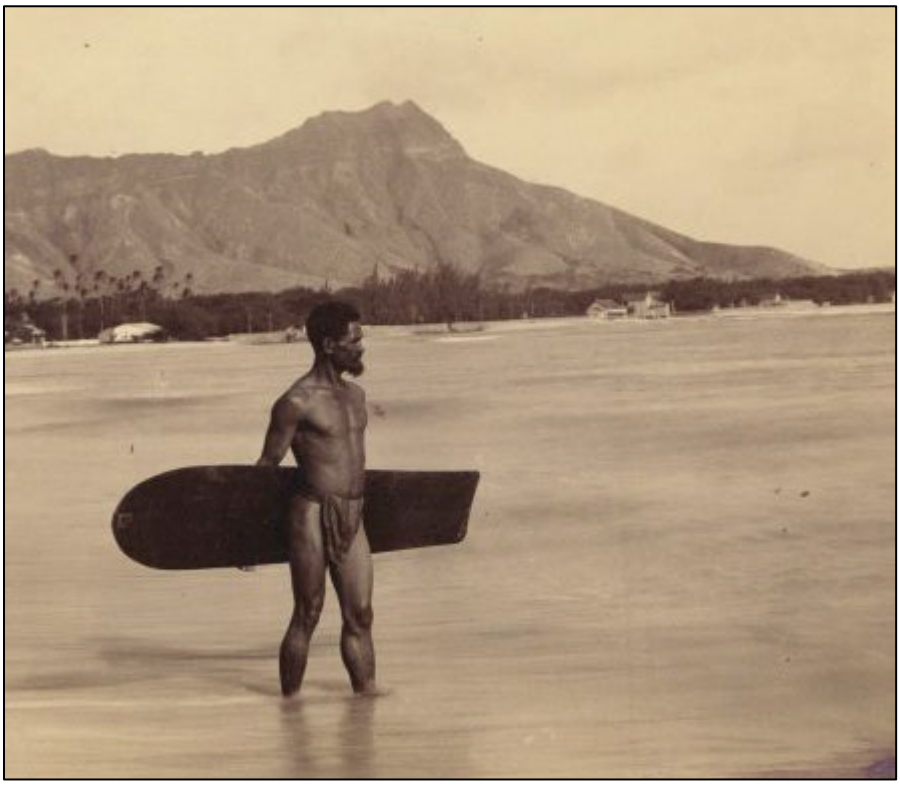


**Figure 2.5** **Hawaiian Surfer Holding an Alaia Surfboard at Waikīkī Beach**
(Source: Hawaii and It's People, The Land of Rainbow and Palm, 1899)

The popularity of the surfing in Hawaiian life and its status as a tradition of the Hawaiians can be measured by the comments and early documentation of Hawaiian life, which referred to surfing with such phrases as a "national pastime", a "most prominent and popular pastime", and a "favourite amusement" of ancient Hawaiians. Ali'i prided themselves on their surfing abilities; John 'Ī'ī (advisor to the Royal Hawaiian court in the early 1900s, kahu for Kamehameha I and Kamehameha II) wrote that Kamehameha I was trained in his youth to surf with board and canoe and that he and his wife,

Ka‘ahumanu, were expert surfers, noted especially for their skill in lele wa‘a (canoe leaping), in which the surfer leaps from a canoe with his board into a moving wave to surf it to shore. The renown of expert surfers is reflected in many Hawaiian songs and stories that spoke of leaders, courtship, and surf contests. One such story recounted by King Kalakaua mentions surfing in ‘Ewa, describing Kelea “the surf-rider of Maui” (Finney, 1959):

> *Kelea, the beautiful sister of the ruler of Maui, was famed as the most graceful and daring surfer in the kingdom. One day while surfing at Lahaina she accepted an offer from an Oahu chief to ride the waves in his canoe. The chief, Kalamakua, taking advantage of a squall which blew the craft out to sea, abducted Kelea to take her to Oahu. During the voyage Kelea learned that she was to be the wife of Lo-lale, the high chief of Oahu. Kelea, after her initial anger at being abducted, became pleased with the situation and soon thereafter became the wife of Lo-lale. However, Lo-lale disliked the sea and dwelt inland at Lihue. Kelea, confined in Lihue far from the sea, longed to return to the surf and was only happy on her occasional visits to the seashore at ‘Ewa where she surfed in the company of Kalamakua. Finally, she vowed to return to the shores of her native island and left Lo-lale forever. However, on her way to Maui she stopped at ‘Ewa and there accepted a proposal of marriage from her fellow-surfer, Kalamakua, the chief who had abducted her.*

When the first missionaries arrived to Hawai‘i in the early 1800s, many aspects of early Hawaiian society and culture including practices such as medicine and hula, as well as cultural traditions including surfing, were discouraged or outright abolished. This cultural conflict, along with factors such as the diminution of population due to disease in a 100-year period from the original encounter with Captain Cook, along with diaspora of Hawaiian people, resulted in a decline of cultural practices, including surfers and the cultural practice of surfing. It was not until the end of the nineteenth century that the Merry Monarch King Kalākaua revived many traditional cultural practices, including surfing. In 1905, Duke Kahanamoku picked up surfing in Waikīkī as a young teenager, setting in motion his path as a lifelong ambassador for surfing. However, surfing became popularized in beaches in California and elsewhere in the early 1900s, leading the culture of surfing itself to be gentrified and appropriated across the world.

***Surfing Near the Project Area***

The beaches nearest to the project site, Nimitz Beach and White Plains Beach (Kualaka‘i), are not particularly known for big wave surfing history or opportunities. However, there are breaks featured out at White Plains for smaller surfing and boogie boarding. Just beyond Nimitz Beach there is a treeless beach area with a jetty on the right, and the surf spot “Swabbyland” (also known as Officers, off Nimitz Beach) is located straight out roughly a thousand yards. White Plains Beach has waves that double up over and over again with an occasional hundred-yard ride to the beach. A thousand yards out to the right in front of Nimitz Beach, there is a surf spot, Tankers, but otherwise it is more of a family-oriented beach (Morrison, 2010).

However, traveling up the coast to the west will take you to classic ‘Ewa surf spots including Tracks (Kahe Beach), Keaulana’s (Nānākuli Beach Park), Mā‘ili Point (near Ulehawa Beach Park), Green Lanterns (near Ulehawa Beach Park), and spots all the way to Mākaha Beach. Traveling east down the coast will take you to ‘Ewa Beach, which features many surf spots including Shark Country (near Nimitz Beach), Empty Lot (near Kualaka‘i), Hau Bush (near Keku Point), Dud’s Reef (off ‘Ewa Beach Park), and Sandtracks (near Keahi Point) (Morrison, 2010).

Matt Warshaw, a former professional surfer and writer at Surfer Magazine, was interviewed by Surfer Magazine in 2017 about the history of surfing in ʻEwa and the westside, and responded with the following (Jones, 2017):

> *…the whole Westside was kind of the badlands of Oahu. Then and now. Tucked away, mostly poor, very local. Tourists went out there now and then, on buses or whatnot. The coast is really, really dramatic with cliffs, extra-blue water. Just beautiful. But as a rule, you come down from your Royal Hawaiian suite and ask the concierge where to go on a day trip, he's gonna point you anywhere but the Westside.*
>
> *Makaha doesn't get big often enough, and unless it's huge, it's just this big soft fun warbled thing. Longboards, funboards, bodyboards, anything goes. If you want it big and gnarly—what we all expect from Hawaii—the focus had to go to the North Shore. More surf, bigger surf, more breaks. But every 10 or 12 years, it'll get big enough for Point Surf Makaha to turn on, and when it does get 20-foot-plus, it'll make Waimea look like the oversized shoredump it is. I can't remember the last time Point Surf was huge and firing, it's so rare. But when it happens, it is stunning.*

## 2.2 Project Area Characteristics

Also known as Barbers Point, the Kalaeloa area has a rich cultural heritage due to its unique environment and landscape. Native Hawaiians who settled in the area were required to identify and utilize specialized traditions and cultivation techniques for food and water resources, especially considering the hard coral shelf beneath the surface of the soil. The Kalaeloa coastal region is known for the cultivation and production of various species of limu. The nearshore fisheries along the predominant reef system was, and for some continues to be, a source of subsistence. The weather brought on by the Kona wind, as described in some oratorical traditions is the predominant wind form, counter balanced by the strong makaliʻi season sun, provides opportunities for water collection and specific medicinal and cultural material plants such as uhaloa, kaunaʻoa and kūpala that thrive in the short periods of heavy rain, which are preserved by natural lava tube formations.

There is also a long tradition of military occupation and presence in the immediate area, symbolized by the still functioning Kalaeloa airport as well as historic military sites and artifacts present throughout the Kalaeloa region. The project site falls within the greater KCDD, which is comprised of 3,695 acres of former BPNAS land in the Kalaeloa area of West Oʻahu. The lands within KCDD are presently owned by various Federal, State, and County agencies, including the U.S. Fish and Wildlife Service, U.S. Coast Guard (USCG), Hawaiʻi State Department of Transportation, Department of Hawaiian Home Lands, and City and County of Honolulu Department of Parks and Recreation *(Figure 2.6).*

South of the Kalaeloa Airport is the USCG Air Station Barbers Point. Besides the adjacent airport, neighboring land uses to the project site include The Ranch at Kalaeloa located to the southeast, and the Kalaeloa Heritage Park (KHP) located to the south/makai of the project site across Long Island Street. The 11.5-acre KHP contains significant cultural, historical, and natural resources unique to the ʻEwa Plain. The core values of the KHP are to promote the stewardship and preservation of Native Hawaiian cultural sites and the cultural landscape of Kalaeloa, to educate the community about cultural traditions and practices, to advocate cultural awareness, and to implement and maintain an authentic Hawaiian presence in the Kalaeloa area. This living historical park serves as an interpretive area and provides a glimpse of the lives of Native Hawaiians that once lived there.

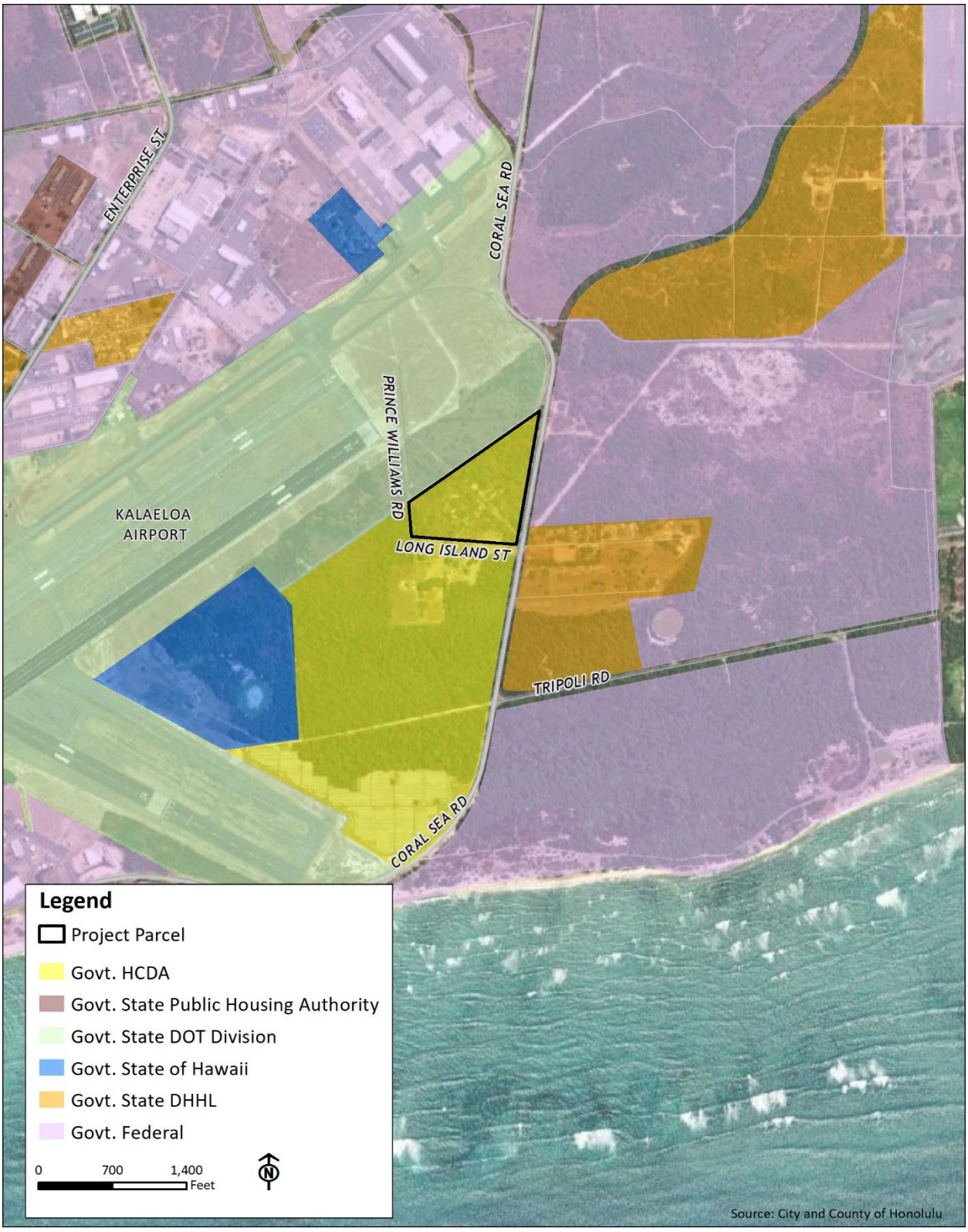



**Figure 2.6** **Large Landowners**

Several beaches along the coast (White Plains Beach, Eisenhower Beach, Kalaeloa Beach Park, Nimitz Beach) offer recreational opportunities in the area *(Figure 2.7).* Military Rest and Relaxation facilities are provided at the Nimitz Officers Beach and Barbers Point USCG Resort Homes. Other recreation opportunities in the area include Pride Baseball Fields, Kapolei Aquatic Center, Barbers Point Bowling Center, Coral Crater Adventure Park, Dogs of War Airsoft Park, K-1 Speed Indoor Go Karts, Barbers Point Golf Course, and Hoakalei Country Club.

Mixed uses north of Kalaeloa Airport include several industrial lots related to the trucking and automotive industries. Tracts of rental homes have been built closer to Roosevelt Avenue. Attempts to resurrect the previous base facilities immediately north of the airport have attracted Magnum Film Studios as well as several social services, including the National Guard Kalaeloa Youth Challenge Academy, Hale Ulu Pono – Steadfast Housing, Kumuhonua Transitional Living Center, and Waianae Community Outreach.

Future planned development in the KCDD encompasses a range of several large institutional development projects, including new solar farms, housing for homeless, and recent groundbreaking for a new Veterans' Administration clinic. Over the next two decades, plans are to continue to transform Kalaeloa into a thriving mixed-use community with new housing and jobs for local residents.

Kalaeloa is also located in an Opportunity Zone for federal redevelopment tax incentives. Hawai‘i designated 25 census tracts as opportunity zones as part of the new federal community development program established by Congress in the Tax Cuts and Jobs Act of 2017 to encourage long-term investments in low-income urban and rural communities nationwide. Its stated purpose is to encourage entrepreneurship and expansion capital for economically distressed areas of the country.

## 2.3 Existing Conditions

The project site itself is bounded by Coral Sea Road to the east, Long Island Street to the south, Prince Williams Road to the west, and the security fence for Kalaeloa Airport to the north and northeast. The project site is located roughly 656 feet (ft) from the edgeline of northeast Runway 22 L of Kalaeloa Airport, approximately one mile from the T-intersection of Coral Sea Road and Franklin D. Roosevelt Avenue, and about half a mile from the Pacific Ocean, within the Honouliuli Ahupua‘a, ‘Ewa District, on the island of O‘ahu *(Figure 2.1).* TMK: (1) 9-1-013:068 consists of 19.46 acres *(Figure 1.2)* and is owned by the HCDA.

The proposed site is presently more or less level ground typical of the ‘Ewa Plain. The terrain is uneven and rocky with limestone rubble and outcrops typical of karst, although much of the site has been disturbed by past development evidenced by roads, scattered concrete slabs, and other structures dating to the years when this parcel was actively used as part of the BPNAS operations. Vegetation on-site consists predominately of invasive species such as cactus, koa haole, grasses, and kiawe with some limited native shrubs and groundcover that still thrive.

Observing satellite images of the project site, the project site is substantially more historically disturbed than almost any other nearby properties, the one exception being the former skeet range along San Juacinto St. where the ground surface was essentially scraped away to remove lead contamination. Properties just east of the Project parcel on Long Island and Casablanca streets (The Ranch at Kalaeloa) and the Kalaeloa Heritage Park bordering south of the project site are all more recently developed sites.


**Figure 2.7** **Recreational Opportunities Within a One Mile Radius of Project Site**

## 2.4 Purpose and Need

The purpose of developing the Honokea Surf Village is to create a place of community that allows visitors, residents, and patrons the opportunity to experience living with great connections to place, to culture, and to each other by sharing Hawaiian values, culture, and history through surf and surf culture. In many respects, surfing allows the opportunity to experience an authentic Hawaiian lifestyle translated to any location: informal, outgoing, social, outdoor oriented, and instilled with Aloha.

This unique project also contributes to fulfilling the vision, core values, and guiding principles for Kalaeloa; and in doing so, also aligns with the local community's aspirations and values. HCDA's master plan vision for Kalaeloa (Kalaeloa Master Plan, 2006) is centered on the premise that it is a wahi ho'okela, a center for excellence and a place for Hawai'i's people to come together to share knowledge, develop expertise, and advance themselves while remaining respectful of past and place.

Honokea Surf Village will provide state of the art, professional level facilities for a variety of sports, specifically for the sport of surfing. Local surfers are already impacted by not having access to top tier training facilities even though Hawai'i has some of the best waves in the world. These new top tier facilities are popping up all over the world and allow surfers to gain a training advantage especially at a young age, that allows for accelerated learning. These facilities and the training opportunity it affords surfers forces our aspiring surfers to travel to the mainland and abroad. This is an economic burden that the local youth should not have to bear in the sport invented by Hawaiians. These top tier training facilities are allowing adaptive surfers opportunities to surf that have never been possible in the ocean. Blind surfers can now surf unassisted due to the machine-like repeatability of the waves and the controlled environment that cannot be replicated in the ocean. This technology can be seen as a new school classroom where the values of life, wellness, culture, and life safety can be shared and promoted.

The Surf Village will provide a comprehensive program of healthy recreation, sustainability, culture and community attractions that together create a commercially viable community, offering a variety of sport recreational facilities and cultural educational facilities that share the history of Hawaiian surf and Hawaiian sustainability practices. The ultimate goal is for Honokea Surf Village to be a sports training and wellness destination for people of all abilities and ages, keiki to kupuna.

## 2.5 Description of the Proposed Action

The 19.4-acre Honokea Surf Village is organized into five major zones: the Arrival Pavilion, the Surf Lagoon, the Adventure Zone, the Family Zone, and the Clubhouse & Camp Cabins *(Figure 2.8).* The primary use of the village is skill-and-adventure-based recreation with the primary attraction being the 5.5-acre wave lagoon that will generate waves for surfing. The surf lagoon will be surrounded by a beach lifestyle environment and approximately 8 acres for (non-surfing) recreation and supporting program spaces *(Figure 2.9).* Approximately 2 acres will be used for camp cabins, and the remainder for parking and support areas.

The **Arrival Pavilion**, as the public entry to the Honokea Surf Village, is mainly a single-story structure with a two-story structure housing a restaurant and event pavilion, with a raised boardwalk fronting the Surf Lagoon. The Arrival Pavilion allows guest to check in, browse the Surf Museum and Education Center, and eat at either the full-service restaurant or the Grab-n-Go Bar. The Arrival Pavilion will also offer a sports outfitter/pro-shop/surfboard shaping space, High Performance Training Center, and Multi-Purpose Conference Center and Event Lawn.

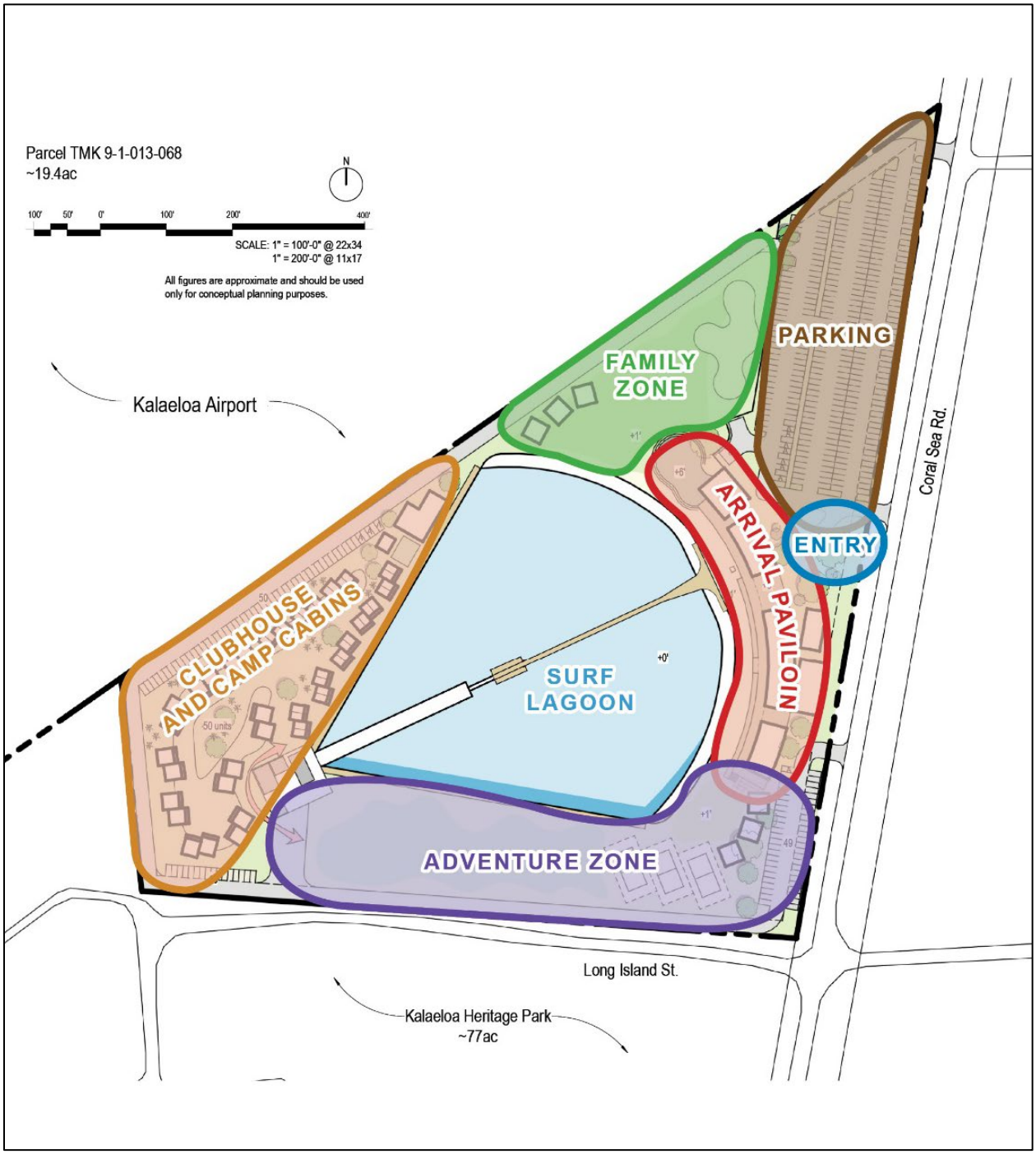



**Figure 2.8** **Surf Village Activity Zones**

The **Surf Lagoon** provides waves of the highest quality and variety for both experts and beginners. Supporting facilities include the Operator Tower, where lifeguards can have visual control of the whole Lagoon and houses the control panels for the operation systems, and the Service Area to support maintenance. The **Adventure Zone** will provide an area of high activity. Recreational opportunities in this area will include the Surf Academy, Beach volleyball, Adventure Lagoon, and Water-level Bar & Lounge.

The **Family Zone** will cater to the needs of families with younger children, who may or may not be participating in the Surf Lagoon. Supporting elements in this area include a Family Lawn for activities and education, Play Area, Pavilions and Hale, Grab and Go / Juice Bar, Dipping Pool and Splash area, skatepark and BMX track.

The **Clubhouse and Camp Cabins** provide an immersive, multi-day sports and social experience at the Surf Village. The Clubhouse will have a Clubroom, Fitness Pavilion, Courtyard with BBQ Grill, and Dipping Pool. There will be 50 Camp Cabins and a natural lagoon with central island. While camping and lodging are not currently permitted uses in the T2 Rural/Open Space zone district, this use will be pursued at the time of future Kalaeloa Community Development District rules updates, or via a Conditional Use Permit.

The architecture, landscaping and sustainable design elements of the Honokea Surf Village will lend to a beach "lifestyle" that honors the past and provides a place for everyone to come as they are and enjoy their time on their own terms. This could mean active engagement for some, or a casual and relaxing time for others. The overall design aesthetic principles will include organic, simple and honest structures that provide shelter from the elements, made from authentic materials seemingly gathered on the beach. Many buildings will be adaptive re-use, or even pop-ups, all to add to the experience and feeling of the place.

No distinct single style has been set; the design will be more organically derived in response to program and climactic conditions. However, there will be a local beach side material palette, with earth tones, durable materials, and indoor/outdoor relationships and spaces. The boardwalk and lanais will be covered in a unifying shade/photovoltaic (PV) trellis.

As depicted in the rendering *(Figure 2.10)* and elevations *(Figures 2.11, 2.12),* the visual changes are depicted with roof elements, a trellis and the two-story build out of the restaurant at the arrival, allowing for mural space to welcome guests. From the inside of the park looking back at the arrival (activity elevation south and lagoon elevation west), the buildings are slightly elevated, providing shade and decks for views of all of the activities within the park. The Family Lawn captures a partial view of the arrival buildings, with full view of the event stage.

While the Arrival Pavilion will be open to the public, there will be an admission fee for access to the remaining amenities of the Surf Village. Membership passes will also be available. Additionally, it is anticipated that the Surf Lagoon and Adventure Lagoon will be used for film production.

The park will be open daily with an estimated annual attendance of 330,000 with 150 full-time employees. Approximately 390 parking spaces will be available on-site for daily use. The Surf Village is aiming to be completed by Q4 of 2024 and construction is expected to cost $106 million.

Additional details of the facilities within each zone are presented in the following sections.

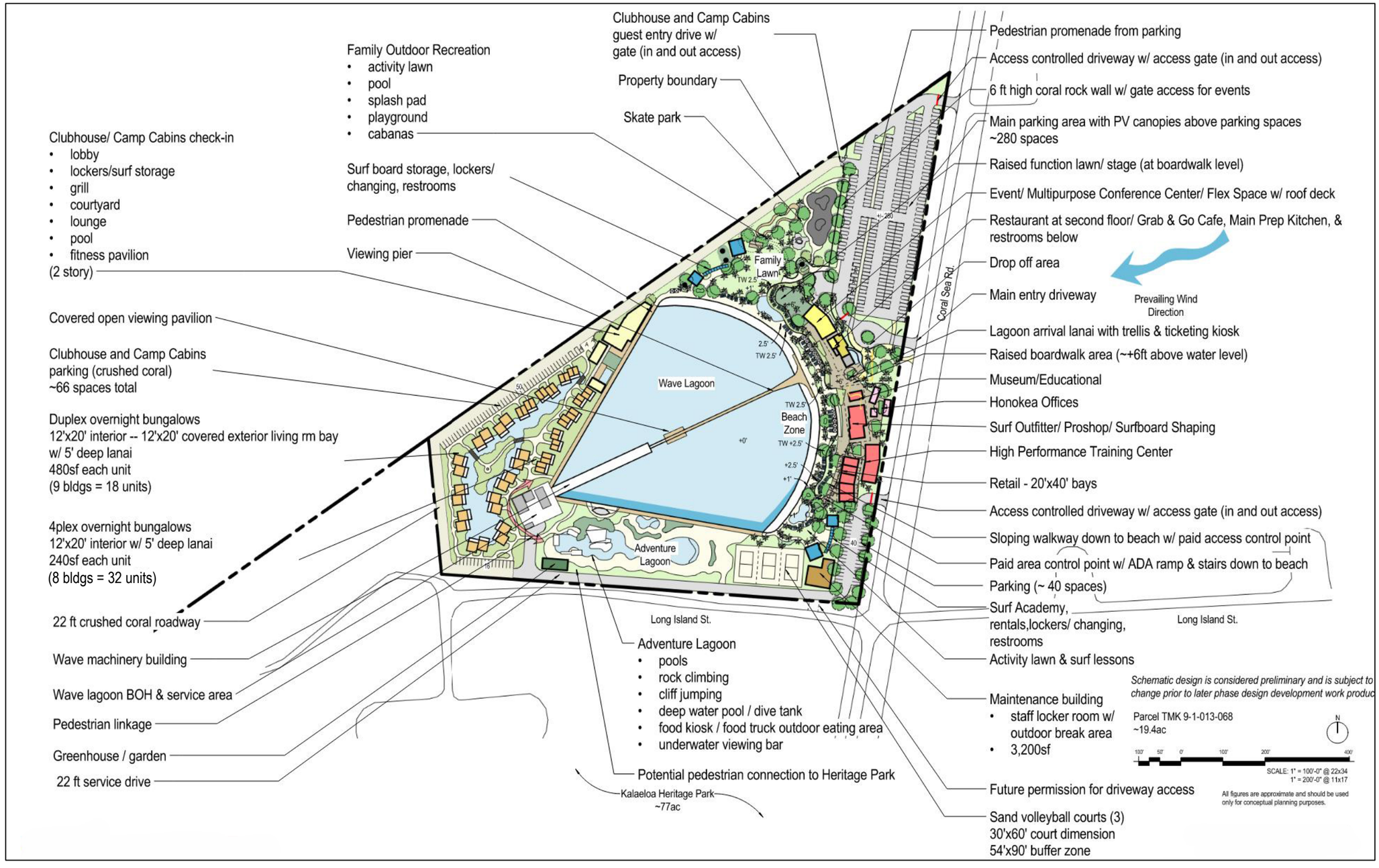
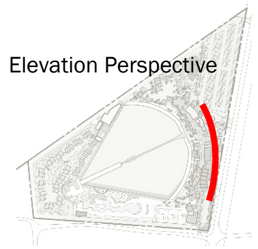
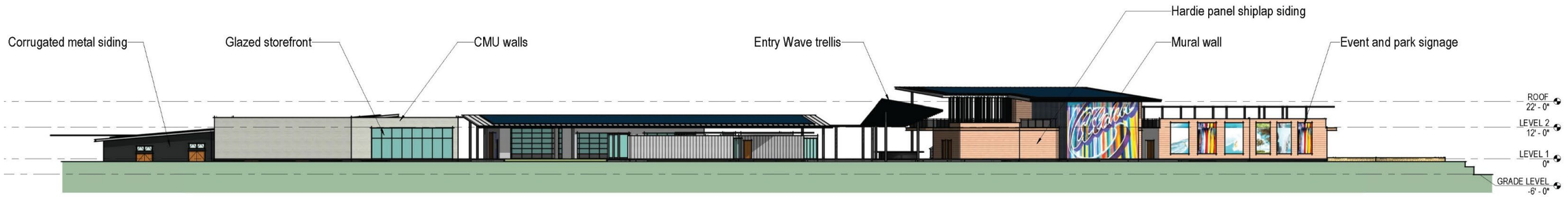



**Figure 2.9** **Conceptual Site Plan**

**Figure 2.10** **Rendering of Honokea Surf Village Project – View towards the Southwest/Makai**




1 ARRIVAL ELEVATION (EAST)
SCALE: 1" = 20'-0"



2 ACTIVITY ELEVATION (SOUTH)
SCALE: 1" = 20'-0"


SCALE: 1" = 20'-0" @ 22x34
1" = 40'-0" @ 11x17

**Figure 2.11** **Arrival and Activity Elevations**

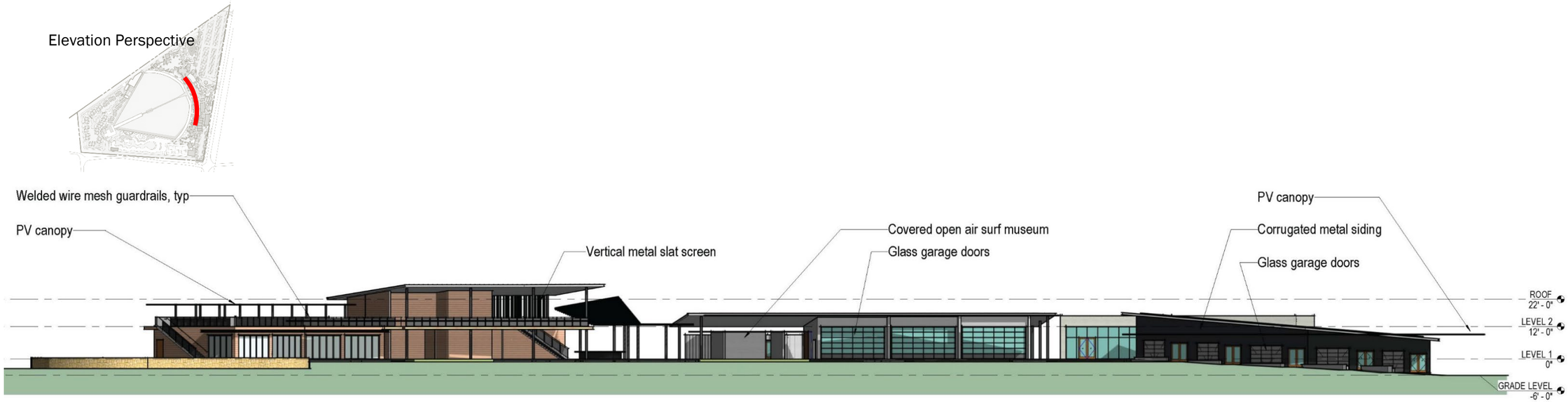



**Figure 2.12** **Lagoon and Family Lawn Elevations**

## 2.6 Arrival Pavilion

The primary entry to the Surf Village from Coral Sea Road will be the main driveway located in the central portion of the parcel. Entry monuments to the Honokea Surf Village will alert visitors to the location and arrival at Honokea while extending a feeling of aloha to all visitors as they enter the Village, thus creating a positive first impression.

Guests will be able to drop off surfers at the arrival drop-off *(Figure 2.9).* Terraced loʻi ponds and a large specimen tree decorated with lanterns will greet them as they unload their gear. Drivers can continue through to the parking lot via the main vehicle gate access point (see *Section 2.13* for additional information on Circulation and Off-Street Parking).

Guests will walk along a winding path through an outdoor courtyard "room" created through native plantings *(Figure 2.13)* prior to ascending upon the entry lanai of the Arrival Pavilion. A "Wave" trellis canopy/sculptural element will shade guests as they are greeted at the reception desk and check-in at the ticketing kiosk, located under a signature tree. The Wave canopy will be visible from Coral Sea Road, enticing passers-by to investigate the Surf Village. After checking in, the Overlook Area will invite guests to take their first look at the Surf Lagoon to check out the waves.

As the public entry to the Honokea Surf Village, the Arrival Pavilion is mainly a single-story structure with a second-story dining terrace and elevated (+6 ft above water level) boardwalk offering views of the Surf Lagoon. The Arrival Pavilion houses a Surf Museum & Education Center, Sports Outfitter Pro Shop, Retail Space, High Performance Training Center, Front Offices, Grab & Go Bar, Full-Service Restaurant and Dining Terrace, Multipurpose Event Center, and Kitchen. All of the facilities within the Arrival Pavilion will serve all patrons, accessible without paying the Surf Park entry fee.

Immediately to the left after arrival will be an information wall with video screens, orienting guests to the available activities at the Surf Village. This will lead to the 800 square foot (sf) open-air Surf Museum and Education Center, which will include video viewings and interactive exhibits of the history of surfing and the local area. As guests wander through, they will find a 3,000 sf Sports Outfitter/Pro-shop that will offer branded items, sundry items, and sports related gear, apparel, and accessories. This space will also be used as a platform for the local surf industry to shape boards and combine research & development, design, and testing of equipment such as boards, fins, materials, paddles, wetsuits, life safety equipment, and life safety techniques. Large metal roll-up doors facing the Surf Lagoon and barn doors on the mauka side will open up to create natural ventilation. Five retail spaces ranging in size from approximately 800 sf each will also be designed to provide passive, natural ventilation, and will be available for lease by local vendors. A large PV trellis canopy will span across the front/makai-facing side of the Arrival Pavilion facilities, creating further shade to the spaces and minimizing the energy used by these buildings.

Nearby will be the 3,000 sf High Performance Olympic Training and Cross Training Center. Cross-training for surfing is evolving, and the Surf Village provides a venue for riders to improve their skills in speed and agility. Simulators and professional video can be used to help surfers analyze their techniques to improve their form with the help of coaching.

East of these buildings, away from the Surf Lagoon, will be the Honokea offices, providing space for the Manager, management staff desks, meeting room, related services and storage. The offices will include a 550 sf front office, 550 sf employee break area with lockers, and 300 sf conference room. Free standing modular buildings or shipping container structures will be adaptively re-used for these facilities *(Figure 2.14).*

A 550 sf Grab-n-Go Bar on the deck level of the Arrival Pavilion will be available for quick snacks and smoothies, serving the beach areas and 1,000 sf covered terrace with seating capacity for 70. Park goers can also have a more leisurely meal at the 60-seat, 1,000 sf Restaurant and Dining Terrace on the second floor. The restaurant, with views to the waves, creates the perfect atmosphere to relax after a surf session.

Adjacent to the restaurant will be a 3,000 sf Multipurpose Conference Center with stairs leading to the open-air observation roof deck with views of the Surf Lagoon, partially shaded with a trellis. The approximately 100-seat roof deck will have a bar and have a bridge connection with the Dining Terrace. The center will be a wide flexible space to welcome visitors, and can serve as a Life Saving Lab, conference center, and banquet room. As a Life Saving Lab, life-saving skills training can be provided by visiting watermen for the military, lifeguards and others, such as underserved youth. The Multipurpose Conference Center can serve as an open-air meeting space, open market, host community events, family get-togethers or even provide space for banquets with a 120-person seating capacity. The venue can also be rented by companies or private individuals for events, parties, competitions, and even music concerts. Adjacent to the Multipurpose Conference Center is the raised (at boardwalk level) Event Lawn/Stage. The spacious lawn area can host special events, such as concerts (both acoustic and amplified), shows and night surf cinema, enhancing the overall Surf Village experience.

The Multipurpose Event Pavilion and Dining Terrace will be supported by the first-floor 3,000 sf air-conditioned Main Preparation Kitchen. The second-floor Dining Terrace will feature a 1,600 sf Demonstration Kitchen, allowing diners to see guest chefs and cooks in action. Behind the Main Preparation Kitchen will be a loading area and receiving room.

Fronting the Arrival Pavilion, the outdoor elevated uncovered and trellis-covered boardwalk with beach side plantings will have stairs and an American Disabilities Act (ADA)-accessible ramp that lead down to the Beach Promenade. A staff kiosk located at a location with views to controlled entry points located at the overlook area as well as in front of the retail shops will verify wristbands/RFID Key with paid access. Once on the Beach Promenade, an artificial turf lawn will facilitate beach-side lounging. Along the Surf Lagoon wall, the promenade will provide terraced seating levels to provide the best views and relations for the surfers and visitors.

Different shore types provide a full range of experiences that make the most of the transition from shore to the Lagoon. The Promenade adjacent to the Family Zone is an open and flexible space providing easy transition. The center portion of the Promenade is an open stretching area, where surfers gather before going out into the Surf Lagoon. The portions adjacent to the Adventure Zone are seating areas, made up of chaises, cabanas and other furnishings, that provide for relaxation and a vantage point to watch the activities. A width of 50 ft provides the Beach Promenade space for furnishing, landscape and a wide 6 to 8 ft of circulation. In some areas, the seating area will be raised at +2.5 ft for viewing of the wave pool, while keeping the flat-roof cabanas at the +1 ft level in order to maintain views over them from the beach boardwalk at the +6 ft level.

Two cool-off infinity pools flank the Beach Promenade. One is adjacent to the Event Lawn/Stage near the Family Zone, and is a kid-friendly pool. The other cool-off pool includes a spa, surrounded by a sun deck, and is located near the Adventure Zone, adjacent to the Surf Academy.

The Arrival Pavilion supports the Surf Lagoon as well as the other outdoor recreation areas. The shops, food and beverage service, Multipurpose Conference Center, and High-Performance Olympic Training and Cross Training Center support an all-day experience at the Surf Village.

## Arrival

- Outdoor room created through native planting
- Casual beach side pathway through the trees
- Element of water introduced - Karst or Dryland
- Seating spaces integrated
- "Wave" canopy at entry lanai

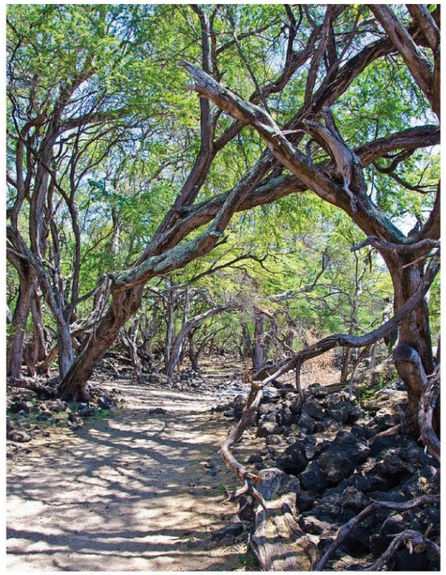


**Figure 2.13** **Character Look and Feel of Arrival Pavilion**


## Overlook & Arrival Buildings

- Experimental
- Playful
- Eclectic
- Simple & honest materials
- Village feel
- Unifying overhead elements
- Adaptive re-use

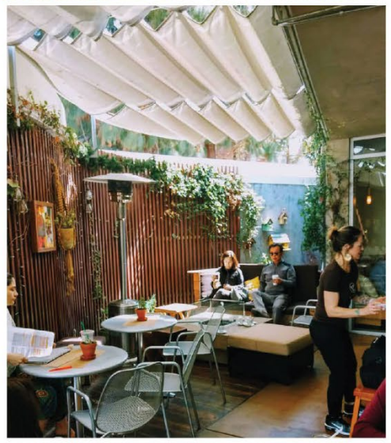




**Figure 2.14** **Character Look and Feel of Overlook and Arrival Buildings**

## 2.7 Surf Lagoon

The 5.5-acre Surf Lagoon creates non-stop waves of the highest quality and variety for both experts and beginners. At peak periods, the Lagoon can hold over 80 people in the water, with over 80 people waiting in a queue to get in the water. Wave frequency is expected to be 17 waves per minute, produced by hydrofoil displacement. The deepest part of the Lagoon will be approximately 10 ft. The Lagoon will have a natural design aesthetic with a turquoise surfing cove surrounded by a uniquely appealing, natural, green, and open environment. On their first day of surfing, the beginner can enjoy the experience as much as the expert, as the Surf Lagoon is able to produce a maximum number of waves, quality and variety of waves for each surfer, as well as surfer capacity. The Surf Village will provide a safe, positive and inclusive environment for people to progress their skills and build confidence. This allows anyone to learn how to surf, irrespective of age, ability or gender.

The Surf Lagoon is a place where friends and families can enjoy practicing the sport together, enjoy the waves, learn to surf, improve their skills, make new friends and get in touch with nature. It delivers world class waves for learning, allowing for more fun and less risk. The Surf Lagoon is ideal for families, as it suits children and young people who surf and want to train. It uniquely provides a surfing opportunity for all surfing abilities, including those who are disabled and handicapped. The Surf Village plans to provide surf time for underserved youth through a scholarship/foundation program.

The Surf Lagoon also allows for athletes who wish to train and improve their techniques for competitive events such as national and international surf meets and the Olympics. Expert surfers who want to have a premium surfing experience will have perfect waves with barrels on demand. Nothing will ever replace the ocean, but knowing exactly what a wave is going to do is unique to man-made surfing environments. Despite the industry's infancy, surf parks are already proven training grounds and have become competitive arenas. Personalized coaching and development programs delivered at surf parks unlock the capability to rapidly improve the performance of all surfers, from first-timers to World Title contenders. Several national surf teams tested other similar wave lagoons and agree it is a great venue for elite training and competition. Underwater lights allow for use of the Lagoon after sundown.

The Surf Lagoon will use potable water. Wave lagoon initial or periodic filling is estimated at 6,870,000 gallons. Draining and refilling water features is anticipated to occur every two years (See *Section 3.10.1* for additional information on water use).

The Surf Lagoon technology generates waves by pulling a "wavefoil" through the water. The patented galvanized steel wavefoil has a bi-directional shape so it can be pulled up and down the length of the wave pool. A gearless drive system, similar to a ski lift, pulls the wavefoil up and down the lagoon at approximately 15 ft to 25 ft per second. It is designed to produce waves while minimizing energy consumption. As the wavefoil moves through the water, it creates waves on both sides of a central pier that propagate toward the shoreline and interact with various bottom contours before breaking.

The orientation of the lagoon is facing the tradewinds, which is optimal for wavebreaking. Offshore winds (blowing from the land out to the sea) can keep waves from breaking until they are well-formed and become steeper than usual, and make it easier for surfers to draw lines and perform tricks on them. Surfers tend to like steeper waves because they have more power and are more exciting to ride.

There are eight areas in the Surf Lagoon, and six of them break with each run of the wavefoil *(Figure 2.15).* The main attraction is the Reef, which is the wave just adjacent to the pier on either side. This is where the largest, most advanced waves in the pool will break. Surfers on either side of the pier

alternate between going left and right as the wavefoil moves up and down the central pier. The Central Channels provide long, peeling point break waves, potentially allowing surfers to paddle back to the Reef. The Bay areas provide a Waikiki-style whitewater rollers that are perfect for beginners catching their first waves. Guests can walk down the viewing pier to the covered, open pavilion at the end to watch the surfers.

***Operator Tower***

The operator tower is necessary for the lifeguard supervisor to have visual control of the whole Lagoon, and provides a front entry to maintain site of the Lagoon when entering and exiting the tower. It is the post for the lifeguard supervisor, and houses the control panels for the operation systems. Located in the beach zone at the end of the Lagoon's central wall and viewing pier, the 15 sf tower is elevated to provide a complete view of the lagoon, waves and surfers, for best supervision of all areas. Other lifeguards will be located to respond from certain areas adjacent to the Lagoon based on key response areas of hazard.

***Machine Room/Wave Generator***

The 14,000 sf Machine Room consists of a series of wave generating modules and includes the wave machine with complete roof and safety net. The wave machine sits on a concrete plinth, central wall and rear walls (reaction, left and right) of the Surf Lagoon. The machine room has two points of access, one at either end of the Lagoon.

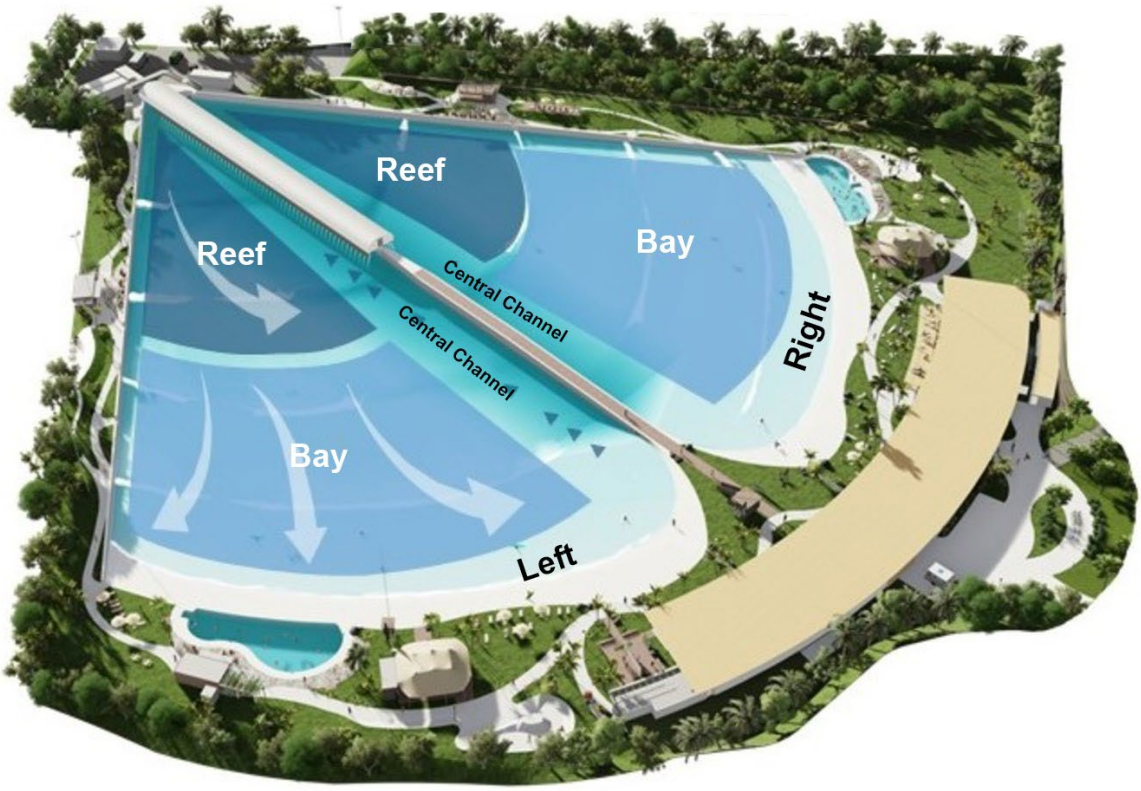



**Figure 2.15** **Diagram of Surf Lagoon Breaks**
(Source: https://raisedwaterresearch.com/spot/wave-pool/us/hawaii/honokea-surf-village/)

***Service Area***

The buildings and facilities located in the Service Area and near the Lagoon shore are essential for the proper functioning and maintenance of the Surf Lagoon. The Service Area is located at the back end of the wave generator machine room. This is a restricted area for maintenance workers with no access to the public due to health and safety concerns. Maintenance vehicles will access through the perimeter access road. The Service Area will be sized sufficiently (approximately 80x100 sf) and include the following: Electrical House (E-House), Transformer Room, Filtration Room, Chemical Storage Area, and Maintenance Building.

## 2.8 Adventure Zone

South of the Surf Lagoon, the Adventure Zone provides an area of independent outdoor recreation. The mix of natural and man-made features, secret nooks and spots create a sense of adventure and curiosity to explore and enjoy *(Figure 2.16).* Highlights of the Adventure Zone include the Surf Academy, Beach Volleyball, Food Truck and outdoor Dining Area, Adventure Lagoon and Water-level Bar & Lounge *(Figure 2.9).* Walking and educational trails will be located throughout the Adventure Zone.

***Surf Academy***

The Surf Academy Facilities are key for the correct operation of the Surf Lagoon. They allow all users from beginners to experts to enjoy the facility fully. The 400 sf Surf Academy pavilion provides a check-in kiosk to register for surf sessions, lessons or studio class, and to rent surfboards and wetsuits. The pavilion also houses a surfboard/equipment storage room.

Approximately 40 lockers will be located on the outside of the restroom pavilion. The open-air restrooms will be approximately 770 sf, with 1:12 slope metal roof and partial height walls. A Changing Pavilion will be available with 9 personal stalls (25 sf each) and an ADA-accessible stall (with ramp). Outdoor showers will be available. Equipment rentals and storage will be provided by an approximately 400 sf (20x20 sf) pavilion with a 1:12 slope metal roof.

The Surf Lesson Lawn is an approximately 1,800 sf soft artificial grass area that provides a gathering point for discussing safety instructions and is a dedicated area for beginners learning and rehearsing basic surf techniques. This will provide the best and safest experience for the surfers. Every surf lesson will start with an approximate 30-minute dry practice, before entering the lagoon. The Surf Lesson Lawn area also provides space for other uses, including board preparation, stretching and warming up for intermediate and expert surfers, as well as classes, yoga, fitness exercises and other events when the area is not used by surfers.

When not used for overflow parking, the adjacent lot can provide a location for a pop-up skatepark or BMX track, farmer's market, or other temporary events for the weekend.

***Beach Volleyball***

Three sand volleyball courts will have a 30×60 ft court dimension, with a 50×90 ft buffer zone. These court sizing and buffer zones work well for both recreational play as well as suiting tournament needs. The courts will be orientated in the north-south direction, with the net oriented east to west. This orientation provides the best non-glare playing environment, ensuring one team isn't looking directly into a rising or setting sun during competition. A high netting will block balls from going into the water, and netting can be available between courts for tournaments.

The sand volleyball courts offer tournament flexibility to start with two courts, and then situate bleachers on either side of the central court for maximum viewing ability. Power will be available for extra lighting (for night play) and speakers.

The sand courts could be available for local volleyball clubs that need access to a sand court, clinics, exhibitions, and tournaments.

***Food Truck And Outdoor Dining Area***

Adjacent to the volleyball courts will be an area for food trucks and picnic tables with shade structures. Food trucks will have access to this area from service road.

***Adventure Lagoon***

The Adventure Lagoon provides support for a variety of water activities, including surf training, snorkeling, apnea training, and junior lifeguard. Guests who want to swim will have a spacious and natural looking pool, with a grotto/waterfall area to swim through. The manmade rock area will allow for rock climbing over the water (overwater soloing) in one pool. Stairs going up the other side will allow for cliff diving into the deep, 33 ft depth diving pool. This deep-water pool could also be used for under water rock carrying. This dive tank will have underwater lights, with the ability to be used during filming. An additional adult pool located closer to the Surf Lagoon will be available for swimming and lounging.

***Water-level Bar & Lounge***

The Water-level Bar will have a ramp leading down from the Beach Promenade into an area depressed into the ground, adjacent to a glass wall looking into underwater views of the Surf Lagoon. This will be an open-air area, covered with a tensile structure for shade. This underwater/water level bar will be 1,000 sf and seat approximately 30 people.

## Adventure Lagoon Outdoor Recreation Area

- Independent outdoor recreation
- Sports, training, working out, socializing
- Olympic type training facilities
- Outdoor sports, events, and training

**Figure 2.16** **Character Look and Feel of Adventure Zone**

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## 2.9 Family Zone

The Family Zone is perfect for those who have younger children that may or may not participate in a surf lesson in the Surf Lagoon. The Family Zone is located west of the main parking lot and adjacent to the Event Lawn/Stage and north end of the Surf Lagoon. The Family zone provides a Family Lawn; Pavilions, Cabanas and Hale; Dipping Pool and Splash area; Changing area and Equipment rentals; Play Area; Skatepark and BMX track; and native cultural garden *(Figure 2.9).*

The expansive sunken Family Activity Lawn provides flexible usage for activities and education. The Family Activity Lawn has amphitheater seating and is made for hanging out between surfs, chilling with family and friends, playing lawn games like cornhole and bocce ball, and hosting celebrations and epic events such as hula festivals, performances, functions, outdoor movies, weddings and other private events *(Figure 2.17).* An entrance off the parking lot allows for admittance specifically for special events.

Located adjacent to the Lagoon, two 20×30 ft open-air cabanas can be hired for half or full days. The private cabanas will offer views of the live surfing action as well as on television. Guests will be able to order food online to be delivered directly to their lounging area. A Grab-n-go bar kiosk will also be available for quick snacks.

Three open-air Pavilions with picnic tables will be available for rent by families to hold birthday parties or small get-togethers. A 540-sf open-air Hale will be available for village-centered activities such as arts and crafts, cultural education seminars, and the like. The Hale will also be available for rent to celebrate larger birthdays and other family events.

Approximately 40 total lockers will be located on the outside of the restroom pavilion. The open-air restrooms will be approximately 770 sf, with 1:12 slope metal roof and partial height walls. A Changing Pavilion will be available with 9 personal stalls (25 sf each) and an ADA-accessible stall (with ramp). Outdoor showers will be available. Equipment rentals and storage will be provided by an approximately 400 sf (20×20 sf) pavilion with a 1:12 slope metal roof. This is a second location for the Surf Academy. While there is a small lawn area available, the check-in and orientation for the Surf Academy will occur in the Adventure Zone.

Honokea has had initial discussions with Kalaeloa Heritage Park (KHP) leadership regarding an opportunity for providing seedlings for a cultural native plant garden located in the Family Zone. Signage and tours will help guests to appreciate the plants native to this area.

***Play Area***

The kids sport and play area includes a splash pad, climbing rock, kid's zipline, and ninja course. The splash pad is safe, zero-depth water feature with challenging interactive games and inventive water-based activities. The climbing rock has climbing holds with ratchet straps and is supervised. A seated zipline for the kids allows them to zip from one side of the play area to the other. For added activity, the ninja course offers kids several obstacles to swing, jump, climb and grab to get through the course.

***Skate /BMX***

The skate park will be sunken into the ground and designed to feel like surfing. The slopes are shaped like perfect waves so skateboarders can practice and improve their surfing ability. The BMX dirt race track will have a starting gate for up to eight racers. The groomed course will be serpentine and undulating, made of various jumps and rollers and a finish line. The course will be about 15 ft wide with large, banked corners which are angled inward, that help the riders maintain speed.

## Family Outdoor Recreation Area

- Expansive lawn with flexible usage
- Casual seating and gathering areas
- Family oriented
- Supervised play areas

**Figure 2.17** **Character Look and Feel of Family Zone**

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## 2.10 Clubhouse & Camp Cabins

The Clubhouse offers a place to hang out, barbecue, take yoga classes, and provides fellowship with other like-minded sports enthusiasts *(Figure 2.18).* Honokea Surf Village membership will allow people who are interested in surfing more often, a discount on the normal hourly rates while also providing incentives for frequency. Camp Cabins for overnight use will help to create the immersive recreation and surf experience *(Figure 2.19).*

***Clubhouse***

The approximately 5,000 sf Clubhouse will be accessed from the main parking lot, following the perimeter access road to a parking lot adjacent to the Clubhouse *(Figure 2.9).* Members will be greeted at the 12×30 sf reception lobby with refreshments. A concierge desk will be available, with a luggage room and back of house storage, office rooms, and 500 sf satellite kitchen. Lockers and restrooms will be available on this first floor. This is also where guests staying in the Camp Cabins will check in.

The second floor of the Clubhouse will host the Clubroom restaurant, with an entry either by stairs or elevator. The Clubroom Terrace will be trellis-covered or open to the sky, and extend out from the restaurant. The Terrace will have a bar and overlook the Surf Lagoon.

An open-air or trellis-covered 30×50 sf Fitness Pavilion will have weights and other fitness equipment.

A 3,000 sf outdoor garden courtyard will have a 150-seat dining area and be serviced by the outdoor BBQ Grill.

The Clubhouse Pool will measure 1,500 sf, allowing for dipping and cooling off. This pool will be adjacent to the Surf Lagoon, allowing for front-row views of the surf action.

***Camp Cabins***

Camp cabins for overnight use is part of the immersive recreation and surf experience. The cabins will be used to house visiting watermen, families who travel to the location to surf or do sports, athletes who are training, and those participating in surf camps, volleyball camps, or sports competitions that span several days. The cabins would allow for users, particularly those with disabilities, easier access to the facilities through allowing them to stay on-site for multiple days to fully engage the recreational facilities without having to transport themselves off-site on a daily basis. Usage of the recreational areas will be included as part of the camp experience.

Fifty single-story overnight camp cabins are proposed for the project ranging from 240 sf to 600 sf per cabin *(Figure 2.9).* The camp cabins will sleep four to eight people each.

Studio Cabin will have a 12×20 sf interior with a five-foot deep covered lanai. Four studios will be in an adjacent block, creating eight groupings or 32 units. The Studio Cabins will have a three-fixture bath and outdoor shower. The One Bedroom Cabin has a 24×25 sf interior with a five-foot deep covered lanai. These will be paired creating nine groupings or 18 units. The One Bedroom Cabins will also have a three-fixture bath and outdoor shower. Each cabin will provide a coffee pot, tea kettle, microwave and sink amenities for visitors that choose this additional option at the Surf Village. Per ADA requirements, at least two units will be ADA-accessible.

The cabins will be paired, adjoining four studios and two one-bedroom cabins to provide flexibility with a locked inner connecting door. These will be useful for those traveling with older children or a larger group that needs more space.

The Camp Cabins will be located on elevated platforms around the Camp Cabin Lagoon, maximizing the waterfront view and separating the cabins from the busier areas of the Surf Village. Those cabins in proximity to the Surf Lagoon will have views to the water. With a North Shore beach village feel, outdoor living is highlighted over interior spaces.

***Camp Cabins Lagoon***

This wetland feature creates a relaxing atmosphere for the Camp Cabins. While this brackish lagoon is not designed for recreation, it will provide the right environment for growing limu, kalo and other water plants, as well as a cultural education opportunity. A path that connects the Camp Cabins will also wander over the lagoon to a central island. The coconut grove island will provide a space for campers to relax and connect with others. The island will have a firepit with seating area and lawn activities.



## Clubhouse

- Timeless feel
- Exclusive yet casual beach vibes throughout
- Indoor/Outdoor
- Connection to the water


**Figure 2.18** **Character Look and Feel of Clubhouse**

## Surf Camp Cabins

- Outdoor living highlighted over interior spaces
- North shore beach village feel
- Micro cabin option
- Siting to encourage grouping of areas

**Figure 2.19** **Character Look and Feel of Camp Cabins**

## 2.11 Back of House

An onsite greenhouse will grow plants suited specifically for the Kalaeloa area and be used in landscaping. The greenhouse will also be used as a "chef's garden", to provide fresh farm-to-table produce for meals at the Surf Village kitchens.

There will also be a Maintenance area separate from the Main Maintenance building to store landscaping equipment and tools to maintain the onsite buildings. A locker room will also be available here for staff.

## 2.12 Film Production

The Surf Lagoon, diving pool (within the Adventure Zone activity pool) and potentially other areas of the park will be utilized by the film industry for filming. It is anticipated at this time that there will not be a dedicated building for film production, and that crews will stage trailers along the perimeter service road during filming. Depending on the needs of the film, a portion or the entire Surf Village could be bought out (typically one to two days) for film production.

The Surf Village would be able to support film production in several ways. Fencing around the entire property will help with security. Electrical service or the ability to have generators is available at several locations around the park. Parking will be available for large crews, and the on-site cabins would be an advantage for cast and crew members, especially when the optimum time for filming time is during golden hours: dawn and dusk.

The use of artificial and underwater facilities would greatly assist the film industry, as film productions currently need to travel out of state to shoot these scenes. The naturalistic rock work, water clarity, and landscaping will be ideal for filming. Underwater lighting would assist in nighttime filming. The 33 ft depth of the dive pool is an industry standard. Green screens can be placed on tie-poles along the promenade to allow for the desired background images while using the Surf Lagoon. Shades can also be used to cover the edges of the pools to reduce shadows and bouncing light.

Other advantages for using the Surf Village for film production include its adjacency to the Hawaii Film Studio in Kalaeloa. This would also support local students at the University of Hawai‘i West O‘ahu Academy for Creative Media who want to go into film production.

## 2.13 Circulation and Off-Street Parking

***Vehicular Circulation***

Vehicle circulation through the site will be via three access points off Coral Sea Road. Driveway access for parking will meet the requirements of HAR §15-215-47. The first driveway (furthest mauka) will feature an access-controlled secondary driveway utilizing a gate arm for in/out access. This will provide entry to the approximately ±280 stall main parking area which is surrounded by a 6 ft coral rock wall with gate access for events. The second driveway down Coral Sea Road will provide access to a drop-off turnaround area loop, as well as the main in and out access gate secured with gate arm. The third driveway down Coral Sea Road will provide additional parking (approximately 40 stalls) and staff, loading zone, general back of house access via a perimeter service drive, and access to Clubhouse and Camp Cabin parking (approximately 50 stalls) located in the back of the site that is adjacent to

the Kalaeloa Airport. Access to the Clubhouse and Camp Cabin parking will also be available from the northern portion of the main parking area, utilizing a gate arm for in/out access.

A proposed Priority 2 Shared Use Path project (Project ID 2-37 in the 2019 O'ahu Bike Plan) is located on Coral Sea Road fronting the Project site. Driveway improvements will be designed to minimize conflicts between bicyclists and turning vehicles. Both short-term and long-term bicycle parking will be provided.

A pedestrian path to the project entry will be provided from Coral Sea Road. Walkways will be provided within the site between buildings, parking area, and recreation spaces. Pedestrian-scaled, tamper-proof lights will be provided in courtyards, passageways, roof gardens, corner plazas, and other landscaped areas.

All sources of illumination will be shielded to prevent any direct reflection toward adjacent premises. Parking stalls will be covered by cantilever and double cantilever style PV steel structures. Medians will otherwise be landscaped.

***Off-Street Parking and Loading***

Adequate off-street parking will be provided to support the existing and new facilities, as determined by the HCDA Kalaeloa Community Development District Rules HAR §15-215-47 and Figure 1.9. Applying the requirements for the project's land uses (Commercial, Restaurants and Bars, Group Assembly, Industrial), calculations reflect a required 102 parking stalls. The project will provide a total of 386 stalls. Ten of these stalls will be reserved for buses.

The 2010 Americans with Disabilities Act Standards for Accessible Design requires eight accessible parking spaces per 301 to 400 total provided parking spaces. Eight ADA compliant spaces will be located in the main parking area, two in staff parking, and three in the Clubhouse and Camp Cabin parking.

Four off-street loading spaces will be provided, as required under HAR §15-215-47(l) Loading (Goods and services and industrial; and civic, civic support and educational).

## 2.14 Landscaping

Landscaping will be in compliance with KCDD Section §15-215-44. All required yards will be landscaped, new plantings will be selected from the preferred plant species list provided in KCDD, and landscaping shall have an automatic irrigation system with a rain or moisture sensor, or with a system that eliminates water waste. There are no trees designated by the City and County of Honolulu as exceptional trees that would be required to be protected and preserved in place.

Landscaping features throughout the property include a cultural native plant garden near the Family/Function Lawn and dense screening along Coral Sea Road. Native and drought tolerant plants will be used. See *Table 2.1* for the proposed plant palette.

| Table 2.1 Proposed Plant Palette | |
|---|---|
| **Common Name** | **Scientific Name** |
| **Palms** | |
| Loulu Palm | *Pritchardia remota* |
| Coconut* | *Cocos nucifera* |
| Hala* | *Pandanus tectoris* |
| **Trees** | |
| Kou* | *Cordia subcordata* |
| Kukui*† | *Aleurites moluccana* |
| Lonomea | *Sapindus oahuensis* |
| Milo* | *Thespesia populifolia* |
| Kamani* | *Calophyllum inophyllum* |
| Dwarf Hau | *Hibiscus tiliaceus 'dwarf'* |
| Hau* | *Hibiscus tiliaceus* |
| Noni | *Morinda citrifolia* |
| ʻUlu/Breadfruit* | *Artocarpus altilis* |
| Wiliwili† | *Erythrina sandwicensis* |
| Koaia | *acacia koaia* |
| Ohiʻa | *metrosideros polymorpha* |
| **Shrubs** | |
| Naupaka | *Scaevola taccada* |
| Naupaka Kuahiwi | *Scaevola gaudichaudii* |
| Nāʻū | *Gardenia brighamii* |
| ʻOhai† | *Sesbania tometosa* |
| Koʻoloaʻula | *Abutilon menziesii* |
| Maiapilo* | *Capparis sandwichiana* |
| Maʻo† | *Gossypium tomemtosum* |
| ʻIliahi A Loʻe | *Santalum ellipticum* |
| ʻAʻaliʻi* | *Dodonaea viscosa* |
| ʻIlima Papa | *Sida fallax* |
| ʻĀkia* | *Wikstroemia uva-ursi* |
| Hinahina ʻEwa* | *Achyranthese splendens var. rotundata* |
| ʻŪlei | *Osteomeles anthylidifolia* |
| Naio*† | *Myoporum stellatum* |
| Kukuʻī, | *Nototrichium sandiwense* |
| Ape | *Alocasia macrorhiza* |
| Kalo | *Colocasia esculenta* |
| Native Hibiscus (Red, white, yellow, orange) | |
| Nohu† | *Tribulus cistoides* |

* Preferred Plant Species, Figure 1.10 in HAR §15-215 Rules for Health and Safety within the Kalaeloa Community Development District

† Listed in a series of oli aloha recorded by Hoʻoulumāhiehie in Ka Moolelo o Hiʻiakaikapoliopele in 1905/1906. These were the ancestral manifestations that were witness by Hiiaka during her sojourn across Honouliuli and specific to areas like Kanehili, Kaupea, Kapolei, and Kalaeloa (See *Section 3.6, Historical and Cultural Resources).*

| Table 2.1 Proposed Plant Palette |
|---|

| Table 2.1 Proposed Plant Palette (continued) | |
|---|---|
| **Common Name** | **Scientific Name** |
| **Ground Cover** | |
| ʻIlima papa - Ilima Ku Kahakai* | *Sida fallax* |
| ʻĀkulikuli† | *Sesuvium portulacastrum* |
| ʻIlieʻe | *Plumbago zeylanica* |
| Naupaka Papa | *Scaevola coriaceae* |
| Hinahina | *Heliotropium anomalum* |
| Pāʻū O Hiʻiaka | *Jacquemontia ovaliformis* |
| Hunakai | *Ipomoea imperati* |
| Pōhinahina*† | *Vitex rotundifolia* |
| Carex/Oahu Sedge | *Carex wahuensis* |
| **Accent Plants** | |
| Variegated Carex | *Carex wahuensis* |
| Puakala | *Argemone glauca* |
| Ālula | *Brighamia insignis* |
| ʻApe | *Alocasia mycorhizae* |
| ʻIhi | *Portulaca molokiniensis* |
| Kupukupu | *Nephrolepis cordifolia* |
| ʻUala/Sweet Potato | *Ipomoea batatas* |
| ʻUki ʻUki | *Dianella sandwichensis* |
| Kaunaʻoa† | *Cuscuta sandwichiana* |
| **Grass & Turf** | |
| Seashore Paspalum | *Paspalum vaginatum* |
| El Toro | *Zoysia Zoysia ʻEl Toroʻ* |
| Pili† | *Heteropogon contortus* |

* Preferred Plant Species, Figure 1.10 in HAR §15-215 Rules for Health and Safety within the Kalaeloa Community Development District

† Listed in a series of oli aloha recorded by Hoʻoulumāhiehie in Ka Moolelo o Hiʻiakaikapoliopele in 1905/1906. These were the ancestral manifestations that were witness by Hiiaka during her sojourn across Honouliuli and specific to areas like Kanehili, Kaupea, Kapolei, and Kalaeloa (See *Section 3.6, Historical and Cultural Resources).*

# 2.15 Sustainable Strategies

Sustainability is one of the core values of the Honokea Surf Village project *(Figure 2.20).* The facilities will be designed and constructed utilizing sustainable design strategies and green materials to the extent possible and comply with HAR §15-215-48 Green Building. Sustainable design features include:

***Sustainable Design Strategies***

- Building orientation to capture wind and orient major facades away from the path of the sun
- Majority of spaces naturally ventilated; use of ceiling fans in most spaces, conditioned spaces only where necessary in high activity work areas
- Adaptive reuse of old shipping containers for offices
- Large overhangs, trellis and landscaping for solar shading
- Green roofs/wall and vegetated cooling
- Reuse of building materials
- Use of durable materials for long building life space

***Energy Conservation***

- PV panel systems to generate energy on building roofs, walkways and possibly over parking lot
- Passive building cooling strategies

***Water Conservation***

- Use of native and drought tolerant trees and landscaping
- Use of low flow fixtures on all water dispensing appliances including toilets, sinks, showers and spigots
- Capture and recycling of rainfall runoff
- Capture, recycling and onsite storage of graywater into the camp cabins pool for irrigation use
- Drilling and use of onsite brackish water wells for irrigation water. Two irrigation wells, each pumping 20 gpm from the basal aquifer, are proposed to provide irrigation water.
    - Implementation of water conservation measures may result in a 30% reduction of domestic, pool and irrigation water demand and 50% re-use of wastewater.
    - A typical water park is estimated to use 170,000 to 200,000 gpd and a typical wave lagoon park about 180,000 gpd. Implementation of water conservation measures may allow reduction in water demand to about 136,000 gpd.

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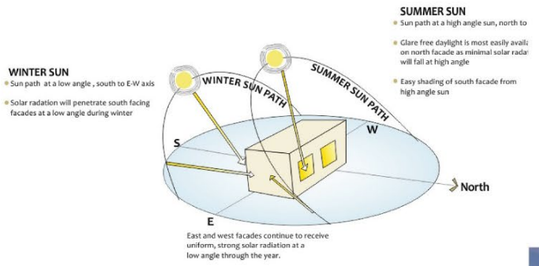
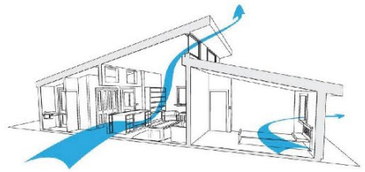
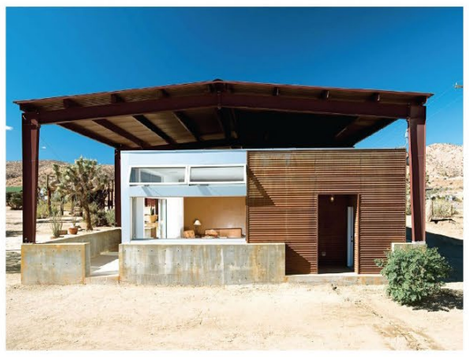


- Passive sustainable features
- Building orientation
- Natural ventilation and wind capture
- Natural daylighting opportunities
- Large roof overhangs
- Trellis and grilles for solar shading
- Green roofs/ walls & vegetated cooling
- Double roof strategy
- Water management
- Storm water management
- Drought tolerant landscaping
- Landscaping to shade direct sun
- Durable materials with long lifespan
- PV power
- Wind power
- Showcase sustainability in action



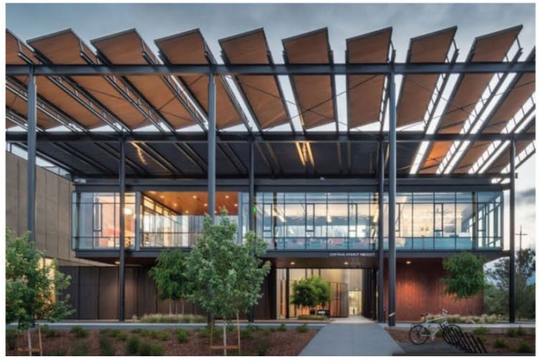


**Figure 2.20**

**Sustainable Strategies**

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## 2.16 Various Site Information

**Signage.** According to §15-215-43, all signs will be in compliance with the applicable rules and regulations administered by the City and County of Honolulu, as provided for in the City and County of Honolulu's land use ordinance, as it may be amended from time to time.

**Setbacks, Yards and Other Open Spaces.** Honokea Surf Village will be consistent with HCDA yard setback standards for Kalaeloa Community Development District T2 Building Placement rules of 5 to 15 ft for front yards and 0 ft for side/rear yards.

**Height, Bulk and Location of Structures.** The Surf Village will comply with §15-215-42 Building Form requirements for maximum building heights (all structures range from 12 to 28 ft in height, and do not exceed the KCDD maximum height restriction of 28 ft) and building density (3,000 sf/acre) for all floor area throughout the project.

## 2.17 Hours and Manner of Operation

The front of house arrival area including the historical/cultural museum, shops, and some food areas will be open to the public free of charge. There will be an admission fee for access to the Surf Village, which will include the use of amenities within the Surf Village, with the exception of the surfing lagoon which will be a separate booking platform. Group and annual membership passes will also be available.

The park will open daily from 5:00 a.m. to 10:00 p.m., and will provide jobs for 150 full-time employees. Approximately 10 special events per year (such as concerts) are anticipated. Smaller functions (such as birthday parties or other gatherings) fall under normal function operations. The estimated annual attendance is approximately 330,000 park visitors.

## 2.18 Development Schedule

Planning and permitting for construction of the Surf Village is anticipated to be completed by Q4 2022. Site and building design and engineering should be completed by Q2 2023, with site construction and building permits anticipated for approval by Q4 2023. Site development will follow with anticipated completion in Q4 2024.

## 2.19 Required Permits and Approvals

**Commission on Water Resource Management (CWRM).** CWRM has regulatory authority over groundwater use. Kapolei is a Ground Water Management Area, therefore, along with a Well Construction and Pump Installation Permit, a Water Use Permit will be required.

**HCDA Conditional Use Permit (CUP), Development Permit (DP), and Waiver.** The proposed project is located in lands under the jurisdiction HCDA, specifically regulated by the Kalaeloa Community Development District rules per HAR §15-215. A CUP and DP will be required, along with a Waiver as necessary depending on the program uses allowed by the HCDA Board. For additional information on the HCDA approval process, see *Section 5.3.*

**Hawai'i Department of Health (DOH).** The project must apply for underground injection control permits for the existing dry wells located on the subject property within 90 days of the conveyance of the property. Approval is also required for the project water system, including wave pool water system, and wastewater system, including the pool wastewater treatment disposal system.

**Hawai'i Department of Transportation (DOT).** Driveway connections and modifications to Coral Sea Road will need approval of the DOT, which has initially indicated that driveways will be allowable, subject to review of construction drawings. While DOT has requested that driveways be minimized, the project's three driveways will assist with mitigation of traffic impacts, improve circulation and emergency access. Utility work within the right-of-way will also likely require a Permit to Perform Work Upon State Highways with DOT.

**Other Permits and Approvals.** There are other permits and approvals that are categorized as "ministerial" because they do not require approval by a commission or department director. These approvals include a Grading, Grubbing and Stockpiling Permit and Building Permits, Underground Injection Control (UIC) Permit, and a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit and Dewatering Permit, which will be obtained in advance of construction. Project plans will be reviewed and approved by the Disability and Communication Access Board to ensure full compliance with Americans with Disabilities Act requirements. A Federal Aviation Administration (FAA) Form 7460-1 Notice of Proposed Construction or Alteration will be submitted to FAA as construction is within 20,000 feet of Kalaeloa Airport and exceeds a 100:1 surface from the closest point on the runway.

Section 3

# Environmental Setting, Potential Impacts and Mitigation Measures

Chapter 3

# Environmental Setting, Potential Impacts, and Mitigation Measures

The environmental setting, potential impacts, and mitigation measures with the addition of the Honokea Surf Village is addressed in the sections below.

## 3.1 Climate

*Existing Conditions*

Average annual temperature in the Kalaeloa region is generally with lows in the high 60s and highs in the high 80s/low 90s (degrees Fahrenheit), depending upon the time of day and the season. Rainfall is sparse in the vicinity, averaging 21 inches per year (Giambelluca et al. 2013) (*Figure 3.1)* – the majority of which occurs during the months of November, December, and January. Climate at the site is characterized as mostly sunny, often muggy and/or dry and arid, with moderate (5 to 15 miles per hour [mph]) tradewinds from the east-northeast.

*Anticipated Impacts and Proposed Mitigation*

The proposed action will have no effect on climatic conditions; therefore no mitigation measures are required.

## 3.2 Topography, Soils, and Grading

A preliminary engineering report (PER) was prepared by G70 in February 2022 and is attached as *Appendix A.* The PER includes a Preliminary Geotechnical Report conducted by GEOLABS, Inc. Findings from the Geotechnical report are presented below.

*Existing Conditions*

The project site is situated on the coral plain of ‘Ewa, south of the flows of the Wai‘anae Range. The project site gently slopes to the northeast, sitting at an elevation of approximately 22 ft above mean sea level (msl) along Long Island Street, and gently slopes up to approximately 25 ft above msl along Coral Sea Road. Throughout the site, irregular onsite slopes ranging from about 19 ft to 25 ft above msl characterize the natural terrain (*Figure 3.2)*.

The site consists entirely of soil type coral outcrop (*Figure 3.2)*. Coral outcrop consists of coral or cemented calcareous sand, formed when the ocean was at a higher level. This soil type is described as consisting of bedrock from the surface to greater than five ft depth. It is excessively drained and flooding is rare. This land type is used for military installations, quarries, and urban development.

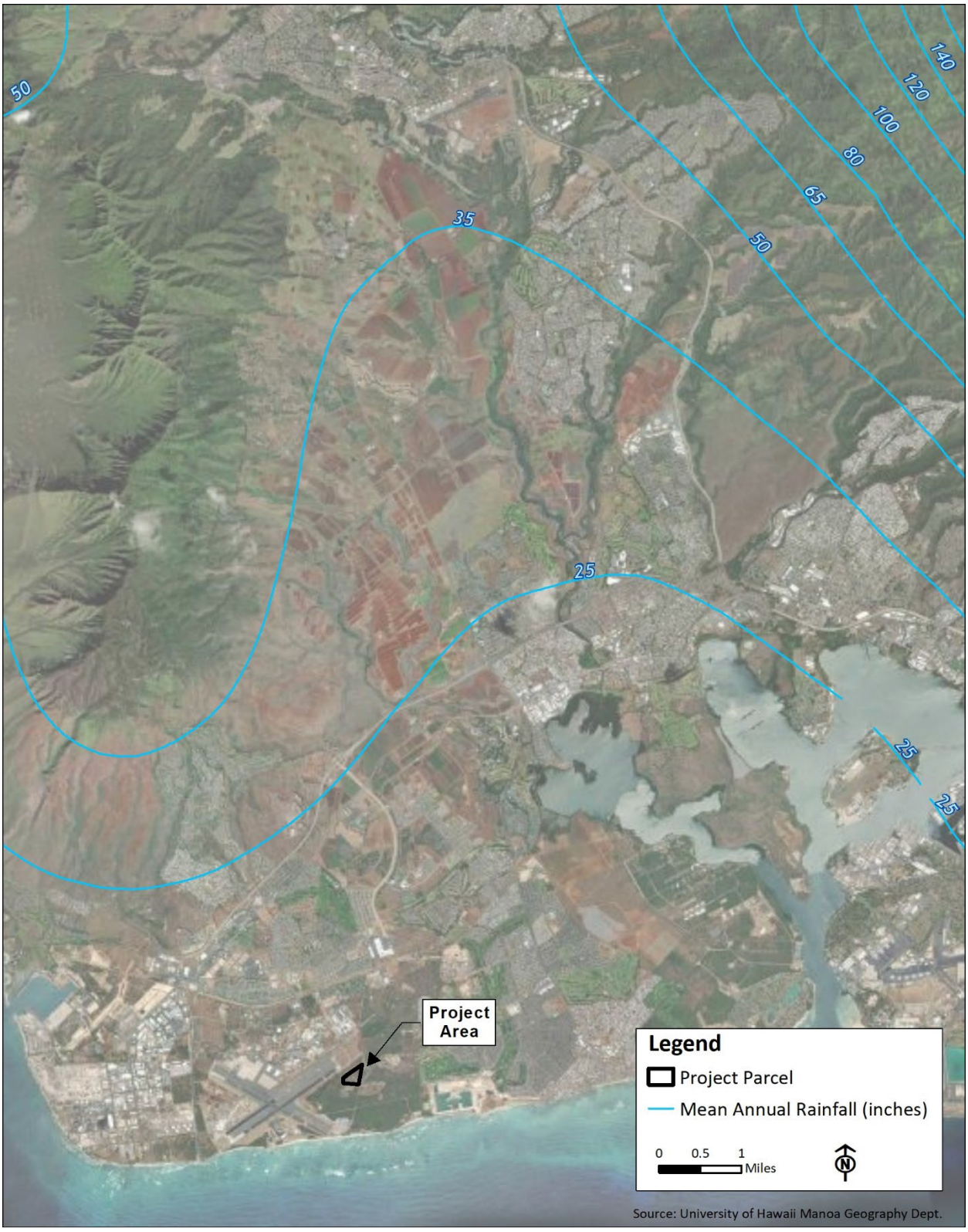


**Figure 3.1** **Mean Annual Rainfall**

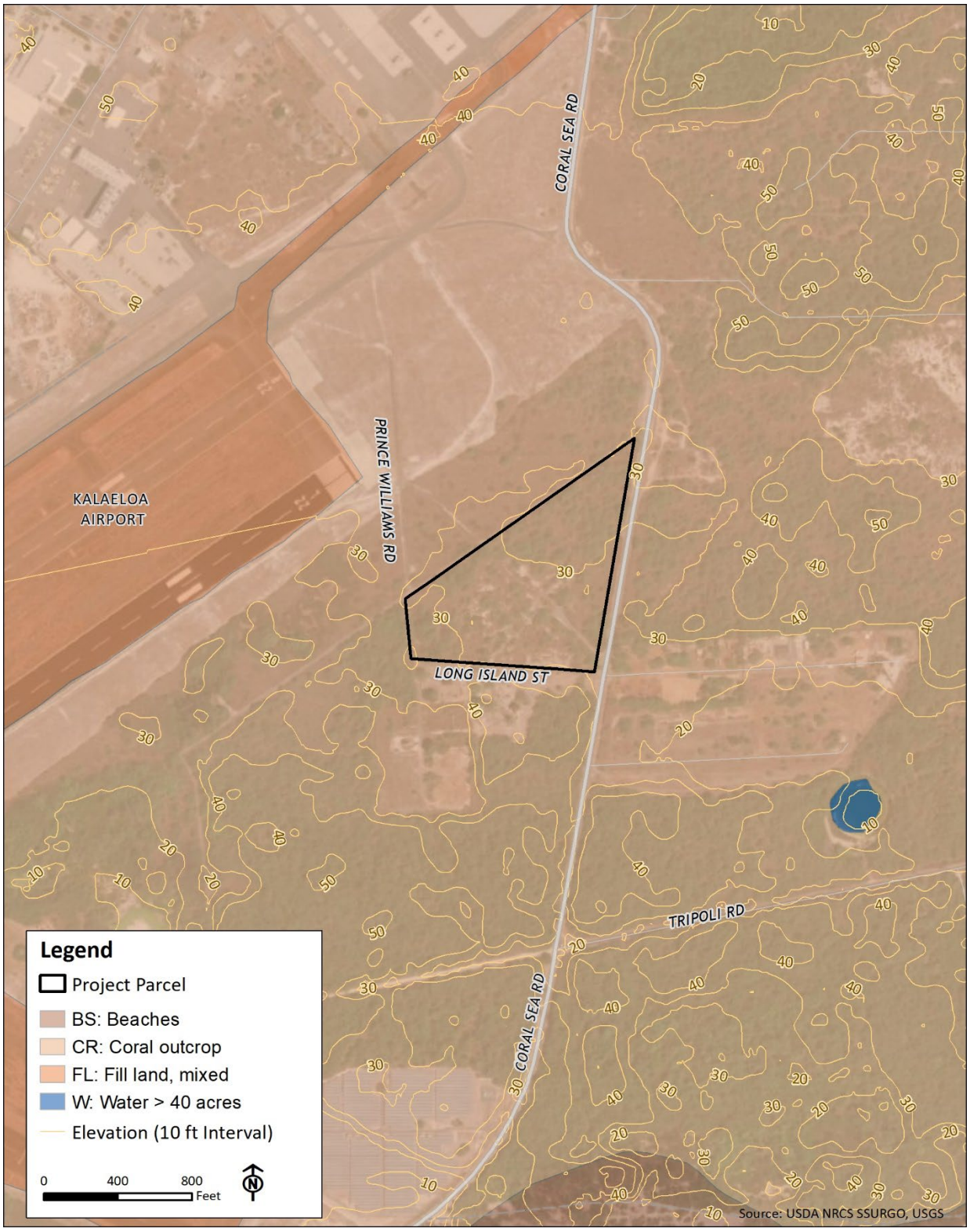


**Figure 3.2** **Soil Classifications**
(Source: U.S. Department of Agriculture Soil Conservation Service)

The ‘Ewa region is known to have the largest network of karsts on O‘ahu, where limestone bedrock is dissolved by the carbonic acid found in rainwater (Kalaeloa Heritage Park Final Environmental Assessment, 2014). The acidity of the rainwater eventually erodes enough limestone to cause the surface layer to collapse, creating a combination of sinkholes, caves, and underground channels. Sinkholes range from being no more than four to five ft deep, while others are as deep as thirty ft and extend to the water table. A ground topographic survey of the project site was conducted by ControlPoint Surveying Inc. in February 2022. The ground topographic survey identified six “holes” that were each approximately five ft deep on the project site (See *Appendix B, Sheet 1).* Further discussion relating to the sinkholes identified at the project site is located in *Section 3.7.*

GEOLABs Inc. conducted subsurface testing at the project site by drilling and sampling three borings (See *Figure 3.3)*. Borings were extended to a depth of approximately 31.5 ft below the existing ground surface to locate the approximate groundwater depth. Locating the groundwater depth will assist when approximating well depths. Drilled borings encountered a thin surface layer consisting of dense silty sands approximately one foot thick. Underlying the surface fill layer, soft to medium hard sandstone and coral formation were encountered to the maximum depth drilled of about 31.5 ft. The strength of coralline deposits are highly variable due to the depositional nature of the coralline deposits, which may create localized areas of hard, crystalline coral, limestone, and/or sandstone formations intermixed with soft, severely fractured detritus. In addition, cavities or voids are commonly encountered in coralline deposits. Groundwater was encountered in the borings drilled at a depth of approximately 21 ft below the existing ground surface in one of drilled borings. Notably, groundwater level can fluctuate depending on tidal fluctuations, storm surge condition, seasonal precipitation, groundwater withdrawal and/or injection, and other factors.

### *Anticipated Impacts and Proposed Mitigation*

The buildout of the Honokea Surf Village is not anticipated to significantly affect soils covering the project site. The grading plan to prepare the site for the buildout of the Honokea Surf Village is presented in *Figure 3.4.* Prior to the start of grading operations, the site will be properly cleared of vegetation, debris, deleterious materials, and other unsuitable materials to reduce the potential for contaminating the excavated materials to be reused as fill material. Areas designated to receive fills will be properly prepared, scarified to a minimum depth of approximately eight inches and moisture conditioned. Soft and yielded areas will be over-excavated to expose firm ground and will be backfilled with appropriately selected fill materials. The grading plan calls for the use of on-site cut materials for fill, to minimize the need for additional imported fill material. On-site sandy and gravelly soils with maximum particle size less than three inches in largest dimension will be screened to be used as backfill material. If imported fill material is warranted, select granular fill materials which may include crushed coralline or basaltic materials will be used.

Where fill is needed in areas with cut subgrades exposing coral formations, the subgrades will be proof-rolled to detect the collapse of near surface cavities. Cavities detected will be opened, cleaned of debris, and backfilled with properly compacted fill or concrete to reduce the risk of settlement. The grading plan has been prepared to properly prepare the site in a safe condition while minimizing the potential for environmental impacts. If the contractors find additional probing and grouting is needed to detect cavities, such measures will be employed. If groundwater is encountered during site preparation, backfill materials consisting of free-draining granular materials wrapped in non-woven filter fabric will be employed.

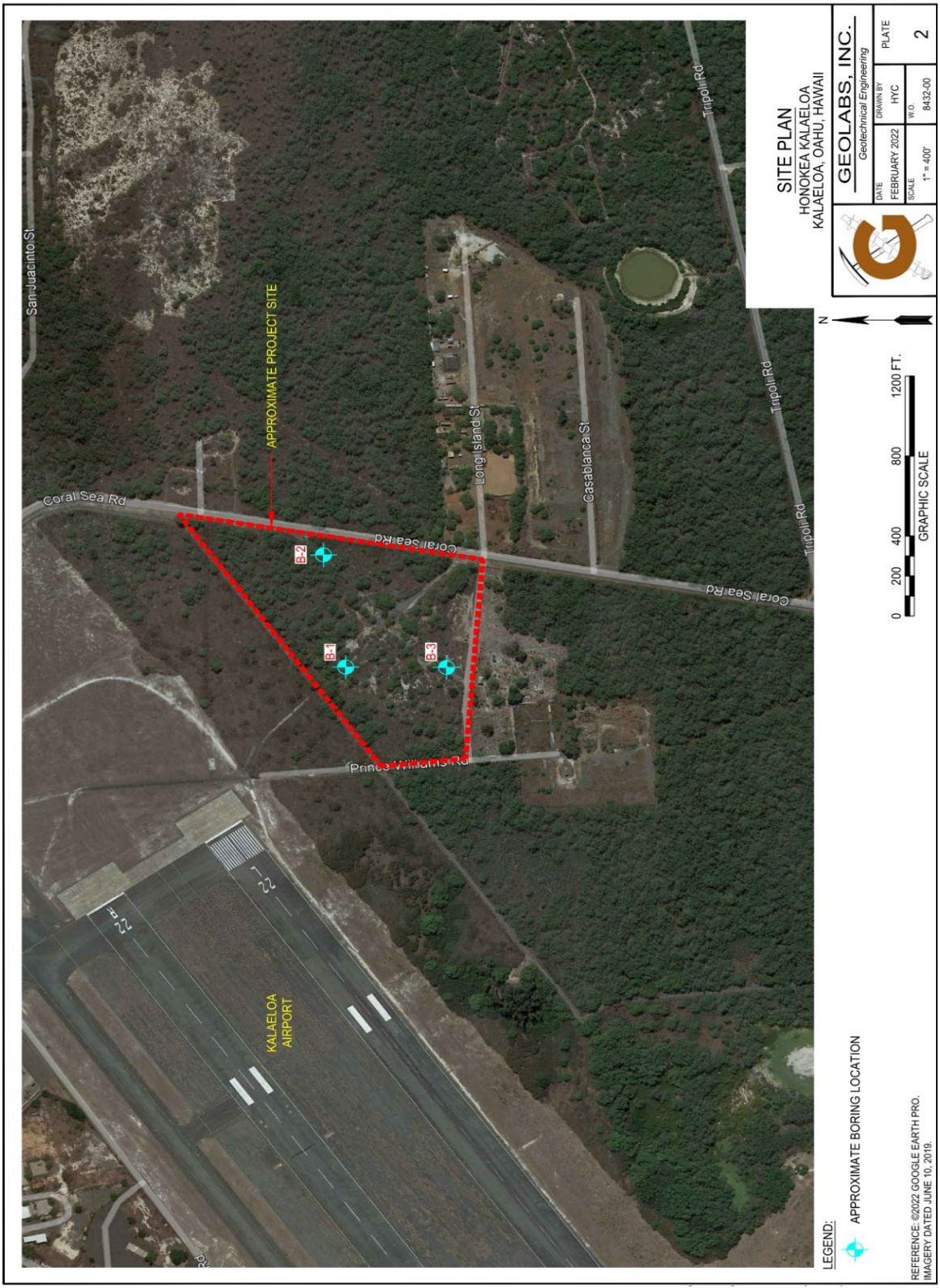


**Figure 3.3** **Boring Samples**
(Source: GEOLABS, Inc)

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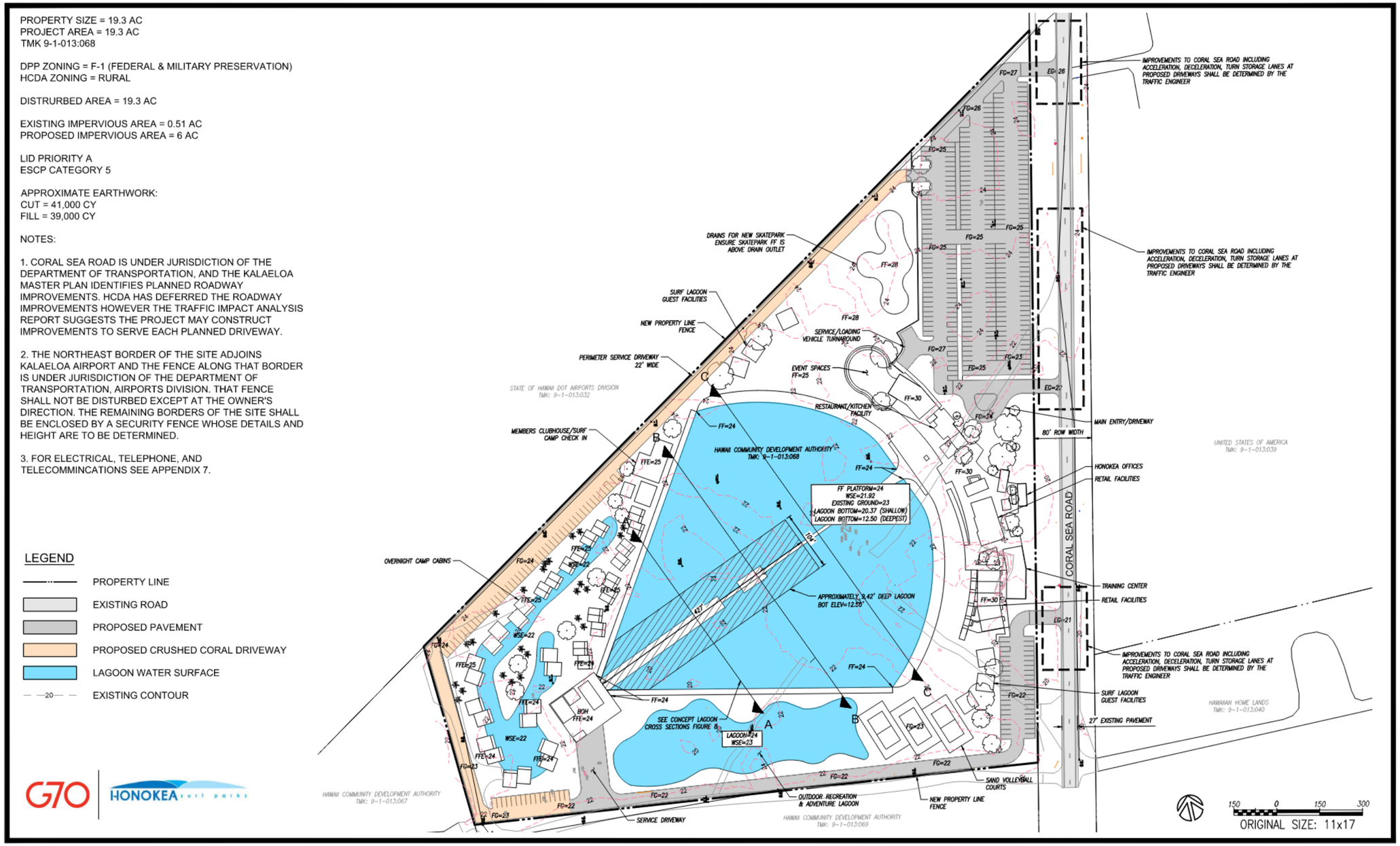


**Figure 3.4** **Grading Plan**

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Construction Best Management Practices (BMPs) will be implemented to mitigate potential environmental impacts that may occur as a result of the buildout of the Honokea Surf Village. During construction, contractors will utilize erosion control and land-based sources of pollution barrier measures such as sediment traps, silt fences, dust fences, stabilized construction entrances, and truck wash-down areas on-site, as appropriate to manage sediment discharge into nearby waters.

Grading operations will be conducted in compliance with dust and erosion control requirements of the City and County of Honolulu (City) Grading Ordinance. A grading permit will be obtained from the City in order to begin construction. The contractor will be required to perform proper quality control density testing during fill and sub-grade compaction in accordance with the planned improvement specification requirements.

Primary fugitive dust control methods that will be implemented include regular watering of exposed soil areas, good housekeeping on the job site, and prompt landscaping, covering or paving of bare soils in areas where construction is completed. Contractors will be advised to utilize non-potable water where practicable to control for fugitive dust emissions. Furthermore, the impact of construction activities on soils will be mitigated by practicing strict erosion control and dust control measures, particularly those specified in the following:

- City Grading Ordinance; Revised Ordinances of Honolulu Chapter 14-13 Provisions for Grading, Soil Erosion & Sediment Control
- State of Hawai‘i, DOH, Water Quality Standards, Chapter 11-54
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Erosion and Sediment Control Guide for Hawai‘i
- National Pollution Discharge Elimination System (NPDES) Construction Stormwater and Dewatering Permit

Based on the results from the boring samples, it is recommended footings be used for the support of the planned one-story and two-story facilities. Furthermore, the facilities will be carefully and appropriately designed such that they will not exceed the bearing capacity of properly compacted fill or underlying coral and sandstone formation. Excavated areas for footings will be backfilled with select granular fill materials, recompacted to a relative compaction, and embedded below the lowest adjacent finished grade. Footings located adjacent to slopes or on slopes will be embedded to a sufficient depth.

Features within the buildout of the Honokea Surf Village including structural facilities, parking areas, and pathways may be supported by concrete slabs-on-grade. If slab-on-grade is preferred, the site will be scarified to an appropriate depth, moisture-conditioned, recompacted, and proof-rolled before covered with concrete. The Surf Lagoon is one of the main features of the Honokea Surf Village. To safely construct the Surf Lagoon, it is recommended an additional 12-inch layer of non-expansive granular fill material lay beneath the bottom slab of the lagoon to provide uniform support, and a retaining wall be constructed around the Surf Lagoon. The retaining wall surrounding the Surf Lagoon should be constructed to an appropriate width and be embedded below the finished grade. For features such as the parking areas and walkways, concrete slabs should be appropriately filled to support vehicles and pedestrian usage.

As designs for the facilities and features within Honokea Surf Village continue to be crafted, closer design-level field explorations of the structure foundations, site grading, pavements, and infrastructure to support the Honokea Surf Village will be examined.

# 3.3 Drainage and Hydrology

### *Existing Conditions*

The State DOH records indicate four closed (backfilled) drywells (Permit UO-3237, wells UO-2127-1, -2, -3, -4) in the "old Engine Test Cell Area" or southern portion of the site. A ground topographic survey identified six "holes" near the southwestern corner of the site, each approximately five feet deep (See *Appendix B).*

There are currently no drain lines in the area. Based on the geotechnical report and boring surveys, infiltration rates at the site are approximated to be 25 inches/hour.

Honouliuli Stream is the only perennial stream in the area, draining into the West Loch of Pearl Harbor over four miles away (ʻEwa Watershed Management Plan, 2017). Thus, when the ʻEwa Plain floods, water percolates into the porous limestone and drains into sinkholes. Ponds and marshes were more plentiful across the plain in the past, as drilling of artesian wells for historic-era sugarcane cultivation has drained the water table significantly. Non-perennial streams in the vicinity run through the gulches of Barbers Point, Makakilo, and Kaloi, the latter of which is the closest to the project area, approximately 1.5 miles to the east. These gulches can carry high volumes of stormwater during heavy rains.

The project site overlies the Kapolei Aquifer System of the ʻEwa caprock. The project site's geology is comprised of two hydrostratigraphic units in the subsurface. The upper formation is a sedimentary sequence comprised of reef limestones and marine lagoonal muds known as the ʻEwa Caprock. Underlying the Caprock formation is the Koʻolau Basalt formation which likely consists of seawater located approximately 1,000 ft below the surface. The ʻEwa caprock is exposed at the surface and contains brackish water. The caprock aquifer is primarily recharged by surface flow, rainfall, and flow from the underlying basalt aquifer. The caprock is divided into two limestone aquifers, the upper and lower Caprock. The upper Caprock is unconfined, located approximately 25 to 170 ft below ground surface, and supports irrigation and industrial uses. Groundwater levels within this aquifer are tidally influenced, suggesting that groundwater discharges into the ocean. Below the upper aquifer lays a low permeable brown clay layer that acts as a flow barrier or aquitard between the upper and lower caprock aquifers. The lower caprock is confined to semi-confined and is located approximately 250 to 300 ft below ground surface. The salinity of the lower Caprock is too saline for irrigation. The ʻEwa caprock is classified by DOH as non-potable because salinity levels are too high for drinking water purposes.

The State CWRM estimated the sustainable yield of the Kapolei Aquifer System is less than five million gallons per day (mgd) with chlorides between 500 and 1,000 milligrams per liter (mg/L). There are no existing wells at the Kalaeloa Airport area, so the existing groundwater quality is unknown, but it is likely that small quantities of irrigation quality water will be available.

### *Anticipated Impacts and Proposed Mitigation*

Given there are no drain lines in the project area, rainfall runoff will be retained onsite via infiltration, capture and re-use to irrigate and serve low flow fixture toilets on-site.

Stormwater runoff rates at the project site were determined using the Rational Method. The Rational Method is used to determine stormwater for facilities that utilize natural features or drywells and infiltration trenches. Additionally, for sites less than 100 acres in size, the *City's Storm Drain Standards and Rules Relating to Storm Drainage* recommends the Rational Method be used to calculate

stormwater runoff rates. Moreover, because the project site is considered a sump, meaning all stormwater runoff must be retained on site, the 50-year recurrence interval rainfall intensity will be used to size drainage facilities as the design for the Honokea Surf Village continues to progress. Current projections of runoff volume (see *Appendix A* for calculations) suggest parking lots will need to be graded as sumps which drain to subsurface infiltration basins or injection wells (drywells).

As the site design progresses, revised hydrology calculations will be performed allowing BMPs to be integrated into the design and ensuring that post-development stormwater runoff can be managed onsite. A drainage report will be prepared for the project as part of the permitting and approval process. The preliminary geotechnical investigation suggests on-site disposal of runoff may be accomplished using a network of permitted eight-foot diameter, 20-foot-deep drywells. However, as the site design progresses, appropriate drainage to manage stormwater runoff will be integrated into the site design.

The contractors will implement the practice of utilizing erosion control and land-based sources of pollution (LBSP) barrier measures at the project site where there is the opportunity for sediment discharge into nearby waters (e.g. any site where there will be excavation, grading, or sediment/pollutant producing activities). These measures may include any type of barrier (e.g. sediment fences, silt screens, bags, environmental socks, petroleum absorption diapers) that limits the amount of sediment or LBSP (e.g. petroleum products, chemicals, debris, etc.) to the maximum extent practicable. If spills of sediment or wastewater occur during project construction, spills will be reported promptly, and the impact to the marine habitats need to be assessed by Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR).

In adherence to the City's *Rules Relating to Water Quality* and based on the size and scope of the project, Category A stormwater quality permanent BMPs through principles of Low Impact Design (LID) will be implemented to reduce stormwater runoff. LID includes the use of bioretention, biofiltration and vegetated systems to treat, absorb, and infiltrate stormwater runoff. The purpose of LID components is to reduce runoff volume and the pollutant loads from new development and to protect the receiving waters. Complete onsite retention of storm runoff flows through drywells and other infiltration structures is anticipated to adequately respond to the City's *Rules Relating to Water Quality* for a Priority "A" project. A Priority "A" project is defined as "All new development and redevelopment, including any incremental development, that proposes land disturbing activities of 1 acre or more."

In adherence to the *Rules Relating to Water Quality* for a Priority "A" project, a landscape plan for the Honokea Surf Village has been prepared, identifying a variety of native and other drought tolerant species throughout the site *(Section 2.14)*. Vegetated buffer strips will be implemented for new parking areas and paved driveways. Additionally, parking lots will be graded appropriately as sumps to allow for stormwater to drain to subsurface infiltration basins or injection wells (drywells). To reduce the amount of stormwater runoff generated at the site, the Honokea Surf Village has been carefully designed to reduce the amount of impervious surface areas. The parking area and perimeter access road running through the southern and western portion of the project site will not be paved but will rather be a roadway comprised of crushed coral rock. A crushed coral rock roadway increases the amount of pervious surface area that will allow for retaining stormwater runoff on-site.

The Surf Lagoon at the Honokea Surf Village will require the biennial draining of approximately seven million gallons of water. Injection wells will be implemented to accommodate this water disposal. The lagoon will be drained every other year, within the span of seven days, which equates to approximately one mgd; therefore, the injection wells must have a capacity of one mgd. Periodic lagoon maintenance draining will be stored in the Camp Cabin water feature for irrigation use. The injection well open interval will be relatively shallow to recharge the upper Caprock aquifer. Upper Caprock recharge has two benefits:

1. Potentially provide relatively low salinity recharge water for the proposed irrigation wells and possible other groundwater users;
2. Recharge the aquifer to provide potential benefits to groundwater dependent ecosystems and traditional and customary uses along the coast.

Potentially two wells could be developed on the site with one well having the capacity to dispose of one mgd and the other well on standby. The potential design for the injection wells on-site is described in *Table 3.1* and shown in *Figure 3.5.*

**Table 3.1 Conceptual Design of Injection Wells**

| Interval (ft below ground surface) | Borehole Diameter (in) | Casing Diameter (in) | Screen Slot Size (in) | Material Type |
|---|---|---|---|---|
| 0-5 | 20 | - | - | Pea Gravel |
| 5-15 | 20 | - | - | Neat Cement Grout |
| 15-20 | 20 | - | - | Fine Transition Sand |
| 20-90 | 20 | - | - | 4 x 16 Custom Blend Filter Pack |
| +2-25 | 20 | 12.75OD | - | Blank Casing (Flush-Threaded Schedule 80 PVC) |
| 25-80 | 20 | 12.75OD | 0.070 | Horizontal Mill Slot with Flush-Threaded Bottom Cap (Flush-Threaded Schedule 80 PVC) |
| 80-90 | 20 | - | - | Filter Pack Beneath Casing |

Before the Surf Lagoon is drained, water will be treated on-site. The water treatment system for the Surf Lagoon is designed on a "no failure" basis which guarantees the disinfection of the water and elimination of pathogen microorganisms using a combination of fine filtration, ozone, chlorine, and ultra-violate disinfection. The water from the Surf Lagoon will be dechlorinated before injection. This further ensures that the injectate is of suitable quality for beneficial groundwater recharge.

The salinity of the injectate lagoon water is projected to be about 1,200 mg/l chloride which is similar to the water in the receiving aquifer, which is believed to be below seawater salinity of about 19,000 mg/l chloride. While this exceeds drinking water limits, disposal will occur within a non-potable aquifer and is within the concentrations suitable for irrigation. The injection of relatively low salinity water will also provide recharge to the upper caprock aquifer that may possibly provide water for other purposes such as irrigation and ecosystem maintenance.

A UIC Permit will be sought and the injection wells will be compliant with the DOH, Safe Drinking Water Branch, Underground Injection Control Program's policy and permit conditions and rules for injection wells under Hawai'i Administrative Rules (HAR) §11-23. With proper treatment, the injectate fluid is projected to be non-polluting drainage water classified as Class V, Subclass B injection wells, under HAR §11-23-06. A CWRM Water Use Permit will be acquired prior to construction. The CWRM regulates water use in the 'Ewa Caprock based on the salinity of withdrawals. Irrigation water users are only able to pump when well salinity is below 1,000 mg/L chloride. In concentrations exceeding 1,000 mg/L requirement, pumping will need to cease and hence reduce any potential detrimental impacts to the underlying groundwater quality. Additionally, a NPDES Construction Stormwater permit will be acquired. Construction, grading and drainage plans for the Honokea Surf Village will be submitted to appropriate agencies for review and approval. The requirements of the approved CWRM permit and NPDES permits will be adhered to during construction.

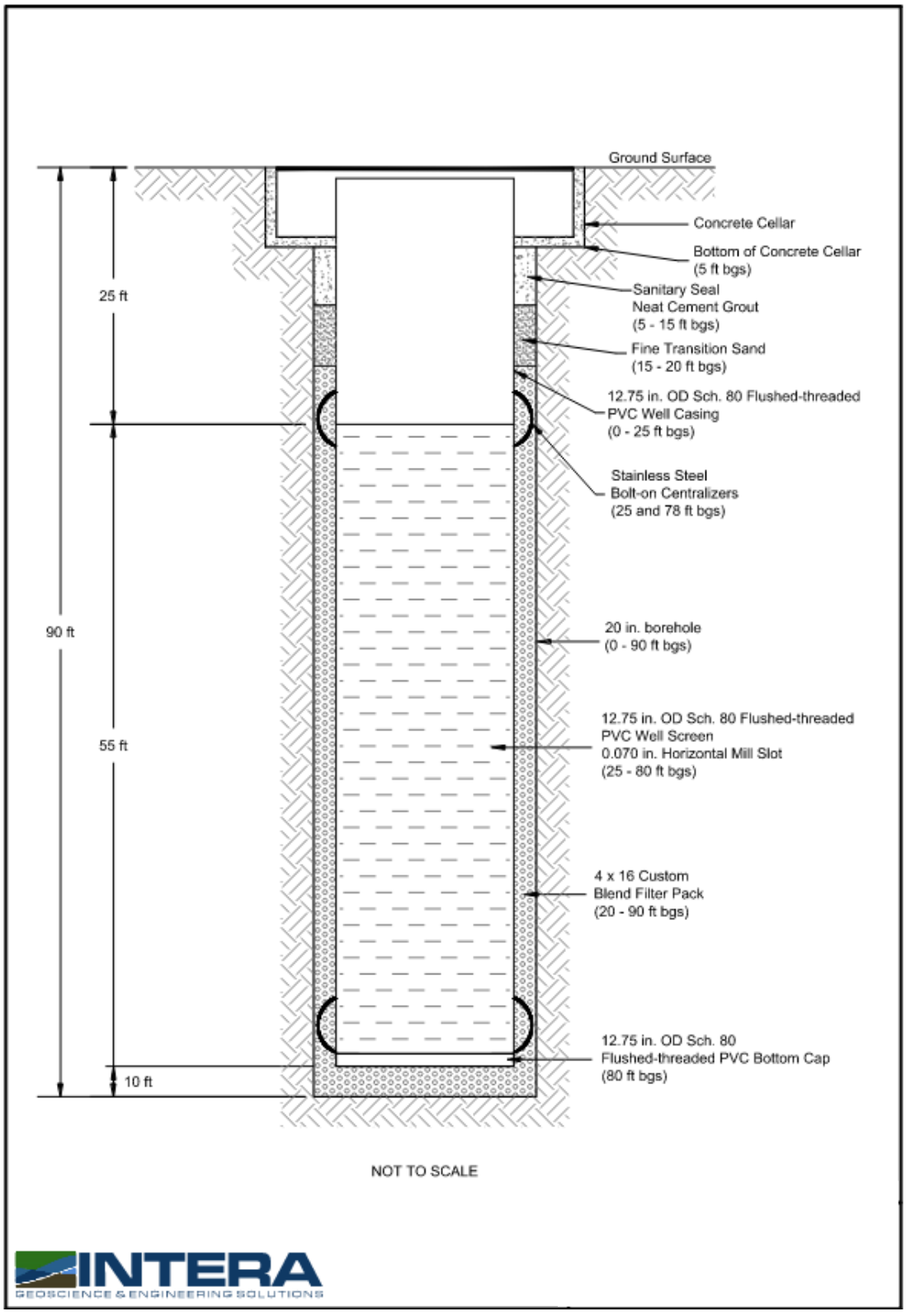


**Figure 3.5** **Injection Well Design**
(Source: INTERA Geoscience & Engineering Solution)

The on-site injection wells are anticipated to have very little, if any, negative impacts on the State's groundwater resources. Additionally, because there are no existing groundwater users in the Kalaeloa Airport area, groundwater users in the area will not be impacted. On-site injection waters could provide benefits by mitigating groundwater withdrawals from the irrigation wells and introducing water of comparable water quality into the upper 'Ewa Caprock Aquifer. Chloride levels of the injectate and of the groundwater underlying the project site will be monitored on a routine basis as a component of permitting requirements under HAR §11-23. Monitoring will protect and ensure groundwater dependent ecosystems including springs and seeps, submarine groundwater discharge, anchialine ponds, caves and karst systems, and deep-rooted plant communities along with traditional and customary rights along the coastline that rely on protection of groundwater resources.

# 3.4 Natural and Manmade Hazards

### 3.4.1 Hurricanes and Tropical Storms

*Existing Conditions*

Hurricanes and tropical storms are both categorized as tropical cyclones, which are warm-core storms which originate over tropical waters with well-defined centers of closed surface wind circulation. A hurricane is a tropical cyclone which sustains surface winds of 64 knots (74 mph) or more. Tropical storms are categorized as an organized system of strong thunderstorms with defined circulation and maximum sustained winds of 39 to 73 mph (National Oceanic and Atmospheric Administration [NOAA], 2015).

Hurricanes are considered to be relatively rare events in the Hawaiian Islands. Records show that strong wind storms have struck all major Hawaiian Islands. The first officially recognized hurricane in Hawaiian waters was Hurricane Hiki in August 1950. Since that time, five hurricanes have caused serious damage in Hawai'i: Nina (1957), Dot (1959), 'Iwa (1982), Estelle (1986), and 'Iniki (1992).

However, with rising global temperatures, Hawai'i is expected to experience a higher incidence of tropical storm events. In most recent history, Tropical Storm Olivia made landfall on Maui and Lāna'i in 2018, causing considerable flooding, power outages, and road and school closures. Also in 2018, Tropical Storm Lane never made landfall in Hawai'i, but unleashed record-breaking rainfall across parts of the island chain, causing considerable flooding and damage.

*Anticipated Impacts and Proposed Mitigation Measures*

Honokea Surf Village construction will be design and built per applicable International Building Code (IBC) requirements for wind resistance as adopted by the City and County of Honolulu.

The future threat of hurricanes at the project site cannot be calculated, although the frequency of hurricane threats may increase with climate change and warming ocean waters. When a hurricane is approaching a coastal location, early evacuation is usually standard mitigation to address the possibility of accompanying storm surge with high winds. The City's *Multi-Hazard Pre-Disaster Mitigation Plan* identifies Kapolei Elementary, Middle, and High schools as evacuation shelters. Each evacuation shelter is located less than approximately four miles from the project site. Guests will be evacuated to one of the shelters in the event of an emergency. The National Weather Service provides guidance and when necessary during an event, issues a hurricane watch when a storm is expected to make landfall within 36 hours. A hurricane warning is issued when landfall is likely within 12 to 24 hours.

### 3.4.2 Earthquakes

*Existing Conditions*

Based on the United State Geological Survey (USGS) 2021 National Seismic Hazard Model Map for Hawai‘i, which projects peak ground acceleration (PGA) over the next 50 years, the model indicates the island of O‘ahu to experience up to 0.3 ground acceleration (*Figure 3.6)* resulting in moderate shaking for the island of O‘ahu in the event of an earthquake.

Subsurface testing conducted by GEOLABs Inc. and the geologic setting of the project site indicate the project site may be classified from a seismic analysis standpoint as being a “Very Dense Soil and Soft Rock” site corresponding to a Site Class C soil profile based on the ASCE Standard ASCE/SEI 7-10, as referenced by the International Building Code 2012.

*Proposed Impacts and Mitigation Measures*

Buildings at the Honokea Surf Village will be constructed in compliance with regulatory controls to meet City Building Code requirements as appropriate to IBC seismic probabilities. Based on the subsurface conditions, the phenomenon of soil liquefaction is not a design consideration for this project site. Soil liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. The risk for potential soil liquefaction is non-existent at the project site due to the subsurface conditions consisting of coral and sandstone formation.

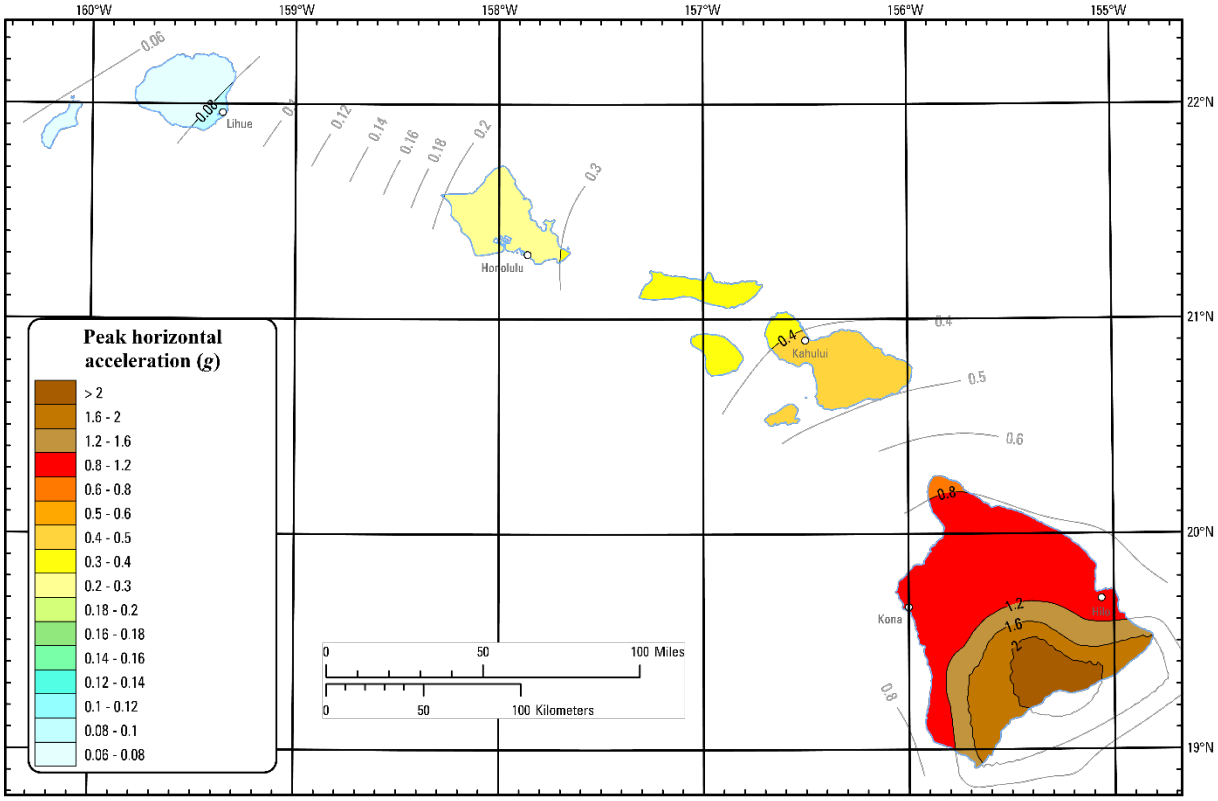


**Figure 3.6** **National Seismic Hazard Model for Hawai‘i**
(Source: U.S. Geological Survey, 2021)

### 3.4.3 Flooding and Tsunami Inundation

*Existing Conditions*

According the the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) map, the project area is located in Zone "D", (unstudied areas where flood hazards are undetermined, but flooding is possible) *(Figure 1.7*).

The sudden displacement of the ocean floor (earthquakes), landslides, or volcanism can generate tsunamis, which are a series of waves that can reach speeds of up to 600 mph. Upon reaching a coastline, a tsunami can become a wall of water reaching heights of 30 ft or more and capable of moving inland several hundred feet. Known major tsunami events in Hawai'i occurred in the areas of East Hawai'i (1946, 1960, 1975) and North Shore O'ahu (1952, 1957).

The site is approximately 3,200 ft from the shoreline at Kalaeloa Beach Park. Hawai'i State Emergency Management Agency maps locate the site outside the "Tsunami Inundation Zone" (*Figure 1.7 – included in Flood map)* but still entirely within the "Extreme Tsunami Inundation Zone."

*Proposed Impacts and Mitigation Measures*

The project site is within Flood Zones D. This area is outside the Special Flood Hazard Area, therefore no structural measures are required. In the event of a tsunami, waves may move significantly inland. Due to the location of the project site within the "Extreme Tsunami Inundation Zone" immediate evacuation to inland areas outside tsunami inundation zones are recommended in accordance with guidance from emergency management authorities. Honokea Surf Village will develop an emergency response plan to ensure the protection and care of guests and staff in the unlikely event of a natural disaster such as tsunami or flooding, in accordance with the City and County of Honolulu Department of Emergency Management's Multi-Hazard Pre-Disaster Mitigation Plan (2020).

### 3.4.4 Climate Change and Sea Level Rise

*Existing Conditions*

Rapid anthropogenic climate change is a well-established fact within the scientific community. A 2013 study by a University of Hawai'i (UH) team of researchers predicts that tropical regions will experience drastically warmer climates by the year 2047. In addition to rising temperatures, sea level rise is a notable concern for coastal communities. Sea level rise has historically driven shoreline changes throughout the Hawaiian Islands. The global annual sea level rise averaged over the last century was roughly two millimeters, with previous studies indicating that this rate is now approaching three millimeters and may accelerate in the coming decades. According to the 2017 Hawai'i SLR Vulnerability and Adaptation Report, the sea level in Hawai'i has increased at a rate of 15 millimeters or more each decade over the past century. While predicting future sea level rise is challenging because of unknown parameters, research shows that global mean sea level may rise approximately one foot by mid-century and 2.5 to 3.2 ft by 2100, with some studies showing a possible rise of up to 6 ft. According to recommendations provided in the 2017 report, an appropriate planning target to use in the design of future projects within the exposure area would be 3.2 ft.

The 2018 Sea Level Rise Guidance by the City Climate Change Commission notes that rising seas threaten human communities and natural ecosystems in multiple ways. Urbanized coastal areas will become increasingly vulnerable to four types of flooding during high water and high wave events, including 1) flooding across the shoreline due to wave run-up; 2) saltwater intrusion of engineered drainage systems; 3) groundwater inundation, affecting buried infrastructure and formation of new wetlands; and 4)

rainstorms, especially concurrent with high tide. Other threats include land loss and coastal erosion, increased wave energy at the shore, and further inland flooding from annual high wave activity.

*Proposed Impacts and Mitigation Measures*

Per the Hawai'i Sea Level Rise Viewer (PacIOOS, 2020), using the potential for chronic flooding with 3.2 ft of sea level rise exposure area (SLR-XA) as the vulnerability zone for planning purposes, it is noted that the project site is not located in an area potentially exposed to 3.2 ft of SLR *(Figure 3.7).* However, Honokea Surf Village understands the impacts of climate change and has integrated sustainable strategies into the design of the surf village.

In response to overall climate change concerns, sustainable design strategies include the strategic orientation of buildings to capture natural wind and facades faced away from the path of the sun; adaptive reuse of building materials; overhangs and trellises for photovoltaics; drought tolerant landscaping; low flow fixtures; capture and recycling of rainwater; capturing, recycling, and storage of graywater for irrigation purposes; and drilling and use of on-site brackish water wells for irrigation purposes.

### 3.4.5 Wildfire

*Existing Conditions*

The Hawaiian Islands are also vulnerable to wildland fires (especially during the summer months, from prolonged drought and/or high winds). The greatest danger of fire is where wildland (trees and brush) border urbanized areas, also known as the wildland-urban interface (WUI). Overgrown vegetation close to homes, pockets of open space within subdivisions, and an increase of non-native high fire-intensity plants around developed areas pose increasing threats to commercial, community, environmental, and residential resources. A great majority of wildfires are human-caused (intentionally caused or by negligence) and often start along roadsides. Wildfires can and also do occur naturally.

In compliance with the guidelines developed by the National Association of State Foresters, the DLNR Division of Forestry and Wildlife (DOFAW) identified at-risk wildland-urban interface communities throughout Hawai'i and rated each community's risk from wildland fires. According to DOFAW's risk rating of wildland fires, the project site is considered High Risk for wildfires (*Figure 3.8).* Rough terrain, strong winds, and a large percentage of highly ignitable invasive grasses characterize much of West O'ahu's landscape. Coupled with warm weather, recurring drought conditions, and a history of human-caused fire starts contribute to the risk of wildfires. Historically (since 2001), 13 wildfires have been recorded within the nearby vicinity of the project area. The project area falls within Honolulu Fire Department's (HFD) Primary/DOFAW Co-op Response Area.

In 2016, the Community Wildfire Protection Plan for Western O'ahu was developed by the Hawai'i Wildfire Management Organization (HWMO) in partnership with agencies, entities, community members, and individuals with interest or jurisdiction in West O'ahu to protect, assess, and provide mitigation priorities to reduce risks of wildfire spread in an area that has historically been impacted by wildfires. The National Cohesive Wildland Fire Management Strategy encourages communities to develop a dynamic approach to planning, responding, and recovering from wildfires and provides a framework to develop a plan. The Community Wildfire Protection Plan for Western O'ahu is broken down into three categories in conformance to the National Framework and includes: resilient landscapes, fire-adapted communities, and safe and effective wildfire response. The plan identifies the importance of restoring, protecting, and maintaining landscapes in West O'ahu, the need to build fire awareness and readiness within the community, and improving the area's resources including personnel, water infrastructure and availability, and firefighting access to the area.


**Figure 3.7** **3.2-Foot SLR Exposure Area**

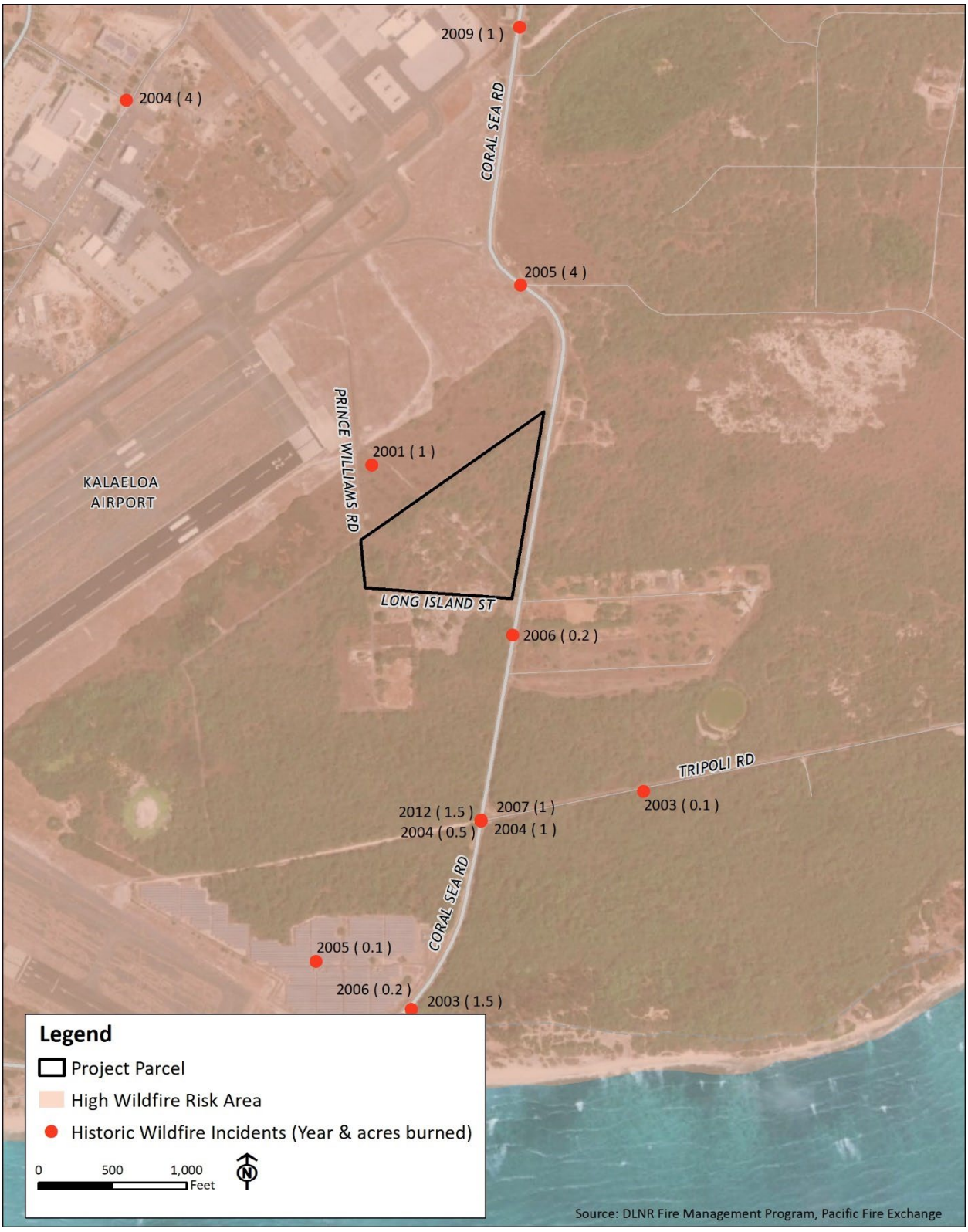


**Figure 3.8** **Wildfire Risk**

### *Proposed Impacts and Mitigation Measures*

Honokea Surf Village understands the risk of wildfires in the area of West Oʻahu. HFD has been identified as a primary responder in the event a fire breaks out. DOFAW is a cooperator if needed. Coral Sea Road and the on-site roadway network surrounding the perimeter of the Surf Village will provide a fire break. The landscape plan for Honokea Surf Village incorporates firewise landscaping techniques to protect and prevent the spread of wildfire at the Surf Village and the greater Kalaeloa area. Additionally, the landscape plan incorporates native plant species as identified in *Section 2.14* to reduce the risk of wildfire spread. Native and drought resistant plants that will be incorporated into the landscape and the Honokea Surf Village include ʻĀweʻoweʻo (*Chenopodium oahuensis)* and Naio (*Myoporum stellatum)* which are both known for their inflammability. Staff members will ensure the leaf litter and other debris do not accumulate throughout the village to reduce the risk and spread of wildfire. As the site plan and design of the buildings within Honokea Surf Village continue to progress, plans will be prepared in accordance with the Fire Code regulations under the National Fire Protection Agency (NFPA) 1.

## 3.4.6 Hazardous and Regulated Materials

A Phase I Environmental Site Assessment (ESA) was conducted in March 2022 by Element Environmental, LLC (E2). The ESA was conducted in conformance with ASTM International (ASTM) Practice E1527-13, *Standard Practice for Environmental Site Assessments* and *All Appropriate Inquiries,* which includes 40 Code of Federal Regulations Part 312, Sections 312.21 and 312.31. The purpose of the Phase I ESA is to identify recognized environmental conditions (RECs). ASTM guidance defines a REC as the likely presence of hazardous substances or petroleum products, in, on or at the subject property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; (3) under conditions that pose a material threat of a future release to the environment. The Phase I ESA is attached in *Appendix C.* The following section includes a discussion of the identified RECs and the significance and potential hazards of the identified RECs.

### *Existing Conditions*

A review of environmental records, site history, geology and hydrogeology, and interviews along with a Visual Site Inspection (VSI) allowed E2 to properly assess the environmental conditions at the site as well as adjacent properties.

The Phase I ESA identified moderate to heavy vegetation covering more than 90% of the project site while asphalt paved roadways and concrete foundations associated with former BPNAS engine test cells were trending northwest to southeast across the center of the site. Multiple concrete, metal, and rebar stockpiles and green waste stockpiles are located within the southwest portion of the site. Sinkholes of various sizes, some of which were filled with concrete, were observed throughout the site. Coral bedrock was observed in areas of cleared vegetation. A marked buried sewer force main was identified along the eastern boundary of the subject property.

Two RECs were identified during the VSI. Solid and hazardous waste may be associated from stockpiles with concrete, metal, and rebar identified at the southwest portion of the project site (*Figure 3.9*). A floor drain was observed in a concrete foundation within the center portion of the property (*Figure 3.10*). The use of the drain is unknown. It is possible that hazardous materials may have been released to the ground via this drain.

**Figure 3.9** **Stockpiles of Metal Piping, Rebar, and Concrete**

**Figure 3.10** **Flood Drain in a Concrete Foundation**

RECs are further defined as controlled REC (CREC), historical REC (HREC), or potential environmental concerns (PECs). A CREC is defined as a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (as evidenced by the issuance of a no further action (NFA) letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (property use restrictions, activity and use limitations, institutional/engineering controls).

In 1999 when the Naval Air Station was closed by BRAC, the project site, which was used as an engine test cell site, was cleaned up to the regulatory agency acceptance, which included a team with State of Hawai'i DOH personnel, U.S. Environmental Protection Agency (EPA) personnel, and personnel from the Navy. During the BRAC process, approximately 9,000 cubic yards of soil mixed with asbestos-containing material was excavated from five acres of the site. Although the site was issued an NFA, regulatory closure does not preclude that a site may be reopened in the future should new data become available. With BRAC, hazardous chemicals such as arsenic, atrazine, bis (2-ethylhexyl) phthalate, 4-4-DDE, 4,4-DDT, lead, lindane, and thallium were released in the regional groundwater system (Point of Interest - 49), however chemicals were detected at concentrations that did not require response action.

HRECs are similar to CRECs defined as a past release of hazardous substances or petroleum products that have occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority. However, HRECs do not require the site to undergo required controls (property use restrictions, activity and use limitations, institutional/engineering controls). HRECs were not identified in Phase I of the ESA.

PECs are identified due to insufficient available information required to make a determination on the hazardous material. PECs identified at the project site includes lead-based paint that may have been used in the construction and/or maintenance and upkeep of former structures built prior to the early to mid-1980s. Asbestos-cement piping may have been used in the potable water distribution systems, sanitary sewer, and storm drains built prior to the 1980s. Over time, the gradual degradation of the piping in the form of corrosion could occur. The crushing of asbestos-cement pipe with mechanical equipment causes this material to become a regulated asbestos-containing material. Residual levels of pesticides, herbicides, and/or termiticides are present in the soil beneath and in the vicinity of the former structures at the site. Small amounts of municipal solid waste including a foam mattress, a specialized railcar chassis and a burnt vehicle were identified on site; however these are considered to be de minimis as even if hazardous substances or petroleum products were released it would not result in a reportable amount. Additionally, several green waste stockpiles pose a fire risk.

The neighboring Department of Hawaiian Home Lands (DHHL) property to the east has been identified as a PEC. Prior to the lease by The Ranch at Kalaeloa, from 2002 until 2004, the site was occupied by the Save Oahu's Race Tracks (SORT). During of the use by SORT, several complaints regarding stockpiling of contaminated soil, tires, and concrete rubble as well as stockpiling and crushing concrete without a permit, burying of construction and demolition waste, and storage of aboveground storage tanks, intermediate bulk containers, and drums were reported. In April 2018, DHHL submitted a Correction Active Letter Report in Response to the Notice of Violation and Order (NOVO) Docket No. 15-HWEA-01. Violations listed in the NOVO have been addressed with the completion of various corrective actions, and soil from the site does not pose a hazard and additional site investigations are not required. However, it is unknown if the land use violations listed in the NOVO have negatively impacted the subject property. This is considered a PEC as it is not known or suspected to be impacting the subject property due to the distance from and location hydraulically down/cross gradient from the subject property as well as the removal of the waste from the adjacent property.

The adjacent Kalaeloa Heritage Park (KHP) to the south has also been identified as a PEC. Prior to September 2013, KHP accepted the import of soil from multiple off-site sources located in Pearl City and Honolulu areas of O'ahu. The soil was observed by DOH Solid and Hazardous Waste Branch to be mixed with large pieces of concrete, as well as small amounts of auto parts and other scrap metal. A NOVO was issued from the City on September 23, 2013. During the stockpile removal, a suspect gray

clay pipe was observed and confirmed to contain asbestos-containing material. All materials were taken and disposed of, and on March 3, 2020, the DOH and HCDA conducted an inspection of the site and NFA is required. This is considered a PEC as it is not known or suspected to be impacting the subject property due to the distance from and location hydraulically downgradient from the subject property as well as the removal of the waste from the adjacent property.

The project site is not listed for action in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) information systems database. CERCLA is commonly referred to as the "Superfund" program. The database tracks the location of identified abandoned hazardous waste sites. No such sites exist within the project parcel.

### *Anticipated Impacts and Proposed Mitigation*

Based on the Draft Phase I ESA findings and conclusions, the following actions were recommended and will be implemented:

1. Stockpiled waste materials (i.e., concrete, metal, etc.) should be removed from the site and properly segregated, recycled, and disposed of. Sampling should be completed to evaluate the presence/absence of contamination in the soil and if present, to characterize the nature, magnitude, and extent of the contamination.
2. A Phase II Environmental Site Assessment should be completed for all areas of the subject property where soils and/or groundwater will be disturbed/removed during future site redevelopment activities. The Phase II ESA should investigate the presence/absence of contamination in soil and groundwater and if present, to characterize the nature, magnitude, and extent of contamination. All work must be completed in accordance with DOH Hazard Evaluation and Emergency Response Office guidance.
3. Soil, sediment, and/or water may be encountered in underground structures, including but not limited to former floor drains, storm drains, wells, and dry wells. If these structures are to be removed from the ground, the content should be characterized and properly removed/disposed prior to removal, if possible.
4. Underground injection wells and groundwater monitoring wells (if any) should be located and closed in accordance with DOH requirements.
5. Deed restrictions on the property noted that petroleum hydrocarbons were identified in the groundwater beneath the project site. Any soil removed from the site during excavation that exceeds into the water table should be tested and disposed of in accordance with applicable laws and regulations.

Following recommended measures, the identified materials associated with the former use of the site will be mitigated and will be classified as a CREC. Construction operators will comply with City building permit conditions, and state and federal laws, to minimize and mitigate any inadvertent spills or release of fuels or lubricants. No significant short-term or long-term impacts are anticipated from any on-site hazardous substances.

# 3.5 Biological Resources

A Natural Resources Assessment was completed by AECOS Inc. in January 2022 *(Appendix D).* The primary purpose of the survey was to establish that no botanical, avian, or terrestrial mammalian species currently listed or proposed for listing under either federal or state endangered species statutes occur on or adjacent to the project.

### *Existing Conditions*

Flora

The project site is a forest of kiawe (*Prosopis juliflora)* and koa haole trees (*Leucaena)* with open areas of disturbed ground (*Figures 3.11 and 3.12)*. Ruderal lands are defined as greatly and recently disturbed. Typically, ruderal lands develop a vegetation type of herbaceous plants that spread rapidly and are adapted to continuing disturbances such as mowing. Ruderal plants at the project site are found along the roadway verge, on the unimproved roadways, and in relatively recent disturbed areas.

The survey revealed 30 species of flowering plants. Five (17%) of which are native species and one (3%) is an early Polynesian introduction. The native species include kūpala (*Sicyos pachycarpus*) koali‘ai (*Ipomoea cairica*), ko‘oloa keokeo (*Abutilon incanum*), ‘ilima (*Sida fallax*) and ‘uhaloa (*Waltheria indica*). All are moderately common, except for ‘ilima, which is especially common. The native species identified at the site were seedlings or newly extending vines, but were very common across majority of the site. The only early Polynesian introduced plant is noni (*Morinda citrifolia),* a small tree valued for its fruits with purported medicinal properties. The remaining 24 species (80%) recorded in the survey are non-native species that were introduced to the islands after 1778 and have since naturalized.

Invertebrates

The project site does not contain resources that would support native invertebrate populations. In particular, no open water features occur on the site that might provide habitat for anchialine fauna/flora or odonates (*damselflies and dragonflies).*

Avian

A total of 96 individual birds of 17 species, representing 13 separate families, were observed during the survey. Of the 17 species recorded, only one species was identified as an indigenous migratory shorebird species, the migratory kōlea (Pacific Golden Plover). The rest of the avian species are alien to the Hawaiian Islands, keeping with the highly disturbed, alien vegetation present at the site. The Zebra Dove (*Geopelia striata*), Grey Francolin (*Francolinus pondicerianus*) and Common Mynah (*Acridotheres tristis*) accounted for 49% of all birds observed. The most frequently recorded species was the Zebra Dove, accounting for 20% of the total number of individual birds recorded.

Fauna

There were three recorded mammalian species: the European house mouse (*Mus musculus domesticus*), domestic dog (*Canis lupus familiaris*), and small asian mongoose (*Herpestes javanicus*). All the species identified during the survey are alien to the Hawaiian Islands.

**Figure 3.11** **Koa Haole and Sparse Understory**
(Source: AECOS, 2022)

**Figure 3.12** **Disturbed Kiawe Forest**
(Source: AECOS, 2022)

### *Proposed Impacts and Mitigation Measures*

Flora

In comparison to surveys conducted in the Kalaeloa area and along Coral Sea Road, the number of flora species recorded at the project site is relatively smaller in comparison to previously completed surveys in the area. Most recently, a survey was completed in 2016 for the Aloha Solar Energy Fund (ASEF) solar project that included a transmission line along Coral Sea Road. A total of 65 species were identified, in comparison to the 30 identified in the survey completed for the Honokea Surf Village. However, the survey completed for the solar project shows only ʻilieʻe (*Plumbago zeylanica)* and ʻihiʻai (*Oxalis corniculate)* as missing from the native species identified at the project site proposed for the Honokea Surf Village, and is not identified as a concern. Additionally, the invasive rubber vine (*Cryptostegia randifolia)* was not identified at the project site, however, the invasive species was identified further south along Coral Sea Road.

Several listed endangered plant species are known from the ʻEwa Plain, including an amaranth *(Achyranthes splendens var. rotundata),* koʻoloa ʻula *(Abutilon menziesii),* and the ʻEwa Plains ʻakoko *(Euphorbia skottsbergii var. skottsbergii).* None of these listed species were observed on the site during the botanical survey.

The project site is not delineated as a Critical Habitat. However, the federally-delineated Lowland Dry – Unit 11 Ecosystem is located to the east of the project site across Coral Sea Road and some 370 ft at its closest point to the project property *(Figure 3.13).* Unit 11 is essential for the conservation and recovery of 17 plant species that require the physical and biological features of the lowland dry ecosystem. This unit also provides the species-specific primary constituent element of coral outcrop substrate required for the endangered ʻEwa Plains ʻakoko, known only from the Kalaeloa area. The buildout of the Honokea Surf Village is not anticipated to impact.

The buildout of the Honokea Surf Village is not anticipated to impact federally delineated Critical Habitats nor flora resources at the project site. The landscape plan prepared to support the buildout of the Honokea Surf Village *(Section 2.14)* identifies a variety of native plant species that will improve the existing landscape at the project site. The Honokea Surf Village is committed to seed banking and/or collections of those native plants that have thrived here on their own. Honokea will work with KHP and others to use the on-site greenhouse to propagate many of the natives, and then return them to the ʻEwa landscape.

Avian

The Honokea Surf Village will be subject to requirements of HAR Title 11, Chapter 10 related to Public Swimming Pools, specifically with respect to wildlife. The endangered waterbird species Hawaiian Coot (*Fulica alai),* the endemic subspecies of the Hawaiian Stilt (*Himantopus mexicanus knudseni)*, and the Common Gallinule (*Gallinula galeata sandvicensis)* were not identified during the course of the survey. However, in a survey conducted nearby, the Hawaiian Stilt was detected flying over the study area, and Hawaiian Coots and Hawaiian Stilts have been reported to regularly occur and nest at the nearby Ordy Pond (C. Carnes; NAVFAC Hawaii, pers. Comm., March 2021). Although the survey conducted for the project site did not detect the endangered waterbirds or their nesting habitat on-site, the nearby Ordy Pond (approximately 1,500 ft away) provides a suitable habitat for the waterbirds, and therefore there may be potential for waterbirds to fly over the project site.

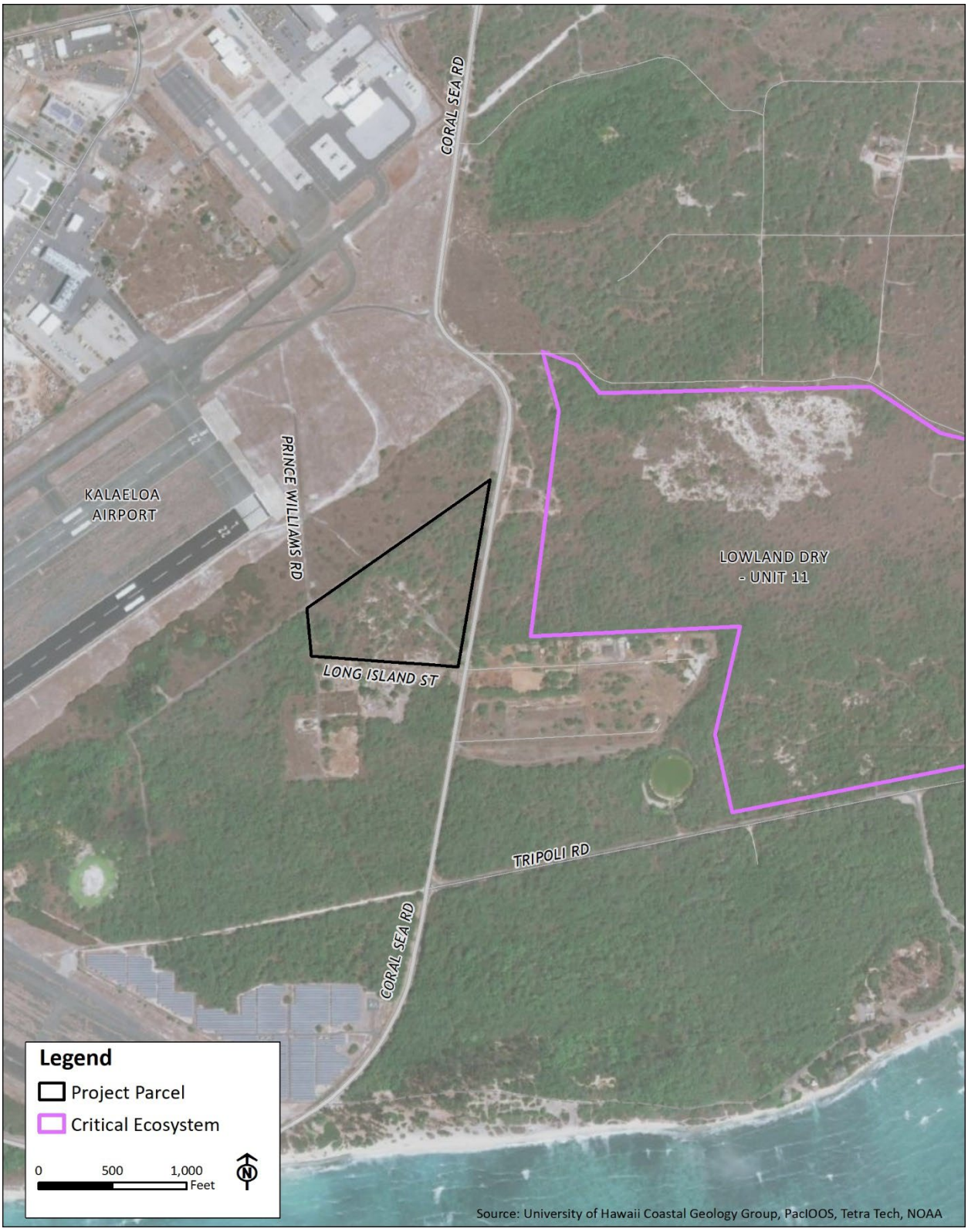


**Figure 3.13** **Location of Critical Habitat Lowland Dry – Unit 11**

If waterbirds land within the project site during the buildout of the Honokea Surf Village, the species may be impacted by construction and operation activity. To avoid impacts to the waterbirds, it is recommended that stormwater and drainage be designed to drain within 48 hours of a storm event to avoid standing water that may attract waterbirds. If waterbirds or waterbirds' nests are identified at the project site during the buildout of the Honokea Surf Village, construction activity within 100 ft of the bird or nest shall cease, and a buffer will be established until a biological monitor or surveyor may survey the site. A DLNR DOFAW specialist will be notified immediately.

Although endangered seabirds were not identified during the course of the survey and in the greater project area, it is possible that night-flying seabirds overfly the project site during the nesting season as the upper elevations of the Wai‘anae Mountains and the Northern Ko‘olau Mountains may provide a suitable nesting habitat (Young et al., 2019). On O‘ahu, these include the Hawaiian Petrel (*Pterodroma sandwichensis*), Newell's Shearwater (*Puffinus newelli*), Band-rumped Storm-petrel (*Oceanodroma castro*), and Wedge-tailed Shearwater (*Ardenna pacifica*). The first three of these species are listed under both federal and the state endangered species statutes, the fourth is protected under the federal Migratory Bird Treaty Act (MBTA).

In the summer and fall, nocturnally flying seabirds (especially fledglings) transiting to the sea from inland locations can become disoriented by exterior lighting. When disoriented, seabirds can collide with man-made structures or the ground. If not killed outright, dazed or injured birds are easy targets of opportunity for feral mammals. The primary cause of mortality in nesting seabirds in Hawai‘i is predation by alien mammalian species at the nesting colonies (USFWS, 1983; Ainley et al., 2001). Collision with man-made structures is considered the second most significant cause of mortality.

To minimize deleterious impacts to seabirds, construction during the buildout of the Honokea Surf Village will occur during daylight hours to avoid nighttime lighting for construction activity. Additionally, outdoor lighting installed at the Honokea Surf Village will be shielded and “dark sky compliant” to avoid seabird disorientation. No additional mitigation strategies are provided by USFWS for exterior lighting above a certain height, however exterior lighting at that height will also comply with shielded seabird friendly lighting solutions. If a grounded seabird is found on-site, DLNR DOFAW and the USFWS will be notified of the downed seabird.

The Hawaiian endemic sub-species of the Short-eared Owl or pueo (*Asio flammeus sandwichensis*) is state-listed as endangered on O‘ahu only. The pueo is a ground-nesting bird and thus susceptible to mammalian predation. The species is increasingly scarce on O‘ahu but is known to utilize crop and pasture land for hunting and nesting. Although the pueo was not observed during the course of the survey and the project site is not suitable for nesting by the owl, a single pueo was observed in a study conducted in June 2020. Given the presence of the pueo in the project area, it is possible that the pueo could fly through, hunt, roost, or nest within the project site. If vegetation is cleared well before modifications are made to the site, the project site may provide a suitable nesting habitat for this species, and it may be appropriate to conduct a nesting survey prior to any further modifications. Additionally, if a pueo is nesting or if a nest is discovered at the site, construction work will cease, and a 100-foot buffer will be established around the nest by a qualified biologist. A specialist from DLNR DOFAW will be notified before proceeding with further construction.

Fauna

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai‘i endangered species programs were detected during the course of the survey. The presense of the European house mouse may indicate the presence of three other established species on O‘ahu: roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), and Polynesian rat (*Rattus exulans hawaiiensis*).

All of these species are deleterious to native ecosystems and the native faunal species dependent on them.

It is possible that the ʻōpeʻapeʻa or Hawaiian hoary bats *(Aeorestes semotus)* overfly the project area on a seasonal basis. The ʻōpeʻapeʻa is known to forage in open and semi-cluttered landscapes in a wide range of habitats and vegetation types (Bonaccorso et al., 2015). Many of the trees in the project area, including kiawe are over 15 ft and may have the potential to function as roosting trees for foraging. Additionally, detections at nearby bat detector stations in the ʻEwa region have documented low bat activity compared to other detector sites on Oʻahu. The principal impact that the construction may pose to bats is during the clearing and grubbing phases when vegetation is being removed. The removal of vegetation within the project site may temporarily displace individual bats using trees for roosting. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. However, during the pupping season, females carrying pups may be less able to rapidly vacate a roost as a tree is felled. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled. To mitigate potential impacts to the ʻōpeʻapeʻa, trimming and removal of trees taller than 15 ft will be avoided during pupping season between June 1 and September 15. If trimming or removal of trees taller than 15 ft must be completed, it is recommended DLNR DOFAW and the USFWS be consulted with.

Recommended avoidance and mitigation measures will be incorporated into the project design. The contractor will adhere to project plans and specifications which will incorporate measures to avoid or minimize impacts to listed species during construction. The project will implement the identified concerns to minimize impacts to listed animal species.

## 3.6 Historical and Cultural Resources

A Cultural Impact Assessment (CIA), including archival research and ethnographic surveys of area residents, was performed by Keala Pono Archaeological Consulting, LLC (March 2022). The entire CIA is attached as *Appendix E.*

### *Existing Conditions*

The project site is located in the ʻEwa District, in the ahupuaʻa of Honouliuli. "ʻEwa" means "to crook, to twist, to bend". This name may refer to the moʻolelo within which Kāne and Kanaloa threw stones to determine the boundaries of the district. The ʻEwa area is known for its expansive coastal plain surrounded by the deep bays of West Loch and Pearl Harbor.

Historically, the boundaries of ʻEwa have been linked to the story of the gods Kāne and Kanaloa, who, while surveying the islands reached Red Hill and saw the expansive ʻEwa Plain. To make the boundaries of the area, they threw a stone, and the boundary was placed where the stone landed. Seeing the beautiful land below them, they thought to include as much as possible, throwing the stone as far as the Waiʻanae Mountain Range in the area known as Waimānalo (which is different than the other area by the same name on the northeast side of the island). While in search of their flung stone, Kāne and Kanaloa were unable to find where it had landed. Because of this, the area was named "Ewa" due to the "straying" of the stone. Eventually, the stone was found on a hill and was named Pili o Kahe. This place marks the boundary between the ʻEwa and Waiʻanae Districts, Honouliuli Ahupuaʻa within ʻEwa, and Nānākuli in Waiʻanae.

Hi‘iakaikapoliopele, the sister of Pele, has also been linked to ‘Ewa Region. In the epic tale of Hi‘iaka’s journey to fetch Pele’s lover, Lohi‘ahu-ipo (Lohi‘ahu), Hi‘iaka traversed the ‘Ewa Plain as she returned back to Pele’s domain of Kīlauea, Hawai‘i, from Hā‘ena, Kaua‘i. As Lohi‘ahu and Wahine‘ōma‘o sailed from Pōka‘i (Wai‘anae) to Kou (Honolulu), Hi‘iaka traveled over land and traversed the plain of Honouliuli, encountering women on their way to gather papa‘i (crabs), limu (seaweeds), mahamoe, and ‘ōkupe (both edible bivalves). At the plain of Keahumoa (between Waipi‘o and Honouliuli), Hi‘iaka came across a group of women gathering ma‘o blossoms (*Gossypium tomentosum,* an endemic yellow-flowered hibiscus typically found on dryland plans) with which they would make lei. Ma‘o as well as other plants named in the rest of this legend will be used in the landscaping of the Honokea Surf Village (See *Table 2.1).*

The ‘Ewa Plain was known to be a very fruitful place, with abundant resources in the ocean and on land. Protecting such a place was the kia‘i or caretaker of ‘Ewa, named Kanekua‘ana. Relied on by the ‘Ewa kama‘āina, during times of scarcity of fish, her descendants built Waihau Heiau and lit fires for the cooking of offerings with the hope of blessings. According to Kamakau (1991), blessings were in the form of various types of seafood including pipi (pearl oyster). The pipi (pearl oyster) - strung along from Namakaohalawa to the cliffs of Honouliuli, from the kuapa fishponds of inland ‘Ewa clear out to Kapakule. They grew right on the nahawele mussels, were fat with flesh, and the pearl (momi) was described as “beautiful as the eyeball of a fish, white and shining; white as cuttlefish, and shining with the colors of the rainbow — reds and yellows and blues, and some pinkish white, ranging in size from small to large”. Other seafood described by Kamakau include the transparent shrimp (‘ōpae huna) and spiked shrimp (‘ōpae kakala) which came into the kuapā and pu‘uone fishponds, the nehu pala and nehu maoli fish which filled the nuku awalau (lochs), as well as the bivalves mahamoe and ‘okupe and other types which have disappeared long ago.

The land of Honouliuli was known for its ‘ama‘ama, or mullet fish. The mo‘olelo of Laniloa and Awawalei (brother and sister) describes how the route of ‘ama‘ama which travel from Honouliuli to Lā‘ie came to be. Laniloa and Awawalei were born in Kaihuopala‘i, the former place name of Honouliuli, with two other supernatural children, an eel and a young ‘ama‘ama. From this, the ‘ama‘ama child came to all the ‘ama‘ama of Kaihuopala‘ai, and thus did it gain renown for its ‘ama‘ama. Awawalei remained in Honouliuli where she married Mokueo. Awawalei and Mokueo had children who were born to the people who owned the ‘ama‘ama, including the late Mauli‘awa and others. Mauli‘awa was among the fishermen who knew the art of making the fish multiply and make them come up to the sand. While Awawalei remained in Honouliuli, Laniloa moved to Lā‘ie where there were no ‘ama‘ama, large or small. Longing for the ‘ama‘ama, he went to visit his sister in Honouliuli asking for ‘ama‘ama. The ‘ama‘ama were divided into two groups, those that were going to Lā‘ie, and those that were staying. As Laniloa’s sister went along the shoreline in her human form, the ‘ama‘ama left Honouliuli without being seen on the surface. The ‘ama‘ama went deep under water until they passed Ka‘a‘ali‘i, then they rose to the surface. They reached Waikīkī, then went on. The sister slept at Nu‘upia and the ‘ama‘ama stopped outside of Na Moku Manu. Finally, she reached Lā‘ie, and to this day, this is the route taken by the ‘ama‘ama.

‘Ewa was famous for its ‘awa, māmaki, and for a variety of kalo called kāi‘i. In wet lowlands, it was planted in mounds, a method called pu‘epu‘e. As one went upland, mai‘a (bananas) and uhi (yams) were grown on the kula land and in the lower sections of the valleys. ‘Awa would have been cultivated deeper in the valleys along with olonā for cordage. Birds, valued as food and for their feathers, would have covered the extensive lowland forest. A large area was set aside for growing wauke and māmaki. This area was so productive that the ali‘i established their residence on the point of Waipi‘o peninsula giving rise to some of the most powerful chiefs on O‘ahu.

The cultural richness of the ‘Ewa moku may be seen through the important mo‘olelo of the origin of the ‘ulu, or breadfruit in Hawai‘i. Noted as one of the two places in Hawai‘i where the ‘ulu “is to be found,” the other being Ka‘awaloa in Kona on the island of Hawai‘i. The breadfruit of Pu‘uloa came from a mythical land in Kahiki, named Kanehunamoku. It was brought by two men of Pu‘uloa who were out fishing and, caught in a rainstorm, landed on an island only inhabited by the gods who then introduced the two me to the fruit of the ‘ulu tree.

Ethnographic interviews acknowledged the significance of the ‘Ewa region. Despite the changed environment, the ‘Ewa region is still a place of cultural significance. The ‘Ewa region was an area with many natural resources. Interviewees noted both land and marine resources, as well as fresh water and brackish water. Native plants, birds, the endangered ‘opae ‘ula shrimp *(Halocaridina rubra),* and extinct avifauna were mentioned. The interviewees agreed that sinkholes would likely be prevalent on the project lands, and that there are large caves on the ‘Ewa Plain that contain fresh water.

The interviewees shared a strong awareness of the cultural and archeological significance of the landscape and the naturally occurring sinkholes, which are present throughout the region. It was noted that the sinkholes on the ‘Ewa Plain were traditionally used for agricultural purposes, sources of fresh water, and as internment sites for iwi kūpuna. The sinkholes also are known to contain the ‘opae ‘ula as well as avifaunal remains of extinct species. The interviewees also spoke of the trails in the area, as well as military-related historic sites such as gun batteries, revetments, engines, engine sheds, plane crash sites, and pillboxes. Both traditional and historic artifacts were also mentioned including either a bait cup or kukui nut lamp, weapons, tools, bottles, and coins. Within the project area itself, an interviewee expected that sinkholes, a gun battery, and one of four ‘Ewa Field Pillboxes might be found.

Cultural practices identified during the interviews include the gathering of marine resources in coastal Kalaeloa, through fishing, diving, crabbing, and collecting limu. Sea salt was also noted as a coastal resource, and a former salt factory was located closer to the entrance of Pearl Harbor. The project region was known for its birds in the past, and artifacts that could be related to hunting birds suggest that this activity may have been practiced in the region. The area also had additional spiritual significance, as on one of the interviewees identified a “leina a ka ‘uhane” or “a leaping place of souls” that begins at “Āliamanu crater and crosses the Marine Corps Air Station Ewa-BPNAS”. The spirits leaped from there with the assistance of their ‘aumakua. Those that didn’t make it were stuck in the wiliwili grove sinkholes and caves of Kanehili and Kaupe‘a. According to Pukui et al (1974:131), “ghosts were thought to leap to the nether world” from these sites. Other spiritual practices were noted during the interviews, such as chanting and greeting, as well as visiting the landscape to reconnect to old ways. It was noted that because the area had been off-limits for a long time, it is possible that there were cultural practices carried out there before military use of the land, that are no longer known.

### *Anticipated Impacts and Proposed Mitigation*

An examination of traditional and historic land use of Honouliuli as demonstrated in mo‘olelo, historic literature, and archaeological investigations shows that this area was once a land rich in natural, as well as cultural resources. Archival research and ethnographic interviews compiled for the current study reveal that Kalaeloa is a culturally rich area. The ‘Ewa Plain is known to contain numerous modified and unmodified sinkholes which were traditionally used for agricultural purposes, sources of fresh water, and as internment sites for iwi kūpuna. The proposed Honokea Surf Village has the potential to affect natural and cultural resources located within the study area as well as affect natural resources of the vicinity of the general landscape. Awareness of this should be at the forefront to prevent any unfavorable effects from occurring as a result of the project. However, the project is not expected to block access to traditional gathering places or fishing grounds.

Ethnographic interviews yielded concerns for the project and in general for the region, however he planned Surf Village provides a positive alternative for the area. Some general concerns are the continued development of Barbers Point, with fewer areas being left as natural landscapes; that some of the archaeological surveys of the area have not been thorough; and that the Navy documents are difficult to access and obtain information. More specific concerns are that the development will impact natural and cultural resources and that the selected location is not the right place for the proposed Honokea Surf Village. Recommendations and mitigations for the project include the following:

- Conduct thorough archaeology for the project
- Explore sinkholes to look for natural and cultural remains
- Investigate even small sinkholes, filled-in sinkholes and those that do not appear culturally modified
- Conduct ground penetrating radar for filled-in sinkholes
- Prepare a preservation plan for cultural resources of the study area
- Save a part of the natural landscape to showcase the natural beauty and sinkholes
- If sinkholes do not have to be destroyed, then leave them in place
- Find a solution to lessen the impact to cultural resources
- If the surf park will be built, then save other parts of Barbers Point
- Teach visitors about the cultural significance and history of surfing
- Create a National Park in the region

Background research and oral history interviews identified archaeological resources within the project area and on the wider ʻEwa Plain. An archaeological inventory survey is recommended to determine if any surface or subsurface cultural resources remain on the property with special care to look out for sinkholes, iwi kūpuna, and historic military sites. A biological survey was recommended to identify native plants that might occur on the project site (see *Appendix D* for the survey that was conducted). The community, including but not limited to those who have a strong awareness of the cultural and archaeological significance of the ʻEwa region, should be kept informed on the construction plans, and their concerns and recommendations should be considered during all phases of the proposed work. The project lands are clearly significant in both past and present.

Honokea has had initial discussions with neighboring KHP leadership and the opportunities for and collaboration between the two projects is on-going. The core values of the KHP are to promote the stewardship and preservation of Native Hawaiian cultural sites and the cultural landscape of Kalaeloa, to educate the community about cultural traditions and practices, to advocate cultural awareness, and to implement and maintain an authentic Hawaiian presence in the Kalaeloa area. Partnership opportunities ranging from educating Honokea users about the culture and history of Kalaeloa at KHP before or during their experience at the recreation facility, to providing plantings for native flora to populate the landscaping at Honokea, to providing seedlings for a native cultural garden on site, providing guided walking tours that with a shared pedestrian access for both locations, even utilizing the cultural knowledge of traditional practices to help start limu cultivation as part of an on-site aquaculture program have all been discussed in order to determine the best way to have both projects preserve and promote the cultural heritage of Kalaeloa.

# 3.7 Archaeological Resources

An Archaeological Literature Review and Field Inspection (ALRFI) was completed by Keala Pono Archaeological Consulting, LLC in December 2021. See *Appendix F*.

### *Existing Conditions*

Numerous archaeological studies have been conducted on the ʻEwa Plan and within the Honouliuli ahupuaʻa. These studies express the complexity of Hawaiian settlement of the ʻEwa Plain, as well as the rich cultural and natural resources of the area. ʻEwa was an aliʻi (chief) stronghold and vacationing spot, as well as a fertile place for the cultivation of crops. Studies reveal a diversity of sites, including heiau, koʻa, fishponds, walls, mounds, enclosures, trails, and human burials. Historic resources also include sites associated with ranching, sugar and sisal cultivation, transportation, and the military.

The ALRFI fieldwork consisted of a pedestrian survey of 100% of the 19.361-acre project area. This was conducted on December 16, 2021. Archaeologists were spaced 5 to 10 meters apart, depending on terrain and vegetation. Much of the project area is open terrain with flat ground. Visibility was good to fair in portions of the project area, and fair to poor in other parts. The dominant vegetation consists of koa haole, mature kiawe trees, and grass.

A total of 17 archaeological sites were identified. All sites were marked with a 3-meter accurate Garmin GPS map 62st Global Positioning System (GPS) unit, and selected features were digitally photographed with a Samsung S10 Galaxy camera. Archaeological sites were given temporary site numbers with a prefix of H for Honokea, and all features were marked in pink flagging tape with a metal tag. Biodegradable orange flagging tape was used to mark survey transect boundaries. The complete list of archaeological sites identified during the ALRFI is available in *Table 3.2.*

**Table 3.2 Archaeological Sites Identified During ALRFI**

| Temp. Site Number | Description | Approx. Number of Figures | Age | Function |
|---|---|---|---|---|
| H1 | Concrete slabs, pads, cradles, asphalt roads, metal poles | 5+ | Historic | Military |
| H2 | Concrete slab, wall, sumps, drains, manhole | 9+ | Historic | Military |
| H3 | Concrete slabs, sumps, metal drain | 9+ | Historic | Military |
| H4 | Filled-in pit | 1 | Historic | Military |
| H5 | Concrete columns with thick concrete chunks, heavy rebar, metal plates | 6+ | Historic | Military |
| H6 | Concrete slabs | 5+ | Historic | Military |
| H7 | Concrete and metal push pile | 1 | Historic | Military |
| H8 | Railroad track | 1 | Historic | Military |
| H9 | Coral mound | 1 | Undetermined | Undetermined |
| H10 | Metal Posts and possible historic debris | 2+ | Historic | Military |
| H11 | Possible C-shaped structure | 1 | Undetermined | Undetermined |
| H12 | Sinkhole with stacked coral | 1 | Undetermined | Undetermined |
| H13 | Small, filled-in sinkholes with coral mounds | 5 | Undetermined | Undetermined |

| | | | | |
|---|---|---|---|---|
| H14 | Historic debris | 1 | Historic | Military |
| H15 | Historic push pile with concrete column | 1 | Historic | Military |
| H16 | Concrete debris | 1 | Historic | Military |
| H17 | Metal debris | 1 | Historic | Military |

In addition to the archaeological sites listed in *Table 3.2,* 12 unmodified sinkholes were noted, given numbers prefixed with S for sinkhole, and mapped with GPS. While these sinkholes show no evidence of human modification and do not appear to be habitable, extinct bird remains and other faunal material, human burials, historic material, and agricultural deposits have been found during excavation of sinkholes elsewhere on the ʻEwa Plain. A complete list of sinkholes is available in *Table 3.3.*

**Table 3.3 Unmodified Sinkholes Identified During ALRFI**

| Sinkhole Number | Description |
|---|---|
| S1 | Natural crack in the coral shelf |
| S2 | Sinkhole with a straight, round shaft |
| S3 | Well-like sinkhole with a straight shaft |
| S4 | Sinkhole with a straight shaft |
| S5 | Two small sinkholes, one filled in |
| S6 | Sinkhole with a straight shaft |
| S7 | Small filled-in sinkhole |
| S8 | Small sinkhole with a straight shaft |
| S9 | Sinkhole with a straight shaft |
| S10 | Sinkhole with a small opening that may lead to a larger chamber |
| S11 | Large sinkhole that is inaccessible but appears to run laterally |
| S12 | Large sinkhole that is inaccessible but appears to run laterally |

### *Anticipated Impacts and Proposed Mitigation*

The ALRFI identified 17 archaeological sites on TMK: (1) 9-1-013:068. The sites are comprised of at least 51 individual features and are mostly historic military remnants, given the intensive military useage of the BPNAS. In addition, 12 sinkholes were documented. While sinkholes are unmodified and not habitable, excavation might reveal past usage or the remains of extinct fauna.

Based on the previous archaeological documentation and the findings of the ALRFI, an Archaeological Inventory Survey (AIS) is recommended prior to any future ground disturbance, to fully document the sites and sinkholes on the Project parcel. The purpose of the AIS is to determine the presence, nature, and extent of archaeological resources in the area of planned improvements; evaluate their significance; and ensure compliance with the National Historic Preservation Act of 1966, as amended, Chapter 6E of Hawaiʻi Revised Statutes, and the guidelines established by the State Historic Preservation Division (SHPD). Hawaii Cultural Resource Information System (HICRIS) Project Number 2022PR00504 was opened in April 2021. Discussion with the SHPD is on-going, and additional testing will be conducted to ensure resources are appropriately evaluated for historical significance, and preserved and mitigated as required.

Based on the current archaeological information and design, the preliminary design of the Honokea Surf Village has taken into account the distribution of temporary sites identified at the site. If identified sites are found to be historically significant, these sites will continue to be evaluated under appropriate mitigation provided by SHPD. Depending on what SHPD recommends as appropriate mitigation, there may be a need for other mitigation plans prior to construction. During construction, in the event that any previously unidentified historic sites or remains are encountered during construction phases, work in the vicinity of the remains should cease immediately and the SHPD should be contacted. Work in the area would then be suspended until further recommendations are made for the appropriate treatment of cultural materials.

## 3.8 Socioeconomic Characteristics

*Existing Conditions*

The project site lies within an Opportunity Zone and rural development area, an area at the center of City and State revitalization efforts. Opportunity Zones are a new community development program established by the U.S. Congress in the Tax Cuts and Jobs Act of 2017 to encourage long-term investments in low-income urban and rural communities nationwide. Its stated purpose is to encourage entrepreneurship and expansion capital for distressed areas.

The Opportunity Zones program provides a tax incentive for investors to re-invest their unrealized capital gains into Opportunity Funds which are the private sector investment vehicles that invest in Opportunity Zones. U.S. investors currently hold trillions of dollars in unrealized capital gains in stocks and mutual funds alone—a significant untapped resource for economic development. The fund model will enable a broad array of investors to pool their resources in Opportunity Zones, increasing the scale of investments going to underserved areas. Notably, Opportunity Zones are a federal program that uses the federal tax code for investor incentives. These are all incentives for private investors of the Surf Village. The State's role is to nominate the census tracts for the program and then according to the guidance received from the National Governors Association (NGA), to market and be a source of information for the program such as through outreach and state economic development websites. The Opportunity Zones program is intended to lead to neighborhood and business district revitalization as well as encourage entrepreneurship in these designated areas. Examples include gentrification of distressed areas, new housing developments, expansion funding for businesses, new developments in underdeveloped areas, e.g., shopping centers, manufacturing plants, business offices.

In addition, Honokea would lease the property from the state, which would generate additional lease revenue for HCDA to support its own programming, staffing, and funding.

Honokea Surf Village is located in within census tract 85.02 (Kalaeloa). Adjacent tracts 9803 (Campbell Industrial Park), 84.08 (Hoakalei Country Club), 84.10 (Coral Creek Golf Course), 84.11 (Geiger Road), 86.17 (Ewa Villages), 115 (Kapolei), 86.09 (Ko-Olina-Honokai Hale), and 86.10 (Ko Olina Resort) were also used for the area socio-economic characteristics. In total, the nine census tracts contain a population of approximately 32,924 people and approximately 10,118 housing units. The Kalaeloa census tract has a population of approximately 2,491 people.

According to the 2020 American Community Survey, majority of the civilian employed population over the age of 16 work within nine census tracts work in either the Educational Services; Health Care and Social Assistance; Public Administration; or Arts, Entertainment, and Recreation industry. In combination, the median income ranges from approximately $61,579 to approximately $129,564. The median income in census tract 85.02 is approximately $61,579.

Within census tract 85.02, a very small percentage, approximately 9.8% of the total population, indicate they work from their place of residence, whereas the other approximately 90.2% of the total population work outside their place of residence. Residents within census tract 85.02 have a mean travel time to work of approximately 45 minutes. These statistics show there is a healthy population in the area that travel far distances for work.

Due to the potential of the project, the Honokea Surf Village has the support of the Hawai‘i Legislature. Honokea LLC was able to secure $95 million (M) in special purpose revenue bond authority from the State of Hawai‘i to assist in planning, designing, constructing, reconstructing, renovating, acquiring, equipping, and improving surf industry center facilities at Honokea. The bill was approved by the Legislature and signed into law as Act 120 in June 2021. This bond bill authorizes State of Hawai‘i tax-free revenue bond authority as a financing tool for the project. The bonds require no capital from the State as this is private capital and poses no financial risk to taxpayers (the returns are guaranteed by the project). It demonstrates the State of Hawai‘i’s commitment to see this project happen from the highest level.

The development of the Surf Village will advance the State's interest by promoting Hawai‘i’s surfing and film industries while also supporting cultural education, smart tourism, and economic development. According to Act 120, other benefits the legislature expects from the surf center include:

1. Supporting local surf-related businesses by allowing the State to remain a leader in surfboard design, manufacturing, and testing;
2. Providing employment opportunities and opportunities as an outdoor venue destination that promotes an awareness of surf history and its cultural heritage.
3. Providing an artificial surf facility to serve as a training and meet venue, including the use of the facility for future Olympic training, and as a design testing facility; and
4. Providing a world-class surf and aquatic film studio to support and attract local, national, and international film projects.

The entire project is designed to maximize social and community impact by creating over 200 short-term jobs in site preparation and construction, and 150 long-term jobs with operations, reducing the commute time for those that live in the community. The Honokea Surf Village will provide a platform for local retailers, the local surf manufacturing industry and film industries. It encourages healthy living through food, activity, family, and sports. The project will partner with local educational organizations to encourage progressive educational opportunities in engineering, sustainability, wellness, medicine, entertainment, and Hawaiian surf history.

### *Anticipated Impacts and Proposed Mitigation*

The buildout of the Honokea Surf Village has no foreseeable negative impacts on the residential population of the area. There are no permanent residential units being developed in conjunction with the Honokea improvements, however there are cabins to accommodate overnight stays by guests. The cabins are not planned for permanent residential housing, and therefore it is not anticipated the camping and cabins will affect land and housing speculation, property values of area homes, or affordable housing in the area.

The Honokea Surf Village is anticipated to generate approximately 200 jobs including site work and general construction. The generation of short-term construction will provide short-term economic benefits resulting from site preparation and construction needed. Construction will be completed by a local contractor.

Over the long term, the Honokea Surf Village is anticipated to generate approximately 150 full-time jobs. The operation jobs, as well as additional professional training, surf industry related (surfboard shaping) and associated film industry-related jobs generated at the Honokea Surf Village will be a positive addition to the Kalaeloa economy and support growth of the second city in Kapolei.

Overall, the buildout of the Honokea Surf Village will provide additional benefits for the community by promoting Hawai'i's surfing and film industries while also supporting cultural education, smart tourism, and economic development. Other benefits with the Honokea Surf Village include:

1. Supporting of local surf-related businesses by allowing the State to remain a leader in surfboard design, manufacturing, and testing;
2. Providing employment opportunities and opportunities to promote awareness of surf history and its cultural heritage;
3. Providing an artificial surf facility to serve as a training and meet venue, including the use of the facility for future Olympic training, and as a surfboard and fin design testing facility; and
4. Providing a world-class surf and aquatic film studio to support and attract local, national, and international film projects.

Health and recreational benefits are also anticipated, as many from keiki to kūpuna can experience and learn surfing in a safe, controlled environment, in a facility with amenities and other related activities for the entire family.

## 3.9 Visual Resources

### *Existing Conditions*

The project site is undeveloped and covered by kiawe and koa haole trees with open areas of disturbed ground. Views from the existing driveways and access roads along Coral Sea Road associated with the navy engine test cell are shown in *Figures 3.14 to 3.14c.*

Relevant local planning guidelines and objectives uphold the importance for 'Ewa to focus on providing a second urban center for O'ahu with its nucleus in the City of Kapolei and protecting scenic views and natural, cultural, and historic resources. Prominent landforms such as Pu'u O Kapolei and Pu'u Pālailai should be protected and maintained as natural visual features and regional landmarks.

### *Anticipated Impacts and Proposed Mitigation*

A landscape plan for the Honokea Surf Village has been prepared and includes a variety of native plant species that will improve the existing landscape and visual resources at the project site. Grading will be accomplished to support the planned facilities at the Honokea Surf Village. Permanent structures and facilities included in the plans for the Honokea Surf Village will be lower than 28 ft in height, and no major views will be impacted by the planned facilities. Existing natural landmarks will not be affected by the addition of the Honokea Surf Village. Scenic views in the vicinity of Kalaeloa and Kapolei will not be altered by any of the facilities.

Open space will be retained and enhanced in the area surrounding the new facilities. Open space is a key element of the setting and character for these facilities, and the existing open space of the surrounding lands and road frontage will remain. Aesthetic quality of the area will be maintained and improved with the new and updated facilities, including new landscaping.


**Figure 3.14** **Honokea Photo Key**

**Figure 3.15a** **Main Driveway (1)**

**Figure 3.15b** **South Driveway (2)**


**Figure 3.15c** **Intersection of Coral Sea Road and Long Island Street (3)**

# 3.10 Utilities

A PER evaluating the existing infrastructure and utility systems at the site was prepared by G70 in March 2022 and is included as *Appendix A.* The following section provides key highlights and assesses potential impacts of infrastructure and utility needs.

### 3.10.1 Water

*Existing Conditions*

Potable water service may be available onsite based on record drawings from U.S. Navy records at the time of base closure (2010) showing an 8-inch waterline and two fire hydrants (*Figure 3.16)*, although no hydrants or water meter were located during the topographic survey.

A 12-inch diameter main runs along Coral Sea Road at the eastern edge of the site. The main is part of a network of water lines installed by the Navy. There are two, one-million-gallon water tanks and a well located mauka of Farrington Highway in Kapolei and a 24-inch water line that runs south along Kapolei Golf Course and into Kalaeloa near the intersection of Coral Sea Road and Roosevelt Avenue.

Hawai‘i Water Service (HWS) operates the area water system and suggested the local static pressure is about 60 pounds per square inch (psi). Hawaii Water Service is a private utility company that owns and operates the Kalaeloa water system under regulation of the State DOH as a public water system.

The project site is currently not equipped with a non-potable water service system.


**Figure 3.16** **Existing Regional Water Infrastructure**

### *Anticipated Impacts and Proposed Mitigation*

Water demand management is a complex combination of water demands encountered on different time scales. Among those are daily domestic demands of associated features within the Honokea Surf Village including cabins, restrooms, employee and administrative uses, food establishments, evaporative loss make-up, operational losses, filter backwash and salinity control; versus a yearly water feature of initial and periodic refilling. Water demand is further complicated by considerations to reclaim, store and re-use graywater for irrigation and non-potable uses. The estimated daily water demand for the buildout of the Honokea Surf Village is provided in *Table 3.4*.

**Table 3.4 Daily Water Demand**

| Feature | Potable/Non-potable | Water Demand (gpd) |
|---|---|---|
| Domestic Use | Potable | 60,000 |
| Water Features | Potable | 56,000 |
| Landscaping | Non-potable | 20,000 |
| | Total | 136,000 |

The Surf Lagoon, which will require the largest water demand, is projected to demand 6,870,000 gallons of potable water for its initial filling and periodic filling which will occur biennially. For safety all swimming areas will use potable water and comply with DOH swimming pool requirements. Although the estimated water demand may shift as the site design progresses, a detailed breakdown of the water demand for the Honokea Surf Village is located within the PER in *Appendix A*.

Based on the estimated water demand, two connections to the 12-inch water main along Coral Sea Road are proposed. Each connection may be made through an 8-inch x 2-inch factory manual meter and backflow preventer. The proposed connections will provide redundancy in the event on an on-site service interruption. Additionally, a looped perimeter water line with branches to various demand points is proposed, with additional branches to provide water to the Camp Cabins, and to structures and Surf Lagoon equipment on the west side of the site. Guest-accessible water features, plus cooking and domestic uses will be potable water, supplied by HWS. Actual water meter size will be reviewed during project design as it continues to progress and must conform to HWS requirements.

Actual water meter size will be reviewed during project design as it continues to progress and must conform to HWS requirements. Informal discussion with purveyor HWS suggests large water demands (e.g., water feature refilling) may be made available over a multi-day period, subject to maximum allowable water meter flow and State-imposed source pumping rate restrictions. The daily water consumption for domestic use in its estimated range is currently available from HWS. A formal water service request must be made to HWS to secure a one-year water commitment, which may be extended with HWS concurrence (if facility charges are paid) for an additional two years.

The Applicant is committed to reducing potable water demand for the project and will continue to develop feasible and practical reduction strategies through the design and permitting process. Additionally, the Applicant understands the Honokea Surf Village must be sensitive to recent events surrounding potable groundwater source contamination, usage restrictions imposed at the HWS source wells, water demand of other users of the HWS system, potential well closures and the overall cost of water. To ensure the potable water demand for the Honokea Surf Village will reduce impacts and negative effects to water users in the Kalaeloa area, water demand reduction strategies have

been implemented into the design and buildout of the Honokea Surf Village. Water demand reduction strategies include:

- Water recirculation at water features
- Climate-appropriate landscaping
- Use of high-efficient/low flow fixtures
- Capture and recycling of rainfall runoff
- Capture, storage and recycling of non-potable water into the Camp Cabins pool for irrigation
- Drilling and use of on-site brackish water wells for irrigation

By implementing water conservation measures, water features within the Honokea Surf Village can be recirculated to limit potable water makeup to evaporative losses and periodic maintenance drill/refill events. Irrigation demand could be limited to 16,000 gpd with careful selection of native plant species. Overall, implementing water conservation measures may result in a 30% reduction of domestic, pool, and irrigation water demand. *Table 3.5* provides a breakdown of the water demand and the range of reduction with the proposed water conservation measures.

**Table 3.5 Water Conservation Measures and Projected Potable Water Reduction**

| Demand Type | Expected Potable Demand | Wastewater Reduction Method | Range of Reduction |
|---|---|---|---|
| Domestic | 60,000 gpd | Low flow fixtures | 20% - 30% |
| Pool | 56,000 gpd | Rainwater -> Camp Cabins Pool | 0% - 5% |
| Irrigation | 20,000 gpd | Graywater | 80% |
| | | Rain | 20% |
| | | Brackish Water Wells: | Up to 100% |
| | | 1 Well | 50% |
| | | 2 Wells | 50% x2 |
| Total | 136,000 gpd | | Up to 30% |

However, water reduction strategies are subject to review and approval by State and City agencies, including the DOH, WWB, and the City DPP. As such, as the design of the project continues to progress, the Applicant will consult with the appropriate agencies to ensure water reduction strategies may be implemented with the project.

HWS has been consulted with about the proposed Honokea Surf Village. Notably, initial conversations with HWS indicated that the water demands presented by the Honokea appeared reasonable, within the range available from HWS at this time, and less than what was originally anticipated by HWS, prior to additional water demand reduction strategies. Furthermore, HWS suggested large water demands (e.g., water feature refilling) may be made available over a multi-day period, subject to maximum allowable water meter flow and State-imposed source pumping rate restrictions. As the design of the project continues to progress, a formal water service request with the estimated water demand and water meters will be prepared and submitted to HWS to secure the reservation as well as pay the applicable facility charges. The Applicant understands HWS reserves the right to conduct further analysis, particularly on the 7 MG tank fill and maintenance draining and refilling.

Based on the Board of Water Supply (BWS) *Water System Standards,* which HWS generally follows, the Honokea Surf Village should be provided with a fire flow of 2,000 gallons per minute for a 2-hour fire duration (a total of 240,000 gallons) via fire hydrants spaced no greater than 250 ft apart. Two plans have been prepared to provide an appropriate amount of water at an appropriate static pressure to the Honokea Surf Village. The first option would be to draw water from the 12-inch potable water main along Coral Sea Road. To adequately supply 2,000 gallons per minute (gpm) at a static pressure of 60 psi, a 12-inch diameter or larger looped fire service line will need to be installed throughout the project site. HWS would need to approve of this plan as water would be drawn from HWS' water line. The second option would be to provide a fire water supply from on-site water features. The fire water supply provided from water features will not contain potable water. Pumping water from on-site may reduce piping sizes, however, an on-site pumping station with a duplex of 2,000 gpm designed to be immune to the potentially brackish fire water supply will need to be included in the site design.

On-site fire protection and water supply systems will be designed according to the Fire Code, NFPA, 1. Based on the NFPA, 1, an approved water supply must be provided within 150 ft of all building exteriors (450 ft if provided without an automatic fire sprinkler system), however, water supply systems may be supplied by non-potable water. The required fire flow will be determined according to the NFPA, 1, based on occupancy, type of construction, and separation from other structures, and there must be a residential pressure of at least 20 psi.

As the design of the Honokea Surf Village continues to progress, the HFD will be consulted with on the design of the Honokea Surf Village. The placement and spacing of fire hydrants may be modified depending on the spacing of structures, the type of construction, and the use of fire sprinklers, which will continue to be developed. Notably, the water system planned to serve the site is a completely separate physical system from the Navy's water system at Red Hill. No pipes connect the HWS system to the Red Hill contaminated Navy system.

### 3.10.2 Wastewater

#### *Existing Conditions*

HWS operates the area sanitary sewer system and advises that no gravity sanitary sewage collection system serves the project site or adjacent TMK properties.

An 18-inch diameter sewer force main from a pump station at the United States Coast Guard (USCG) station collects sanitary flows from the majority of the central area of Kalaeloa, runs mauka in Coral Sea Road fronting the project site and discharges to a gravity collection system leading to the City's Honouliuli Wastewater Treatment Plant (*Figure 3.17)*.

#### *Anticipated Impacts and Proposed Mitigation*

Wastewater

Based on the estimated water rates and total number of daily users plus staff, the total daily domestic wastewater generation is estimated at approximately 50,000 gpd. A detailed breakdown of the wastewater generated at the Honokea Surf Village is located in the PER, *Appendix A.*

It would be cost prohibitive to run a gravity line down approximately 7,000 linear feet from the project site to the existing pump station located at the USCG facility makai of the airport. Such a sewer line would be privately owned but would need to be run within DOT-owned right-of-way in Coral Sea Road, and also need to traverse private property at the USCG station. Such agreements would be challenging

to obtain, in addition to the cost involved. Therefore, two plans to dispose of wastewater at the project site are currently proposed. The first plan includes an on-site gravity collection system consisting of three new wet wells and duplex pump lift stations, with the last station output engineered to accommodate the pressure profile information of the force main connecting to the sewer force main along Coral Sea Road. Wastewater lift stations are facilities designed to move wastewater from lower to higher elevation through pipes. Typically, lift stations have capacities ranging from 20 gallons per minute to more than 100,000 gallons per minute. This entire system would include off-line storage to allow for a temporary emergency lift station or force main shut down.

The alternate plan would be to collect and treat wastewater on-site *(Figure 3.18)* and dispose wastewater to infiltration beds or injection wells. On-site wastewater treatment and re-use of graywater or treated recycled water will meet applicable Department of Health requirements and guidelines under HAR, Section 11-62. The maximum re-use and recycling of water must be considered to reduce the treatment and disposal of quantities. Disposal of wastewater on-site would likely occur through shallow infiltration beds for the wastewater treatment works. The design of injection wells to treat wastewater on-site is located in *Appendix A.*

To ensure seepage into groundwater resources are not encountered, HWS will periodically examine the pipes for leaking. Additionally, it is recommended routine maintenance at Honokea Surf Village include inspection of privately own piping.

Implementing wastewater reduction strategies is projected to re-use approximately 50% of wastewater generated at the site. *Table 3.6* provides a breakdown of the range of wastewater reduction with the proposed wastewater conservation measures.

**Table 3.6 Wastewater Conservation Measures and Projected Wastewater Reduction**

| Demand Type | Expected Wastewater Demand | Wastewater Reduction Method | Range of Reduction |
|---|---|---|---|
| Wastewater | 50,000 gpd | Graywater Capture and Re-Use | 50% |
| | | Low Flow Fixtures | 20-30% |
| | | On-Site Treatment and Disposal | 100% (If Required) |
| Total | 50,000 gpd | | Up to 50% |

Periodic drainage of water features at the Honokea Surf Village is anticipated to occur for maintenance, repair, and replacement of equipment, and thereby require disposal of water. Water feature filter backwash will also result in daily disposal approximated to be 500 gpd. Disposal is proposed to be routed to other water features on-site that may be designed with additional holding capacity, or dispose to on-site injection wells of infiltration structures. All water will be filtered and de-chlorinated prior to disposal.

As the site plan progresses, which will provide a better analysis of the overall water budget and disposal options, gray and black wastewater streams may be treated separately or combined. As there are no drainage or sanitary wastewater facilities outside the site, the overall requirement is to collect and dispose sanitary wastewater to the Coral Sea Road force main; while graywater, pool filter backwash, and pool waters may be disposed on-site to infiltration facilities, or captured, treated, stored, and re-used.

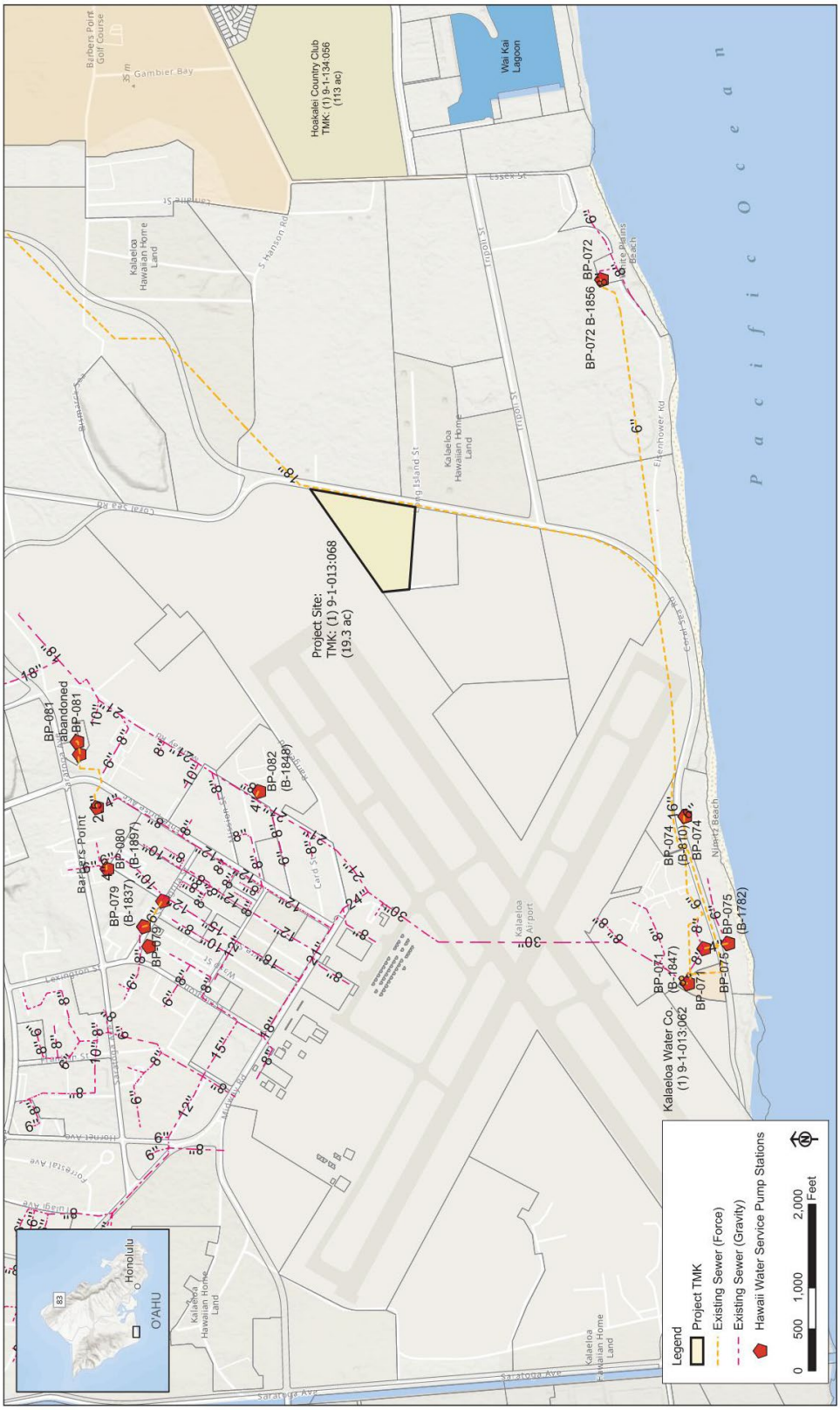


**Figure 3.17** **Existing Regional Sewer Infrastructure**

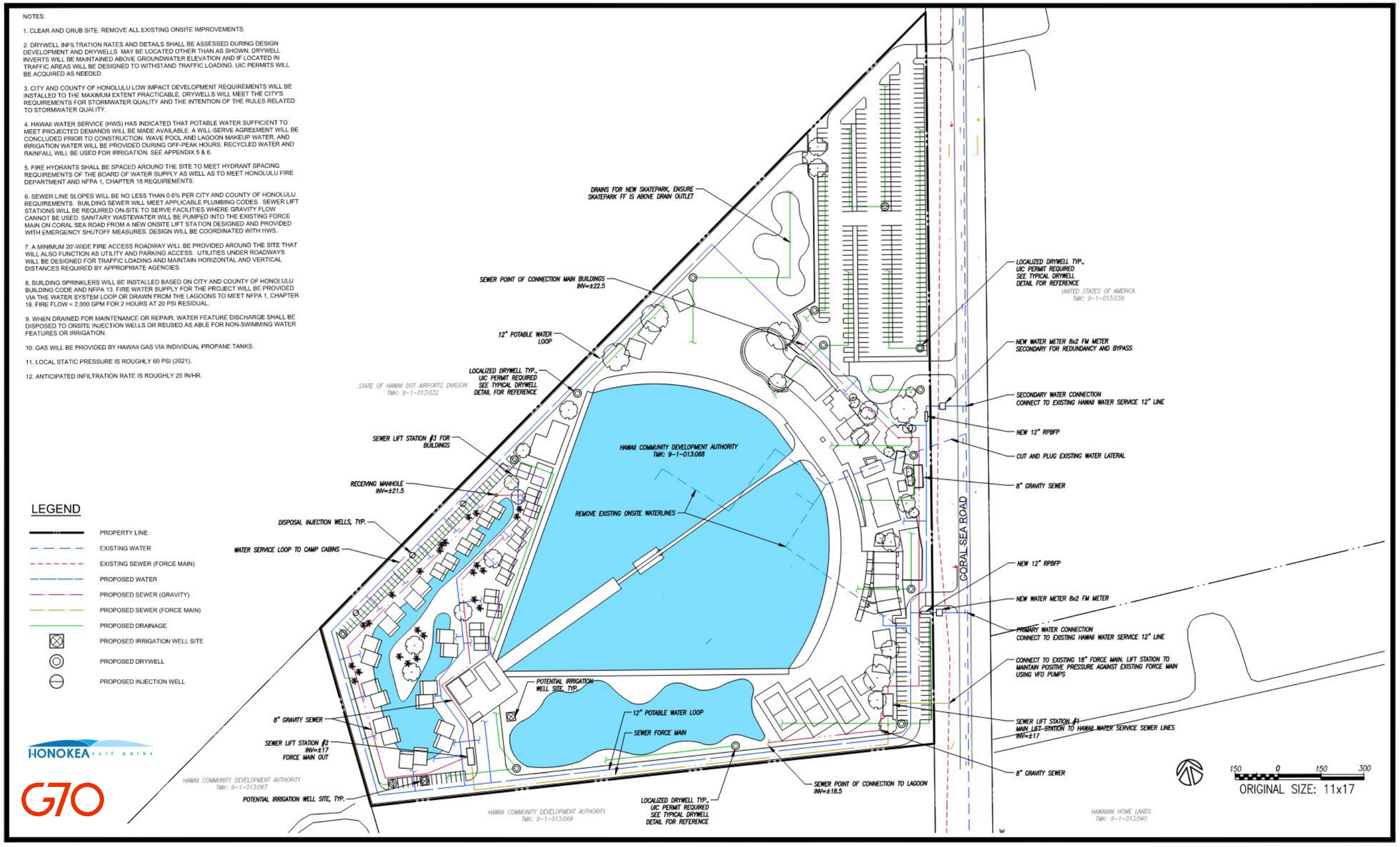


**Figure 3.18** **Concept Utility Plan**

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### 3.10.3 Solid Waste Disposal

*Existing Conditions*

The project site is currently undeveloped and there is currently no refuse collection service at the project site.

*Anticipated Impacts and Proposed Mitigation*

During the construction and buildout of the Honokea Surf Village, waste generated at the project site will be properly transported and discarded at the private landfill. Refuse created after the project becomes operational will be collected by a private refuse service. Recycling will occur whenever possible.

### 3.10.4 Power and Communications

*Existing Conditions*

The roadways surrounding the project site contain many Naval Facilities Engineering Systems Command Hawai'i (NAVFAC-HI) electric distribution lines, Naval Computer and Telecommunications Area Master Station Pacific (NCTAMS) communication lines as well as lines owned and maintained by Hawaiian Telcom and Spectrum. The latter utility companies were allowed to utilize the NAVFAC-HI poles to provide service to the military housing. Notably, as a result of the BRAC process, Coral Sea Road was conveyed to the State DOT.

In 2017, ASEF, in conjunction with Hawaiian Electric (HE), built a hybrid overhead and underground 12 kV distribution line along Coral Sea Ave. to interconnect ASEF's PV energy generating facility located on TMK No. 9-1-013:010 with HE's distribution system along Renton Road (parallel and adjacent to Roosevelt Ave.). This 12 kV distribution line would be a possible point of service connection for the Honokea Surf Village. HE will be evaluating their current 12 kilovolt (kV) and 46 kV circuit capacities and the overall service demand for the Honokea Surf Village to decide as to the appropriate line to supply electrical services to the Surf Village

*Anticipated Impacts and Proposed Mitigation*

As the site plan and design for the Honokea Surf Village progresses and the service request for electrical services are submitted to HE, HE will be able to determine the service voltage needed to support operations at the Honokea Surf Village. An analysis of potential connections to the current 12 kV and 46 kV distribution line in support of the Honokea Surf Village is discussed below.

The previously mentioned ASEF II 12 kV distribution line may provide electrical services to support the Honokea Surf Village. For the Honokea Surf Village to connect to the 12 kV line, HE would likely require an underground duct system along Coral Sea Road to connect to a riser on two different distribution utility poles. The underground duct system would provide redundancy in case a vehicle hits one of the utility poles.

In addition to the 12 kV distribution line, a larger, combined PV energy generating, and battery energy storage system (BESS) facility is located along Coral Sea Road. This facility the 12 kV overhead line and placed a new 46 kV underground duct system along Coral Sea Road. Interconnected with HE's system, the facility generates 46 kV. To connect the Honokea Surf Village to the 46 kV service

connection, it is anticipated that HE will require an underground extension from one of the 46 kV manholes being placed by the PV/BESS facility developer within the Coral Sea Road right-of way. Additionally, if the Honokea Surf Village is connected to the 46 kV service connection, a dedicated substation on-site at the Honokea Surf Village will be required. The PV energy generating and BESS facility along Coral Sea Road are privately owned and maintained. Although a Unit Operating Agreement with DOT will be secured for the ductline and the 46 kV cables within, written permission from the owner of the PV/BESS facility must be secured to access electrical services from this line.

An underground duct system will need to be placed within Coral Street Road and connect to one or more of the existing utility poles to enable extension of Hawaiian Telcom and Spectrum services at the project site. If HE determines a substation will be needed, the substation should be at minimum 5,000 sf and its location will be dependent upon accessibility and proximity to structures within the Surf Village.

HE will determine whether the Honokea Surf Village will be connected to the 12 kV or 46 kV service lines when the service request is finalized. To provide electrical services on-site, a HE distribution transformer is proposed along the Coral Sea Road frontage to supply and distribute electrical services on-site. The proposed transformer will service the Beach Promenade and Family Zone. It is anticipated facilities within the Beach Zone and Family Lawn will demand approximately 600 kilovolt-ampere (kva) to support building loads, area and parking light loads, and ancillary mechanical equipment loads for the irrigation system and sewerage systems. A second transformer is proposed to be located near the Surf Lagoon Equipment Building at the southwest corner of the project site. This transformer would serve the Surf Lagoon, Adventure Lagoon, and Surf Camp, with an anticipated demand of approximately 2,500 kva. The second transformer would service the Surf Lagoon, building loads, area and parking lighting loads, and ancillary mechanical equipment loads for the irrigation system and sewerage system.

To extend off-site conduits to the two distribution transformers at the project site, an underground electric and communications distribution system is planned. Depending on the design of the telecommunications system at the Honokea Surf Village, the underground distribution system will connect to each building's main communication rooms via a private underground communications duct system, extending communications facilities to the individual buildings throughout the Surf Village.

In addition to the distribution transformers on-site, HE will likely require easements and equipment pads for two switchgears along the Coral Sea Road frontage and an equipment pad for the distribution transformer. Due to the anticipated demand for the transformer located near the Surf Lagoon Machine Room, the switchgear may be an S&C Vista type with a larger footprint than the switchgears placed along the Coral Sea Road frontage.

To reduce the demand for electrical services and as part of the Honokea Surf Village's sustainable design strategies, PV panels are proposed on buildings, walkways, and potentially over parking areas. Initial analysis predicts that the PV panels will produce over 1.0 MW of energy. PV structures and a Power Purchase Agreement through a solar provider may be considered. Battery storage in addition to the PV generation would be included. Electrical equipment and motors would be fitted with soft-start capabilities to function with batteries and PV generation. The Honokea Surf Village utilizes sustainable design strategies, including building orientation to capture wind, orienting major facades away from the path of the sun, natural ventilation, large overhangs and landscaping for solar shading, and vegetated cooling, to reduce energy consumption throughout the project.

### 3.10.5 Gas Services

*Existing Conditions*

The project site is currently not equipped with piped gas services.

*Anticipated Impacts and Proposed Mitigation*

Gas service is anticipated to be required to support the buildout of the Honokea Surf Village and may be supplied through point-of-use refillable propane tanks from Hawai‘i Gas.

## 3.11 Roadways, Access and Traffic Conditions

A Mobility Analysis Report (MAR) for the proposed Honokea Surf Village was conducted by Fehr & Peers (April 2022). The MAR assesses the effects the proposed project on the surrounding transportation system conducted per the requirements of the State DOT, Highways Division as well as the City Department of Planning and Permitting (DPP), Transportation Review Branch (TRB). The MAR also provides input on required transportation infrastructure and multi-modal facilities providing access to the site. The MAR is attached as *Appendix G.* The findings from the MAR are described below.

*Existing Conditions*

Access to the project site is provided by Franklin D. Roosevelt Avenue with local access provided by Coral Sea Road. Franklin D. Roosevelt Avenue is a two-lane undivided collector road extending from west of Kamokila Boulevard to Essex Road; further east of Essex Road, the facility is designated as Geiger Road. Planning efforts for the roadway cross-section is under the auspices of the DPP TRB. Coral Sea Road is a two-lane local road serving between Roosevelt Avenue and Solomons Road. Coral Sea Road provides access to a number of beach areas including Nimitz Beach, Eisenhower Beach, and White Plains Beach (via Tripoli Road), as well as southern access to the Kalaeloa Airport and USCG Air Station Barbers Point. The DOT Highways Division currently maintains jurisdiction over Coral Sea Road. Both roadways have posted speed limits of 35 mph and do not allow for on-street parking. Notably, HCDA currently maintains land use planning authority within the Kalaeloa community.

TheBus operated by the O‘ahu Transit Service provides bus services via Route 41, which serves the area between Kapolei and ‘Ewa Beach. The nearest bus stop is located at the intersection of Coral Sea Road and Franklin D. Roosevelt Avenue, approximately 1.3 miles north of the project area. The distance to the nearest bus stop is well beyond the typical ½-mile maximum walking distance for most people to use transit. Service via Route 41 is provided approximately every 30 minutes on the weekdays and approximately 60 to 75 minutes on the weekends.

Pedestrian facilities including crosswalks, curb ramps, and pedestrian signals at signalized intersections are not provided on either side of Coral Sea Road. Additionally, Coral Sea Road does not contain bicycle facilities or signage for cycling routes. Although Coral Sea Road does not contain sidewalks or bicycle facilities, during the field observation, a small number of pedestrians were observed walking on the grass shoulders on both sides of Coral Sea Road and several bicyclists were observed riding along the shoulders of Coral Sea Road.

Field observations were recorded at the existing intersection of Franklin D. Roosevelt Avenue and Coral Sea Road on February 11, 2022. Based on the intersection turning movement counts, the AM peak hour traffic in the study area occurs from 7:15 and 8:15 AM and the PM peak hour occurs between

4:00 and 5:00 PM for the study intersection. Roadway segment counts were collected between February 9 and February 15, 2022 on Coral Sea Road. Roadway segment counts are used to compare vehicle activity on weekdays and weekends along Coral Sea Road. *Table 3.7* provides a breakdown of the traffic volume on Coral Sea Road throughout the week.

**Table 3.7 Segment Volumes on Coral Sea Road**

| Weekday | Average Daily Traffic[a] |
|---|---|
| Monday | 3,203 |
| Tuesday | 3,152 |
| Wednesday[b] | 2,817 |
| Thursday | 2,761 |
| Friday | 3,757 |
| Saturday | 4,390 |
| Sunday | 3,283 |
| Average Weekday Volume | 2,910 |
| Weekday Adjustment Factor | +3% |

a Data collection between February 9 and February 15, 2022

b Intersection volumes collected on Wednesday

The average weekday volume was identified to be 3% more than the average Wednesday (intersection data collection day). Therefore, existing volumes at the study intersection were increased by 3% to represent an average weekday.

The highway capacity analysis performed in this MAR is based upon procedures presented in the Highway Capacity Manual 6th Edition (HCM), published by the Transportation Research Board. HCM describes the Level of Service (LOS) as a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. HCM defines the six (6) Levels of Service from the traveler's perspective, ranging from ideal or free-flow traffic operating conditions at LOS "A" to unacceptable or potentially congested traffic operating conditions at LOS "F" *(Table 3.8).* The State DOT strives to maintain LOS "D" intersection operations for State facilities. The State DOT typically defines a significant intersection impact when the operation of an intersection or turning movement changes from LOS "D" or better to LOS "E" or "F."

**Table 3.8 Level of Service Criteria**

| LOS | Control Delay (sec/veh) | Description |
|---|---|---|
| A | < 10 | Control delay is minimal. |
| B | > 10 – 15 | Control delay is not significant. |
| C | > 15 – 25 | Stable operation. Queuing begins to occur. |
| D | > 25 – 35 | Less stable condition. Increase in delays, decrease in travel speeds. |
| E | > 35 – 50 | Unstable operation, significant delays. |
| F | > 50 | High delays, extensive queuing. |

The results of the existing LOS at the intersection of Franklin D. Roosevelt Avenue and Coral Sea Road are presented in *Table 3.9.*

**Table 3.9 Existing Intersection Level of Service**

| Study Intersection | Traffic Control | Peak Hour | Existing (2021) Conditions | |
|---|---|---|---|---|
| | | | Delay[a] | LOS |
| Franklin D. Roosevelt & Coral Sea Road | Side Street Stop Control | Weekday AM | 21.6 | C |
| | | Weekday PM | 21.7 | C |

a Vehicle delays are reported for the northbound left-turn movement as the most critical movements

Results from the LOS analysis indicate that the study intersection operates at a desirable service level (LOS C or better) during both AM and PM peak periods. Additionally, field observations indicated that traffic moves well throughout the study area during AM and PM peak hours. No significant vehicle queues were observed during the field visit along Coral Sea Road.

### *Anticipated Impacts and Proposed Mitigation*

Evaluating the potential impacts of traffic generated by the proposed Honokea Surf Village on the surrounding street system first required developing estimates of future traffic conditions in the area without the proposed project. Baseline traffic conditions without the project reflect traffic increases due to regional growth and development. This scenario is referred to as baseline or "no project" conditions. The forecasted future traffic volumes were then used as a baseline to identify impacts on the roadway system from the proposed project. Forecasted future traffic conditions also accounted for planning documents that identify developments or future construction projects that are expected within the study area.

Planning documents indicate that some roadway segments in Kalaeloa will be widened to accommodate future planned development. At this time, however, no future capacity improvements are currently funded or planned for construction within the timeframe of the proposed project opening year of 2024. Therefore, no change was assumed in the condition of roadway infrastructure near the project. To project future baseline traffic volumes into the year 2024, a growth factor was applied to existing traffic volumes. A background annual growth rate of 1% was used. The growth rates were compounded over the three-year timeframe (2022 to the end of 2024) and applied to the existing intersection turning movement traffic volumes. Using the annual growth rate over the three-year time frame and the existing lane configurations and traffic control, the LOS for the intersection at Franklin D. Roosevelt and Coral Sea Road were projected without the buildout of the Honokea Surf Village and are presented in *Table 3.10* and *Figure 3.19*. Because little or no new development is anticipated along the Coral Sea Road corridor, application of the growth factor to volumes using Coral Sea Road results in conservative volume estimates.

**Table 3.10 Baseline (2024) No Project Intersection Level of Service**

| Study Intersection | Traffic Control | Peak Hour | Baseline (2024) Conditions | |
|---|---|---|---|---|
| | | | Delay[b] | LOS[b] |
| Franklin D. Roosevelt & Coral Sea Roada | Side Street Stop Control | Weekday AM | 22.6 | C |
| | | Weekday PM | 22.8 | C |

a Vehicle delays are reported for the northbound left-turn movement as the most critical movements

b Delays are reported in seconds/vehicle

The Baseline analysis indicates that all study intersections are expected to continue operating at LOS C or better under future conditions without the proposed Honokea Surf Village. The changes in delay from the existing conditions are the result of the addition of the forecasted traffic growth.

Future traffic conditions with the addition of the Honokea Surf Village have been projected by analyzing the number of trips generated with the project fully built out, using the distribution of trips going to and from the project site, and new street segments and intersection turning movements that will be utilized.

The vehicle trip generation for the proposed project was estimated using a combination of standard trip rates from the *Trip Generation Manual* (11th Edition, 2020) published by the Institute of Transportation Engineers (ITE) and data provided by the project team. Fully built out, the Honokea Surf Village is anticipated to generate a total of 802 net new daily vehicle trips on a weekday, including 92 net new vehicle trips during the AM peak hour (80 inbound/12 outbound) and 140 new net vehicle trips during the PM peak hour (27 inbound/113 outbound). On an average weekend, the project is estimated to generate 898 net new daily vehicle trips including 96 net new vehicle trips during the AM peak hour (82 inbound/14 outbound) and 152 net new vehicle trips during the PM peak hour (30 inbound/122 outbound). *Table 3.11* presents the number of trips generated at the project site with the addition of the Honokea Surf Village.

The geographic distribution of trips generated by the project is dependent on characteristics of the street system serving the project site, the level of accessibility of routes to and from the project site, residential areas from which the visitors would be drawn, and lodging area from which out-of-state travelers would be drawn. Fully built out, the trip distribution pattern estimates that peak hour project-generated traffic will be 50% to/from the east along Franklin D. Roosevelt Avenue and 50% to/from the west along Franklin D. Roosevelt Avenue (*Figure 3.20*).

No bus transit improvements are planned on Coral Sea Road adjacent to the project site, however, the Honolulu Authority for Rapid Transportation (HART) is in the process of constructing a new, driverless, urban rail system along the south shore of O‘ahu, extending from West O‘ahu-Farrington Highway to Downtown Honolulu near Ala Moana Center. The closest station to the project site will be the Kualaka‘i Station in East Kapolei, approximately 2.8 miles from the site. The first rail segment between Kapolei and Hālawa may be open to the public within the next several years, however, a schedule identifying the fully operating rail system has not been defined at this time.

According to the O‘ahu Bike Plan, a shared-use path is planned on Coral Sea Road adjacent to the project site. The buildout of the Honokea Surf Village is not anticipated to impact the planned shared-use pathway along Coral Sea Road. The driveways along Coral Sea Road have been designed so that the path crossing locations of each driveway provide adequate sight distance for drivers and pedestrians and bicyclists. Signage such as monument signage, fencing, and other potential impediments to visibility will be added near the driveways to inform drivers, pedestrians, and bicyclists. Bicycle parking will be provided on-site to encourage the use of non-automobile travel for both employees and guests. As the design of the Honokea Surf Village continues to progress, Honokea will coordinate with HCDA and/or DPP TRB as appropriate to determine the appropriate setbacks for the Surf Village.


**Figure 3.19** **Future Traffic Conditions without Honokea Surf Village**

**Table 3.11 Project Vehicle Trip Generation Estimates**

| Number of Visitors and Employees by Mode[a,b,c] | | Daily Rate[d] | Peak AM Rate[d] | Peak PM Rate[e] | Daily Trips | AM Peak Hour Trips | | | | | PM Peak Trips | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % | | Trips | | Total | % | | Trips | | Total |
| | | | | | | In | Out | In | Out | | In | Out | In | Out | |
| **Guest (Weekday)** | | | | | | | | | | | | | | | |
| Personal Vehicle[f] | 604 | 2 | 4% | 13% | 440 | 70% | 30% | 13 | 5 | 18 | 21% | 79% | 13 | 45 | 58 |
| Ride-share[f] | 44 | 4 | 4% | 13% | 64 | 50% | 50% | 2 | 1 | 3 | 50% | 50% | 5 | 4 | 9 |
| Tour Bus[g] | 214 | 4 | 4% | 13% | 20 | 70% | 30% | 1 | 0 | 1 | 30% | 70% | 1 | 2 | 3 |
| **Guest (Weekend)** | | | | | | | | | | | | | | | |
| Personal Vehicle[f] | 714 | 2 | 4% | 13% | 520 | 70% | 30% | 15 | 6 | 21 | 21% | 79% | 15 | 53 | 68 |
| Ride-share[f] | 51 | 4 | 4% | 13% | 76 | 50% | 50% | 2 | 2 | 4 | 50% | 50% | 5 | 5 | 10 |
| Tour Bus[g] | 254 | 4 | 4% | 13% | 24 | 70% | 30% | 1 | 0 | 1 | 30% | 70% | 2 | 2 | 4 |
| **Employee (Weekday & Weekend)** | | | | | | | | | | | | | | | |
| Personal Vehicle | 135 | 2 | 25% | 25% | 270 | 90% | 10% | 62 | 6 | 68 | 10% | 90% | 7 | 61 | 68 |
| Shuttle | 15 | 4 | 25% | 25% | 8 | 90% | 10% | 2 | 0 | 2 | 90% | 90% | 1 | 1 | 2 |
| **Total Weekday** | | | | | 802 | | | 80 | 12 | 92 | | | 27 | 113 | 140 |
| **Total Weekend** | | | | | 898 | | | 82 | 14 | 96 | | | 30 | 122 | 152 |

a. The annual number of visitors per the market study provided by the project team is estimated at 330,000 guests (6,347 guests/week).

Based on the input from the project team, the average weekday visitors is estimated at [(6,347 guest/7 day) X 95% =] 862 guests per weekday. Average weekend visitors are estimated at [(6,347 –(5 X 862)) / 2 =] 1019 guests per weekend day.

b. The total number of personnel on both weekdays and weekends is estimated at 150 per day working in 2 shifts (75 morning trips and 75 evening trips). Shift change is assumed to happen mid-day (between noon to 3 PM) outside of peak hours.

c. Based on the input from the project team, mode-share is assumed as follows:

Visitors: 70% personnel, 5% ride-share, and 25% Tour Bus

Employee: 90% personal vehicle, 10% Employee shuttle

d. Personal vehicles and employees are assumed to make 1 inbound and 1 outbound (total of 2 trips) per day. Ride-share, Tour Bus, and Shuttles are assumed to make 2 inbound and 2 outbound (total of 4 trips) per day.

e. AM and PM daily rates are calculated based on ITE Trip Generation Manual 11th, edition, Land Use 482 Water Slide Park, Peak hour of the adjacent street traffic:

AM Rate/Daily Rate = 0.08/2.27 = 3%

PM Rate/Daily Rate = 0.28/2.27 = 13%

f. Average Vehicle Occupancy for guests with personal vehicles and ride-sharing is assumed at 2.75 passengers per vehicle

g. Average Vehicle Occupancy for Tour Bus is assumed at 50 visitors per Tour Bus

h. Average Vehicle Occupancy for Employee Shuttles is assumed at 10 employees per employee shuttle


**Figure 3.20** **Future Traffic Distribution with Honokea Surf Village**

Three driveways along Coral Sea Road will be improved to provide access to the site. An additional driveway is shown in *Figure 2.9* that would access Long Island Street on the south side of the project boundary just west of Coral Sea Road. The additional driveway providing access along Long Island Street is not considered in the MAR analysis. The North Driveway and Main Driveway will primarily serve the main ±280-space guest parking area located in the northwest corner of the property (*Figure 2.9)*. A gated access roadway connects to the main lot providing access to the 50-space parking lot accommodating the Clubhouse and Camp Cabins. The Main Driveway includes a passenger loading area for guests to be dropped off and picked up by private vehicles, shuttles, or vehicles operated by ride-hailing companies such as Lyft or Uber. The South Driveway will serve a 40-space lot in the southeastern corner of the property and is intended for use as an overflow lot and could be used as a pop-up skate park/BMX area (*Figure 2.9)*. This access point also connects to a perimeter service road along the south, west and north edges of the property that provides access to the Surf Lagoon service area, and parking areas accommodating the Camp Cabins.

Due to the relatively low traffic volumes and desirable operating levels during peak periods, no turn lanes or additional vehicular access points are warranted or recommended. The driveways along Coral Sea Road are proposed as stop-controlled approaches but will also include gate control for inbound and outbound traffic. The gate for the Main Driveway is not anticipated to result in queuing issues along Coral Sea Road. To minimize the potential for vehicles entering the North and South to queue back onto Coral Sea Road, it is recommended that all on-site gates or ticketing booths include at least 100 ft of on-site vehicle storage for four (4) vehicles to queue. It is not anticipated adding a 100 ft entryway will affect the two-way circulation to all parking aisles.

All on-site lots will include perpendicular parking stalls to maximize access from both directions of travel. In the main lot, the majority of parking spaces are accessed via two-way circulation aisles that do not include dead-end aisles, which allows drivers to circulate while looking for available spaces. Off-site parking along Coral Sea Road is not included in the buildout of the Honokea Surf Village. To prevent drivers from parking their vehicles along the wide grass areas on both sides of Coral Sea Road that may raise safety concerns from pedestrians, signage prohibiting parking along Coral Sea Road will be installed.

Within the plans for the buildout of the Honokea Surf Village, based on the NFPA 1, Chapter 18, it is recommended that access roads throughout the site be accessible for fire vehicles with an unobstructed 20 ft width and 13.5 ft of unobstructed vertical clearance. Fire access roads shall extend to within 50 ft of at least one exterior door for each building. Additionally, buildings should be located no more than 150 ft from fire access roads. If buildings are equipped with fire sprinklers, the distance from each building to fire access roads may be increased from 150 ft to 450 ft. Buildings less than 400 sf may not be subject to NFPA, Chapter 18 relating to fire accessibility. If fire access roads greater than 150 ft long terminate in a dead end, an approved turnaround must be provided. As the site plan and design for the Honokea Surf Village continues to progress, HFD will be consulted with to ensure the site provides accessibility for fire personnel.

To understand the increase in potential traffic with the buildout of the Honokea Surf Village the Baseline Conditions in 2024 have been compared to the traffic conditions with the Honokea Surf Village in *Table 3.12* and *Figure 3.21.* Future traffic conditions at the driveways at the project site have also been analyzed under the Baseline (2024) + Project.

| Table 3.12 Baseline (2024) + Project Intersection Level of Service | | | | | | | |
|---|---|---|---|---|---|---|---|
| Study Intersection | Traffic Control | Peak Hour | Baseline (2024) | | Baseline (2024) + Project | | |
| | | | Delay[b] | LOS[b] | Delay[b] | LOS[b] | Δ |
| Franklin D. Roosevelt & Coral Sea Road[a] | One-way Stop Control | Weekday AM | 22.6 | C | 26.7 | D | 4.1 |
| | | Weekday PM | 22.8 | C | 32.3 | D | 9.5 |
| Coral Sea Road & Project Driveway North[b] | One-way Stop Control | Weekday AM | - | - | 12.2 | B | |
| | | Weekday PM | - | - | 14.8 | C | |
| Coral Sea Road & Main Project Driveway[b] | One-way Stop Control | Weekday AM | - | - | 11.8 | B | |
| | | Weekday PM | - | - | 15.1 | C | |
| Coral Sea Road & Project Driveway South[b] | One-way Stop Control | Weekday AM | - | - | 11.4 | B | |
| | | Weekday PM | - | - | 13.0 | B | |

a Vehicle delays are reported for the northbound left-turn movement as the most critical movements

b Vehicle delays are reported for the northbound left-turn movement as the most critical movements

c Delays are reported in seconds/vehicle

The results indicate that all study intersections are expected to continue to operate at LOS D or better during the AM and PM peak hours with the addition of project-generated traffic. The good operating levels of LOS C or better at all of the driveway intersections indicate that no separate turn lanes are needed on Coral Sea Road in the project driveways. This is especially true for the driveways, where little or no traffic is expected to travel to and from Coral Sea Road in the makai direction (i.e., from Tripoli Road).

Area representatives, neighborhood board, as well as the area residents, businesses, emergency personnel (fire, ambulance, and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., will be kept apprised of the details and status throughout the project and the impacts that the project may have on the adjoining local street area network. Based on the significance criteria and the results of the operations analysis presented in Section 6.2, the development of the proposed project is determined to have no significant impact at any of the study intersections.

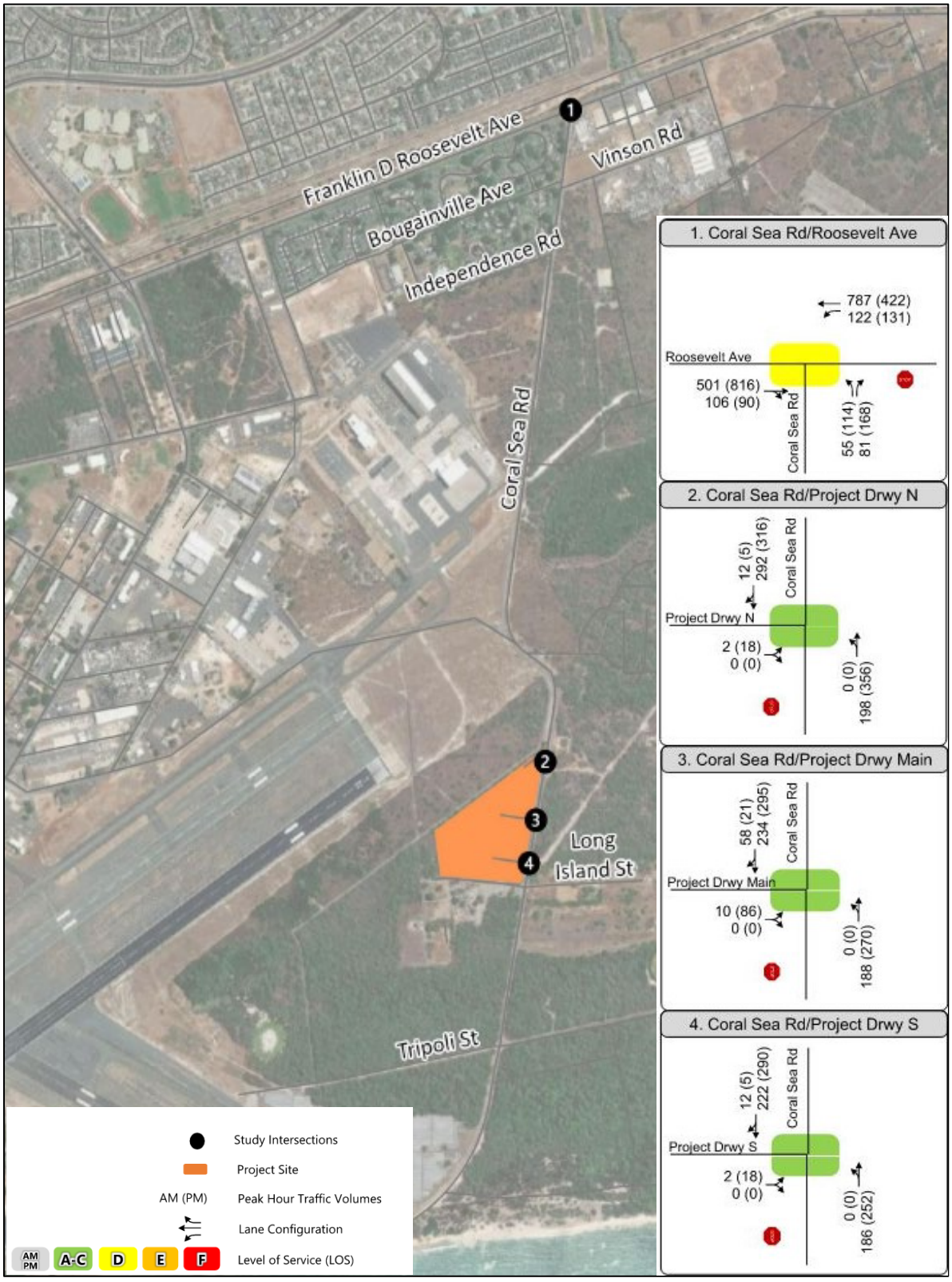



**Figure 3.21** **Future Traffic Conditions with Honokea Surf Village**

# 3.12 Air Quality

*Existing Conditions*

Air quality of the area of planned improvements at Honokea is primarily affected by air pollutants from natural and/or vehicular sources. Natural sources of air pollution that may affect the air quality of the study area include wind-blown dust from bare soil areas. Depending upon the prevailing wind direction, emissions from motor vehicles traveling on the H-1 Freeway may be dispersed in the project area. The Phase I ESA did not identify unpleasant odors to emanating from the site.

The EPA established the National Ambient Air Quality Standards (NAAQS) per the requirements of the Clean Air Act (last amended in 1990) to protect public health and welfare and prevent the significant deterioration of air quality. These standards account for seven major air pollutants: carbon monoxide (CO), nitrogen oxides ($NO_X$), ozone ($O_3$), particulate matter smaller than 10 microns ($PM_{10}$), particulate matter smaller than 2.5 microns ($PM_{2.5}$), sulfur oxides ($SO_X$), and lead. DOH, Clean Air Branch (CAB) has also established State Ambient Air Quality Standards (SAAQS) for six of these air pollutants to regulate air quality statewide. The SAAQS for carbon monoxide and nitrogen dioxide are more stringent than NAAQS. Hawai‘i also has a stringent standard for hydrogen sulfide, which is a common odorous pollutant associated with wastewater treatment facilities.

DOH, CAB regularly samples ambient air quality at monitoring stations throughout the State and annually publishes this information. On O‘ahu, there are six monitoring stations. The Kapolei Monitoring Station located on Lauwiliwili Street collects and publishes air quality samples for the Kapolei area. The current air quality index reading for the Kapolei station is good.

The State of Hawai‘i has also established standards for air pollution control such as fugitive dust emissions emanating from construction activities (Chapter 11-60, HAR). These standards prohibit any visible release of fugitive dust from construction sources without taking reasonable precautions. The State standards are administered by the State DOH.

*Anticipated Impacts and Proposed Mitigation*

Due to the proximity of the project site to Kalaeloa Airport, there is a potential for fumes, smoke, vibrations, odors, etc. resulting from occasional aircraft flight operations over or near the project location. These impacts may increase or decrease over time, depending on airport operations. The frequent northeasterly regional trade wind patterns experienced on the parcel will help disperse most airport emissions in outdoor areas off the property towards the western side of the site. The Project team will evaluate potential indoor filtration systems to help alleviate any exhaust particles in interior spaces.

Fugitive dust emissions may arise from the grading and dirt moving activities associated with site clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is often difficult to estimate accurately due the elusive nature of the emission and because the potential for its generation varies greatly and is dependent on: a) the type of soil at the construction site, b) the amount and type of dirt disturbing activity taking place, c) the moisture content of exposed soil in work areas, and d) the wind speed. The U.S. Environmental Protection Agency has an estimated standard for uncontrolled fugitive dust emissions from construction activity in the range of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation index of 50. Uncontrolled fugitive dust emissions at the project site would likely be somewhere near that level, depending on the amount of rainfall that occurs.

Additionally, State of Hawai'i Air Pollution Control Regulations prohibit visible emissions of fugitive dust from construction activities at the property line. Therefore, an effective dust control plan for the project construction phase is essential and will be developed. A program of BMPs will be implemented during construction of the project to minimize potential impacts. Some BMPs could include job site watering to minimize dust loss during construction, and proper maintenance of construction equipment and vehicles to minimize emissions.

The Honokea Surf Village will have minimal impact on air quality. Vehicles traveling to and from the surf village will generate emissions; however, there will be minimal idling of cars due to measures reducing queuing, and the additional vehicles are not anticipated to generate harmful effects to air quality.

## 3.13 Noise

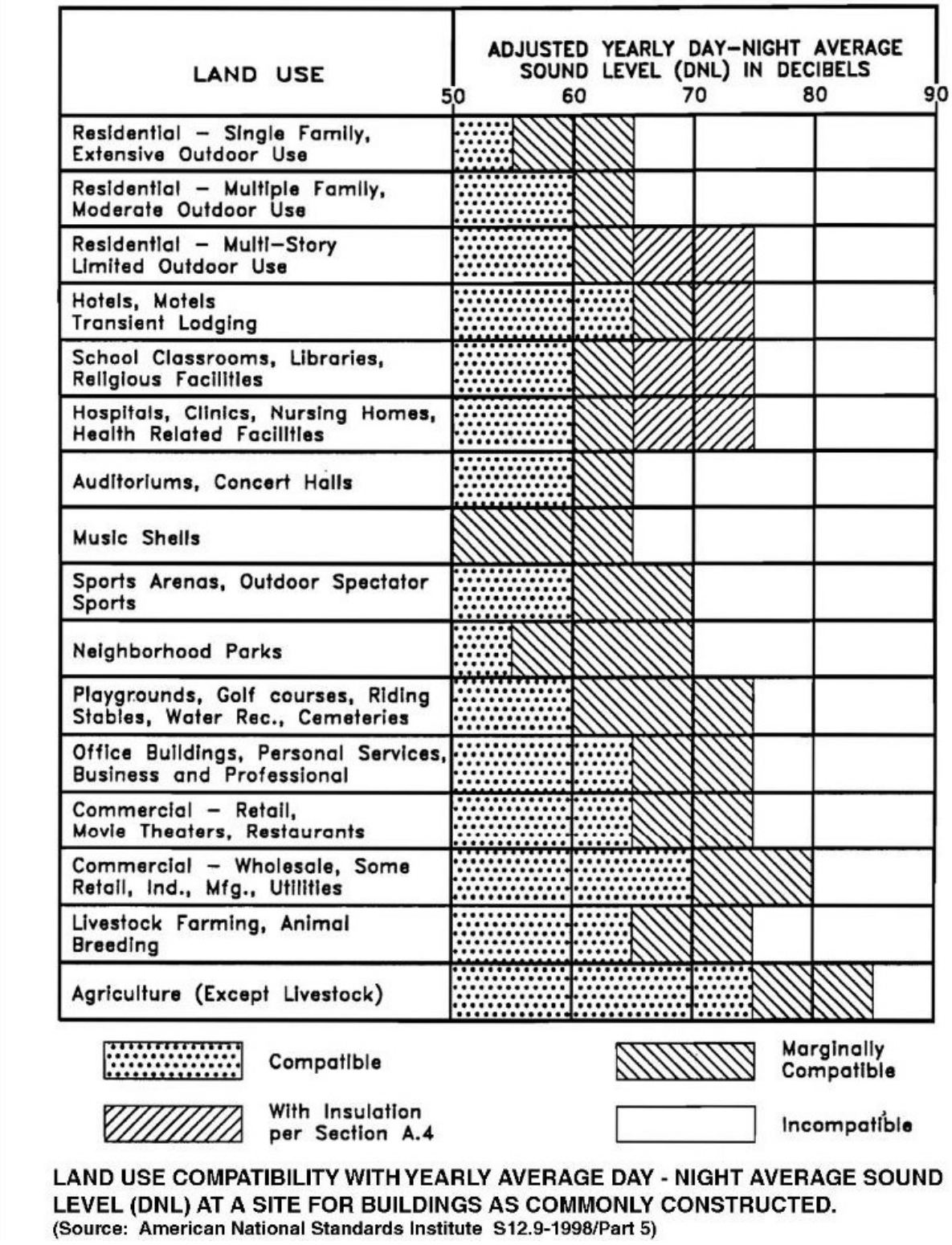
Noise is defined as unwanted sound. Sound may be classified as noise when it damages hearing ability, causes other bodily effects detrimental to health and safety, disturbs sleep and rest, interferes with conversation or other forms of communication, or is simply annoying or irritating.

### *Existing Conditions*

Noise generated by activities at Honokea are relatively minimal and are dispersed to the surrounding airport and heritage park area. The predominant noises in the area are associated with the active runway 22 at John Rodgers Field at Kalaeloa Airport and vehicles and trucks traveling along Coral Sea Road. Other noises are generated by winds and birds.

The Day-Night Average Sound Level (DNL) method, developed by the Environmental Protection Agency, is the most widely used to describe environmental noise. The measurement is weighted so that late night noises are penalized, on the assumption that these noises are more objectionable because they can disturb sleep. In Hawai'i, the State DOH regulates noise from fixed mechanical equipment and construction activities. State DOH noise regulations are expressed in maximum allowable noise limits rather than DNL (HAR §11-46. Although they are not directly comparable to noise criteria expressed in DNL, State DOH noise limits for single family residential lands equate to approximately 55 DNL (*Figure 3.22*). For multifamily residential, commercial, and resort lands, the State DOH noise limits equate to approximately 60 DNL. Hotels, motels and transient lodging are slightly higher at 65 DNL. For light and heavy industrial lands, the State DOH noise limits equate to approximately 70 DNL. Construction activities, which are typically noisier than the State DOH noise limits, are regulated through the issuance of permits for allowing excessive construction noise during limited time periods.

The State DOT Airports Division (DOT-A) developed a local set of guidelines for aircraft noise which account for local conditions in Hawai'i *(Table 3.13).* The State DOT Land Use Compatibility Guidelines were derived from the Federal Aviation Administration (FAA) Land Use Compatibility and Airports Guide for Effective Land Use Planning. The FAA Compatibility Guidelines table of use compatibility is based on the yearly averaged DNL noise descriptor. However, an individual's response and annoyance to aircraft noise will vary, and specific local characteristics were not considered. FAA designated the local authority to determine the acceptable and permissible and use within each noise contour.




LAND USE COMPATIBILITY WITH YEARLY AVERAGE DAY - NIGHT AVERAGE SOUND LEVEL (DNL) AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED.
(Source: American National Standards Institute S12.9-1998/Part 5)

**Figure 3.22 Land Use Compatibility Day-Night Average Sound Level (DNL) Guideline Chart**

| Table 3.13 State DOT Land Use Compatibility with Yearly Day-Night Average Sound Levels | | | | | | |
|---|---|---|---|---|---|---|
| **Land Use** | **Yearly DNL Sound Level (decibels)** | | | | | |
| | **<60** | **60-65** | **65-70** | **70-75** | **75-80** | **80-85** |
| **Residential** | | | | | | |
| Low density residential, resorts, and hotels with extensive outdoor use | Y(a) | N(b) | N | N | N | N |
| Low density apartment with moderate outdoor use | Y | N(b) | N | N | N | N |
| High density apartment with moderate outdoor use | Y | N(b) | N(b) | N | N | N |
| Transient lodgings with limited outdoor use | Y | N(b) | N(b) | N | N | N |
| **Public Use** | | | | | | |
| Schools, day-care centers, libraries, and churches | Y | N(c) | N(c) | N(c) | N | N |
| Hospitals, nursing homes, clinics, and health facilities | Y | Y(d) | Y(d) | Y(d) | N | N |
| Indoor auditoriums and concert halls | Y(c) | Y(c) | N | N | N | N |
| Government service and office buildings serving the general public | Y | Y | Y(d) | Y(d) | N | N |
| Transportation and parking | Y | Y | Y(d) | Y(d) | Y(d) | Y(d) |
| **Commercial and Government Use** | | | | | | |
| Offices - government, business, and professional | Y | Y | Y(d) | Y(d) | H | N |
| Wholesale and retail - building materials, hardware and heavy equip. | Y | Y | Y(d) | Y(d) | Y(d) | Y(d) |
| Airport businesses - car rental, tours, let stands, ticket offices, etc. | Y | Y | Y(d) | Y(d) | N | N |
| Retail trade, restaurants, shopping centers, financial institutions, | Y | Y | Y(d) | Y(d) | N | N |
| Power plants, sewage treatment plants, and base yards | Y | Y | Y(d) | Y(d) | Y(d) | N |
| Studios without outdoor sets, broadcasting, production facilities, etc. | Y(c) | Y(c) | N | N | N | N |
| **Manufacturing, Production and Storage** | | | | | | |
| Manufacturing, general | Y | Y | Y(d) | Y(d) | Y(d) | N |
| Photographic and optical | Y | Y | Y(d) | Y(d) | N | N |
| Agriculture (except livestock) and forestry | Y | Y(e) | Y(e) | Y(e) | Y(e) | Y(c) |
| Livestock farming and breeding | Y | Y(e) | Y(e) | N | N | N |
| Mining and fishing, resource production and extraction | Y | Y | Y | Y | Y | Y |
| **Recreational** | | | | | | |
| Outdoor sports arenas and spectator sports | Y | Y(f) | Y(f) | N | N | N |
| Outdoor music shells, amphitheaters | Y(f) | N | N | N | N | N |
| Nature exhibits and zoos, neighborhood parks | Y | Y | Y | N | N | N |

| | | | | | | |
|---|---|---|---|---|---|---|
| Amusements, beach parks, active playground, etc. | Y | Y | Y | Y | N | N |
| Public golf courses, riding stables, cemeteries, gardens, etc. | Y | Y | N | N | N | N |
| Professional/resort sport facilities, locations of media events, etc. | Y(f) | N | N | N | N | N |
| Extensive natural wildlife and recreation areas | Y(f) | N | N | N | N | N |

Y = Land use and related structures compatible without restrictions

N = Land use and related structures are not compatible and should be prohibited

(a) A noise level of 60 DNL does not eliminate all risks of adverse noise impacts from aircraft noise. However, the 60 DNL planning level has been selected by the State Airports Division as an appropriate compromise between the minimal risk level of 55 DNL and the significant risk level of 65 DNL.

(b) Where the community determines that these uses must be allowed, Noise Level Reduction (NLR) measures to achieve interior levels of 45 DNL or less should be incorporated into building codes and be considered in individual approvals. Normal local construction employing natural ventilation can be expected to provide an average NLR of approximately 9 dB. Total closure plus air conditioning may be required to provide additional outdoor to indoor NLR, and will not eliminate outdoor noise problems.

(c) Because the DNL noise descriptor system represents a 24-hour average of individual aircraft noise events, each of which can be unique in respect to amplitude, duration, and tonal content, the NLR requirements should be evaluated for the specific land use, interior acoustical requirements, and properties of the aircraft noise events. NLR requirements should not be based solely upon the exterior DNL exposure level.

(d) Measures to achieve required NLR must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(e) Residential buildings require NLR. Residential buildings should not be located where noise is greater than 65 DNL.

(f)Impact of amplitude, duration, frequency, and tonal content of aircraft noise events should be evaluated.

This table has been adapted from the Federal Aviation Administration Land Use Compatibility Table, Advisory Circular I 50/5020-1 (dated August 5, 1983). This table is for land use planning purposes only.

A Final EA (FEA) was done for Kalaeloa Airport improvements in 2010 by Wilson Okamoto, which references noise impacts from the airport's operations. The FEA referenced a U.S. Navy Environmental Impact Statement (Disposal and Reuse of Surplus Property at Naval Air Station Barbers Point, 1999) that utilized a summary of the aircraft operations in 1993 and projected operations through the year 2020 as the basis to forecast aircraft operations and noise at the Kalaeloa Airport, which resulted in the John Rogers Field 2020 Noise Exposure Map (JRF NEM) showing DNL noise contours from aircraft operations at Kalaeloa Airport *(Figure 3.23).*

Except for the existing beach cottages within the former Naval Air Station, there were no planned noise-sensitive land uses between the 60 DNL and 65 DNL noise contours around the airport at the time of the Final EA. The forecast aircraft noise levels in the cottages and other beach recreational areas with Kalaeloa Airport are well below the levels experienced while the former Naval Air Station was in operation. According to FEA, the 65 DNL contour is entirely within the Kalaeloa Airport boundaries approved by the Naval Air Station Barbers Point Redevelopment Commission, with an exception along the southwest side of Runway 4R/22L, where the 65 DNL contour extends about 200 feet into the former commercial recreation raceway complex planned by the Department of Hawaiian Home Lands for that location.

During early consultation during the environmental review process, DOT-A expressed their opposition to the overnight camp cabins *(Table 7.2),* because according to the State DOT Land Use Compatibility guidelines, transient lodging is an incompatible land use within the 60-65 DNL *(Figure 3.22).* The DOT-A use of the 60 DNL threshold for transient lodging is due to DOT-A still using the local adaption of the FAA Land Use Compatibility table developed when the state first started implementing the program in Hawai'i decades ago. Determining if the most recent noise contours are still valid has been a challenge with the relatively outdated airport noise contours (forecasted using 1993 aircraft operations). The JRF NEM is tending to display higher noise levels than actual noise experienced, due to progress in aircraft noise quieting.

The DOT-A's JRF NEM indicates that the proposed cabins are located within the 65 to 60 DNL noise exposure contours. If this is true, the Camp Cabins would not be within compliance and may have to be removed from the site plan. Because the JRF NEM may not represent current aircraft noise levels at the project site, sound level measurements were obtained at the northwest corner of the parcel in order to validate the JRF NEM provided by the DOT-A in their comments regarding the proposed Honokea Surf Village (*Figure 3.24*).

A Noise Assessment survey was conducted for the site by Y. Ebisu & Associates in April 2022. 24-hour sound level measurements were obtained on site to calculate current DNL values at the proposed project location representative of the worst-case aircraft noise levels at the cabins. The measurement results memorandum is attached as *Appendix H*.

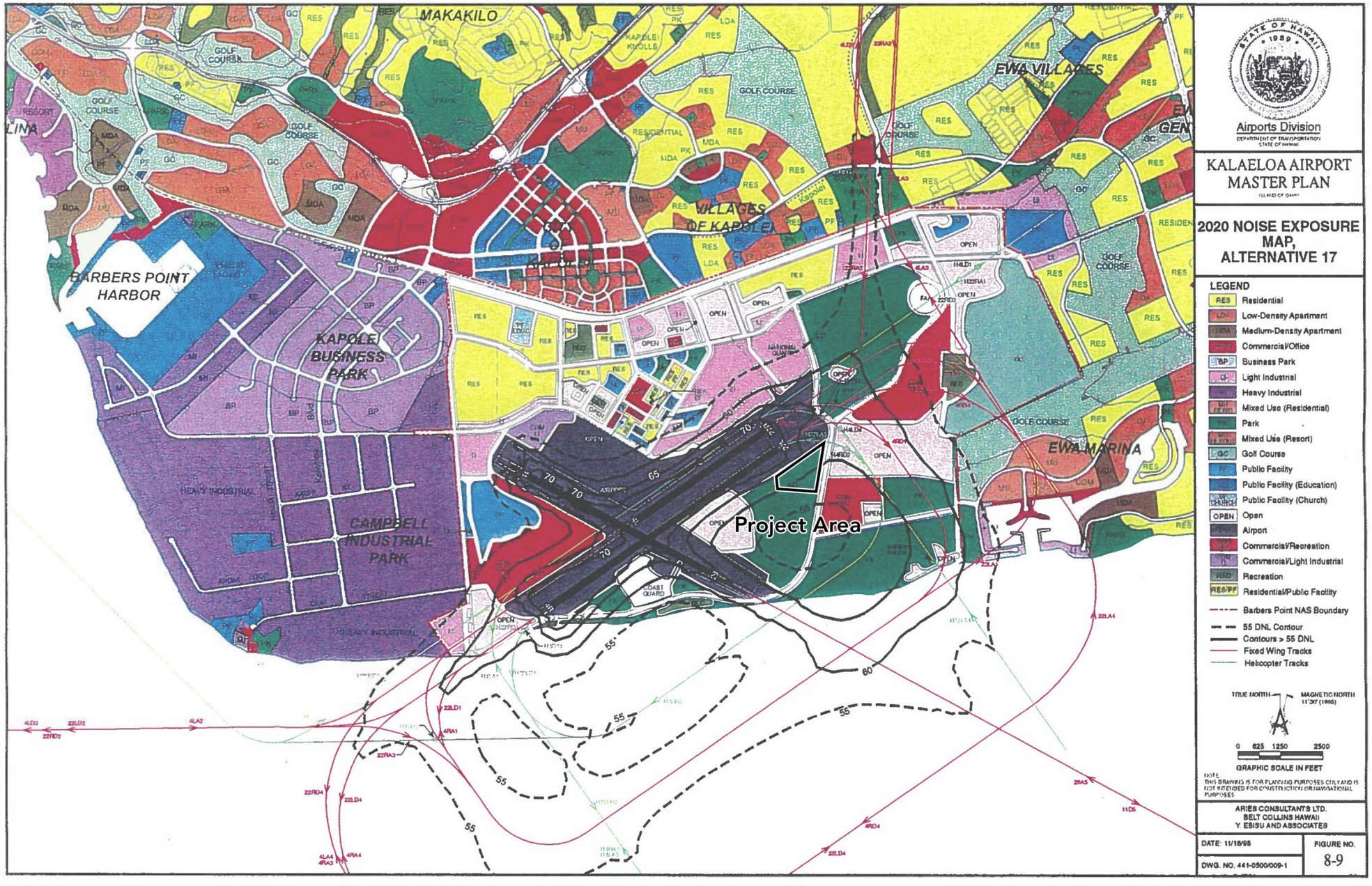



**Figure 3.23** **FAA John Rogers Field 2020 Noise Exposure Map**

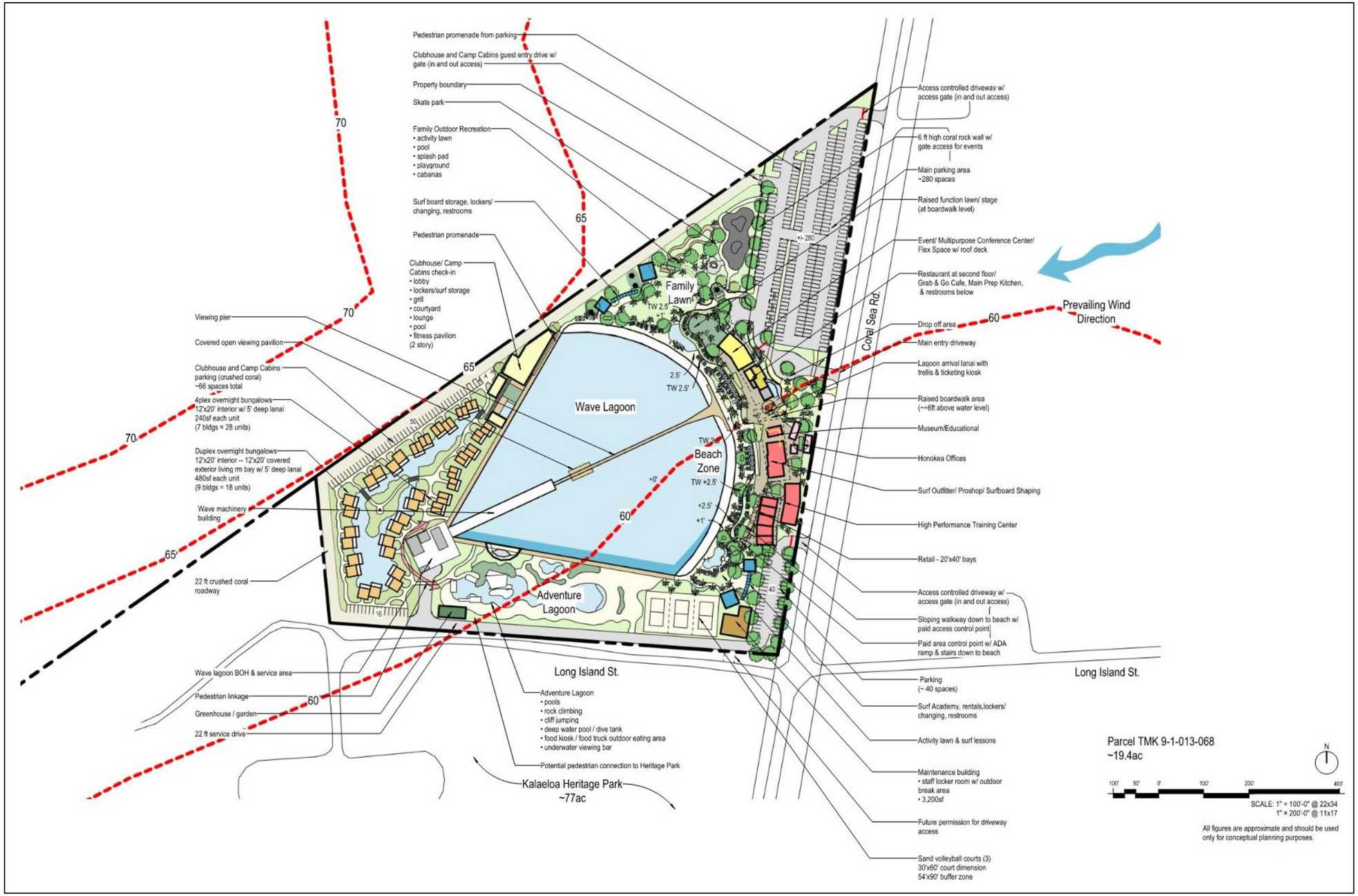



**Figure 3.24** **Conceptual Site Plan with JRF 2020 NEM Contours**

The measurement results are summarized in DNL values for the three 24-hour periods of the survey being 61.2, 60.6, and 56.8 DNL. The lowest 56.8 DNL unadjusted result was attributed to the Easter Holiday. During the measurement period, it was determined from visual observation and evaluation of the measured noise data that USCG C-130 and light propeller General Aviation aircraft were probably overflying the area. These DNLs, when adjusted for the measured C-130's which were on runway heading, are 60.1, 59.4, and 56.8 DNL.

Based on these measurement results, and the higher DNLs believed to be associated with USCG C-130 flyovers in the vicinity of Location A, it was concluded that the project's camp site is exposed to DNL levels less than 60 DNL, except for days when aircraft operating at Kalaeloa Airport overfly the project site.

*Anticipated Impacts and Proposed Mitigation*

Overnight camping or guests may experience intermittent noise due to airplanes or helicopters taking off and landing at Kalaeloa Airport. Noise survey results suggest while the 2020 JRF NEM placed the overnight cabins location between 60 and 65 DNL, actual noise exposure is less than 60 DNL on most days. Therefore, it can be ascertained that the siting of the overnight cabins are compatible with the transient lodging permitted use at less than 60 DNL. Concerns relative to proximity of overnight accommodations to airport noise have been discussed with the FAA Honolulu Office and the DOT-A., and Honokea and HCDA will continue to coordinate in order to reach a mutual agreement.

Because the existing Kalaeloa Heritage Park adjoins the proposed Honokea Surf Village project site, which features educational tours and other cultural activities, and because low level aircraft overflights considered to be unnecessary have resulted in complaints at other state airports and below tour helicopter routes, it is recommended that all aircraft departing on Runway 4R/22L avoid overflying the Kalaeloa Heritage Park at low altitudes, and maintain runway heading during takeoff until approximately 1,000 feet beyond the east end of Runway 04R/22L. This is probably the airport noise modeling assumption for the local flight track which was used to develop the NEM's for Kalaeloa Airport in the past.

Currently, no flights are scheduled at night, however this may change in the future according to the FAA. Guests will be advised of the potential for noise and flight operations nuisances as a part of the conditions of the facility's use and their overnight stay. There are similar conditions with regards to noise and distance of camping activities to airports, such as Camp Mokuleia which is less than 700 ft away from the edge of the Dillingham Airfield runway. There are also examples of similar conditions in the KCDD, including cabins within Barbers Point Beach Cottages and open camp sites at Kalaeloa Beach Park, that are adjacent or near the airport. Initial conversations between the Honokea project team and the FAA and DOT-A have been positive and constructive. Honokea Kalaeloa, LLC is willing to be a supportive adjacent land owner and hold harmless the FAA and Kalaeloa Airport in regard to potential complaints from guests regarding aircraft activity.

Construction noise at the proposed locations is not expected to be significant. Construction will be phased and will take place over 4,000 ft (0.76 mile) from the nearest residences. State regulations and County Building Permit conditions limit construction noise to allowable limits per DOH regulations. Extra care and consideration will be given to the Kalaeloa Heritage Park to the south, especially in regard to the on-going cultural practices that are currently take place on site.

The operations of the proposed Honokea recreational facility will not cause excessive noise. Of the proposed activities and improvements, recreational activity areas and restaurants will create the most

noticeable noise. However, these activities will primarily take place during work hours, will not exceed maximum permissible sound levels, and are at considerable distances from any residences and public parks. The Honokea Surf Village project will be mindful and considerate of the neighboring Kalaeloa Heritage Park's cultural activities and protocols, as well as any other neighboring properties in the project vicinity.

# 3.14 Airport Related Land Use Constraints

### 3.14.1 Preservation of Navigable Airspace

*Existing Conditions*

According to Title 14 Code of Federal Regulations (CFR) Part 77 Safe, Efficient Use and Preservation of Navigable Airspace, navigable airspace cannot be obstructed. To ensure the safety and efficiency of airport operations, the design of airports and surrounding facilities are regulated by the FAA. The FAA provides airport design guidelines in their Advisory Circular (AC) 150/5300-13, Airport Design. According to FAA AC 150/5300-13, there are a series of zones in which development is restricted. Applicable zones are listed below.

*Object Free Area (OFA)* – Area must remain free of objects except necessary air navigation apparatus.

*Runway Protection Zone (RPZ)* - The RPZ is trapezoidal in shape and is located in the area extended from both ends of an active runway. The objective for this area is to protect people and property on the ground, however, some uses are permitted if they are outside of the OFA.

The siting of the Honokea Surf Village in relationship to airport facilities is an important consideration in the planning process. The project site is located adjacent to the existing airport Runway 29 at John Rogers Field. Runway 11/29 is used infrequently, primarily for approach. Although the runway is not heavily used, Kalaeloa airport is active and serves as the alternate for Honolulu International Airport. Land uses adjacent to active runways are subject to FAA guidelines. FAA's AC 150/5300-13 details the required dimensions for the RPZ as shown in *Table 3.14. Figures 3.25* and *3.26* show a plan view and cross section of the restricted area from the AC.

**Table 3.14 Runway Protection Zone Dimensions**

| Airport Service | Length (L) | Inner Width (W1) | Outer Width (W2) |
|---|---|---|---|
| Small Aircraft | 1,000 ft. | 250 ft. | 450 ft. |
| Approach Categories A and B | 1,000 ft. | 500 ft. | 700 ft. |
| Approach Categories C and D | 1,700 ft. | 500 ft. | 1,010 ft. |

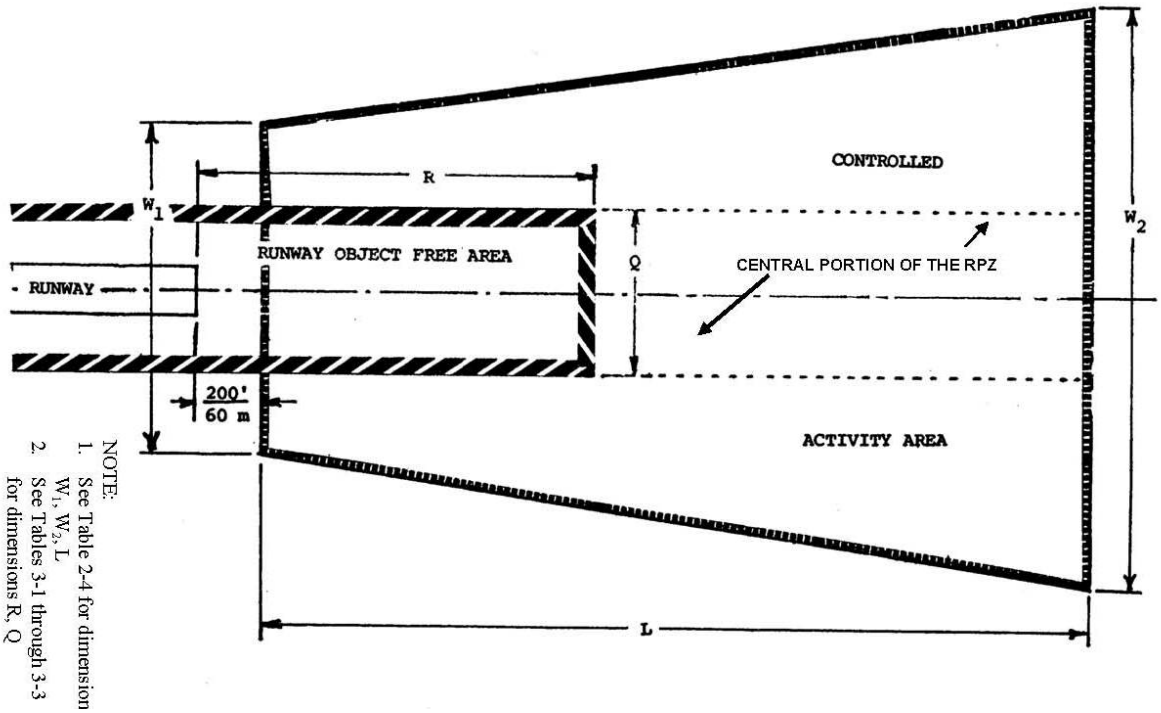



**Figure 3.25** **Plan View of Runway Protection Zone**
(Source: FAA Airport Design Advisory Circular 150/5300-13, September 1989)

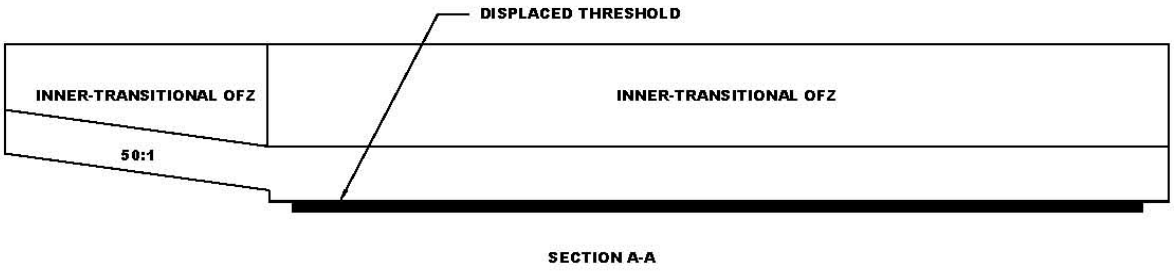



**Figure 3.26** **Cross Section of Obstacle Free Zone**
(Source: FAA Airport Design Advisory Circular 150/5300-13, September 1989)

*Figure 3.27* shows the proposed project site in relationship to Kalaeloa Airport approach runway 11/29, and its anticipated RPZ. The project is located completely outside of the Runway Protection Zone. The permanent structures of the proposed facilities will not exceed 28 ft in height. The use of mounting lights at heights higher than 28-ft has been approved by HCDA pending FAA approval

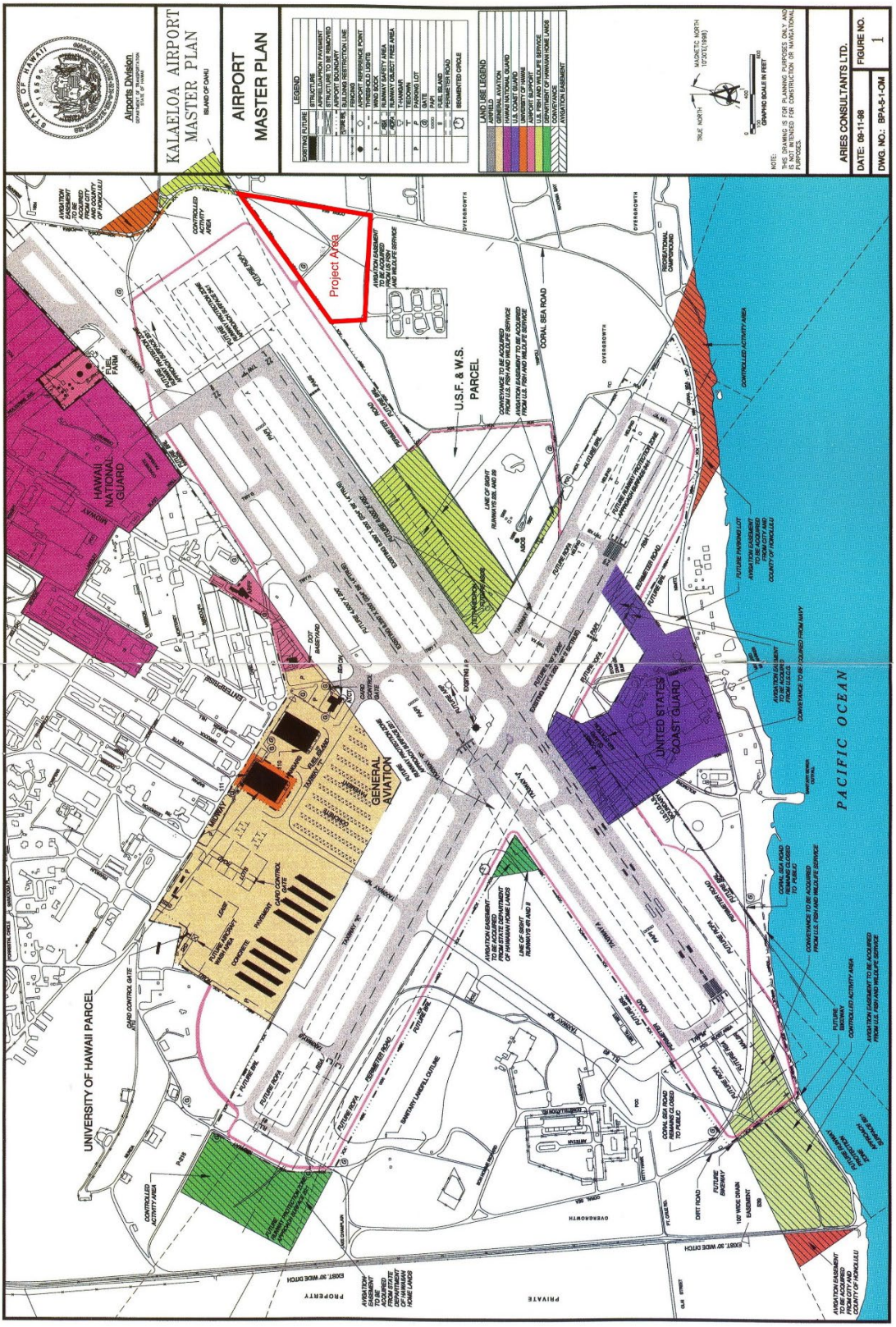



**Figure 3.27** **RPZ Near Project - Kalaeloa Airport Masterplan (1998)**

A heliport is located in the grassy area east of Runway 11/29, between the runway and the taxi lane. FAA governs development in the vicinity of heliport facilities through the standards set in FAA AC 150/5390-2B Heliport Design. Heliport protection zones are diagrammatically show in *Figure* 3.28. The proposed project is located approximately 280 ft from the Final Approach and Takeoff Area (FATO) zone. At a 2:1 transitional surface ratio for navigable airspace from the FATO, the project will not exceed allowed height within the navigable airspace.

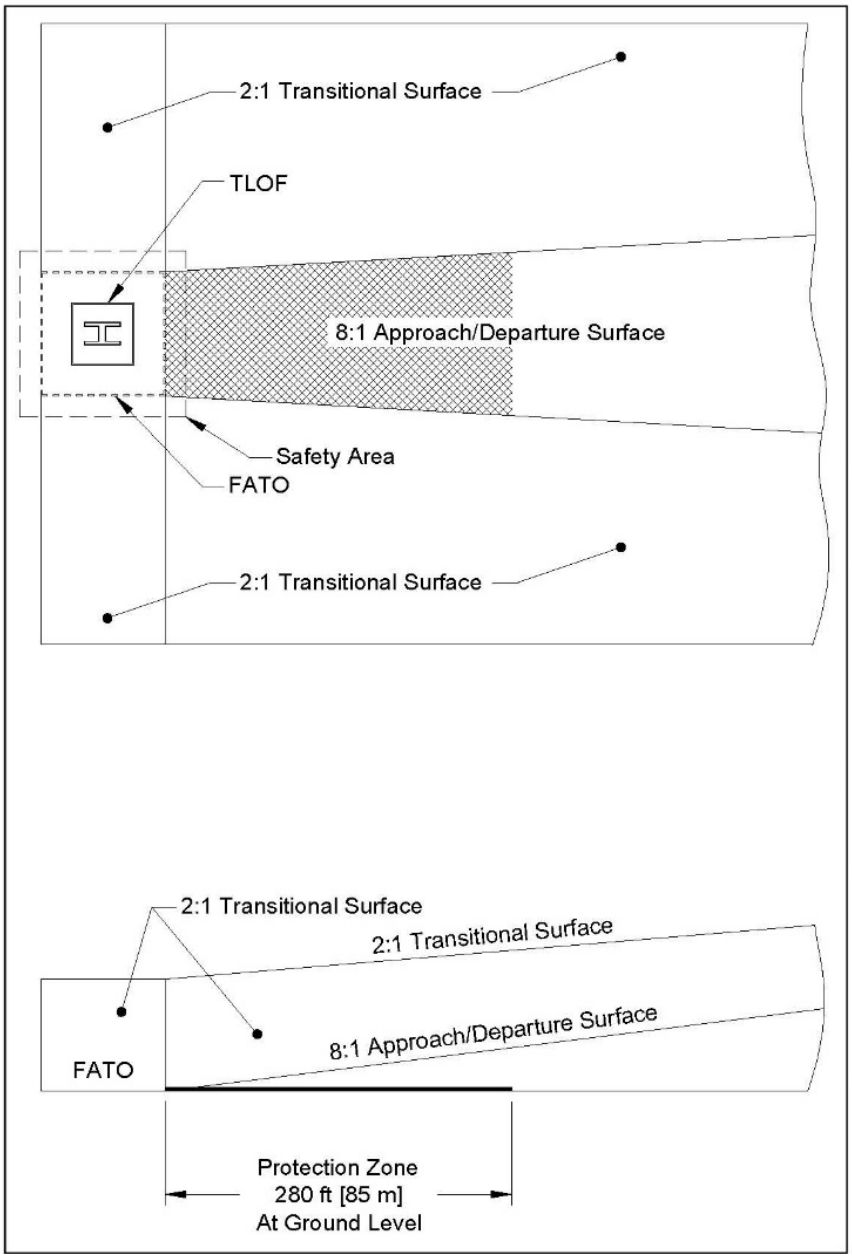



**Figure 3.28** **Heliport Protection Zone**
(Source: FAA Advisory Circular 150/5390-2B)

### *Anticipated Impacts and Proposed Mitigation*

All facilities and utility poles will be sited outside of the OFA and RPZ. FAA will be consulted regarding the proposed project construction. A FAA Form 7460-1 (2-12) Notice of Proposed Construction or Alteration along with supporting attachments will be submitted to FAA for their review to ensure that the project does not physically interfere with protected airspace around the airport, interfere with radar, or create a potential glare hazard. This is required as the project is within 20,000 ft of a public use or military airport, and as shown in *Figure 3.29*, structures on site exceeds the 100:1 surface slope from any point on the runway.

Building height restrictions within aviation easement requirements were fully considered. No buildings or utility poles are proposed in any aviation easements. In addition, flight navigation operations, such as runway approach and/or flight paths, will not be impacted by the project.

No impacts to the heliport approach/departure and transitional surfaces are anticipated.

## 3.14.2 Glint and Glare

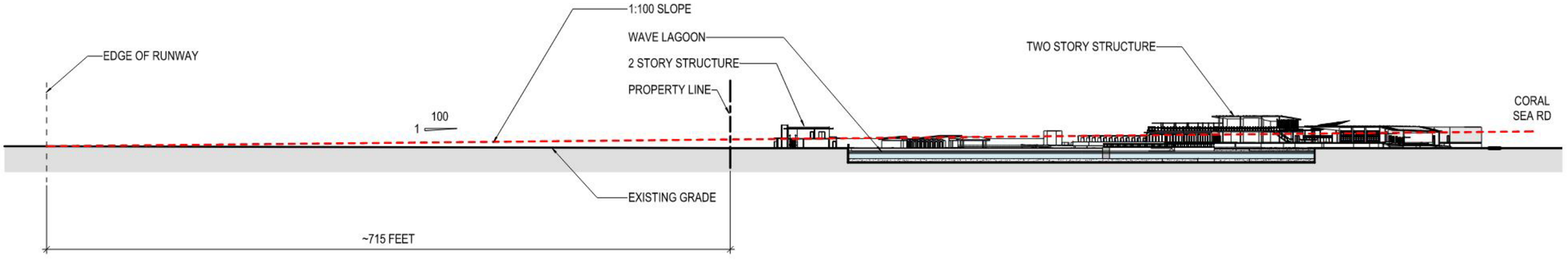
The Project is located adjacent to the Kalaeloa Airport. The FAA has expressed concern regarding glare resulting from photovoltaic systems potentially causing distractions to pilots or air traffic control tower personnel.

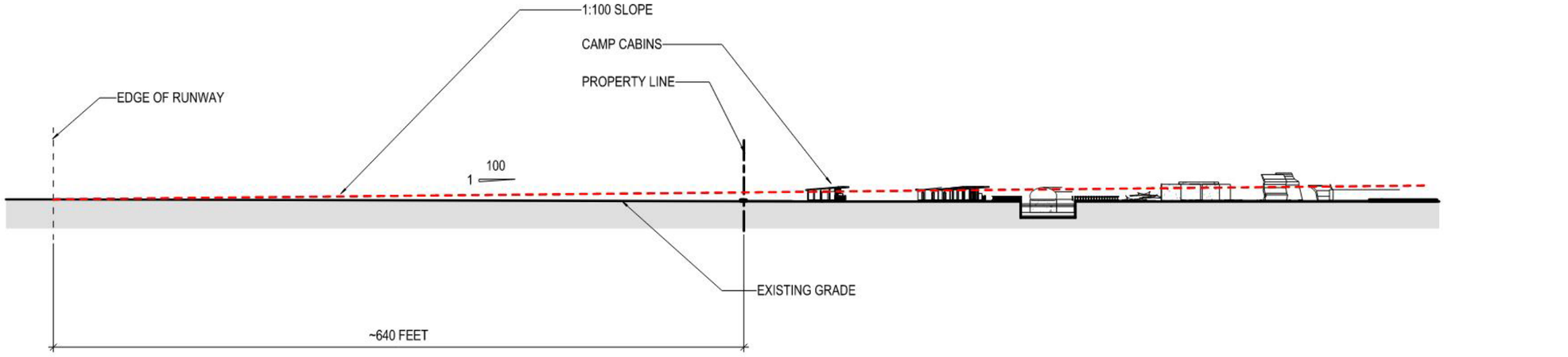
### *Existing Conditions*

The existing project site is vacant, consisting of vegetation and plant growth. Therefore, no glare is present on the site.

### *Anticipated Impacts and Proposed Mitigation*

The proposed Project will utilize a small amount of rooftop fixed panel photovoltaic solar technology to produce over 1.0 megawatt (MW) of electricity. There will also be a large water feature on site, the main Surf Lagoon recreation feature. Based upon studies done for glint and glare of larger projects in the area, occurrences of glare at Kalaeloa Airport resulting from the Honokea project are anticipated to be minimal on approach and limited to final approach of Runways 4R and 4L. Due to the location of the site and orientation of the airport runway, any glare experienced would occur intermittently in morning when the sun is lowest in the sky and not for a period longer than ten minutes from the months of March to October. Any potential glare would most likely be limited to low impact levels acceptable to FAA requirements.



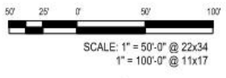




**Figure 3.29** **100:1 Surface Slope from Runway 29 Sections**

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# 3.15 Public Services and Facilities

*Existing Conditions and Anticipated Impacts*

Medical Facilities

The closest hospital is approximately 5.7 miles away from the proposed Honokea Surf Village at The Queen's Medical Center West O'ahu. Other medical facilities in the area include Straub Medical Center – Kapolei Clinic & Urgent Care 1.9 miles away, Warrior Ohana Medical Home is 3.1 miles away, and Queen's Island Urgent Care – 'Ewa Beach 4.6 miles away. Some park users may infrequently require service from local medical facilities; however, the Honokea Surf Village will be equipped with on-site medical treatment and trained lifeguards. The service capacity of medical facilities is not anticipated to be affected by the addition of the Honokea Surf Village.

Public Educational Facilities

There are three public elementary schools (Barbers Point Elementary, Ho'okele Elementary, and Kapolei Elementary) within a five-mile radius of the proposed Honokea Surf Village. The nearest intermediate school and high schools are located at Kapolei Middle School and Kapolei High School, which are approximately 3.7 miles and 2.7 miles away from the proposed Honokea Surf Village, respectively.

The buildout of the Honokea Surf Village is unlikely to have any impact on existing educational facilities. Beneficial effects associated with the addition of the Honokea Surf Village for local schools include educational activities, making the Honokea Surf Village an attractive option for school field trips.

Recreational Facilities

Several beaches along the coast (White Plains Beach, Eisenhower Beach, Kalaeloa Beach Park, Nimitz Beach) offer recreational opportunities in the area *(Figure 2.7).* Military Rest and Relaxation facilities are provided at the Nimitz Officers Beach and Barbers Point USCG Resort Homes. Other recreation opportunities in the area include Pride Baseball Fields, Kapolei Aquatic Center, Barbers Point Bowling Center, Coral Crater Adventure Park, Dogs of War Airsoft Park, K-1 Speed Indoor Go Karts, Barbers Point Golf Course, and Hoakalei Country Club. These public recreational facilities will not be affected by the addition of the Honokea Surf Village. The Honokea Surf Village will provide an additional public recreational facility in the area.

Police and Fire Services

The proposed Honokea Surf Village falls within Honolulu Police Department's (HPD) District 8. The main station for District 8 is located in Kapolei, approximately 3.6 miles away from Honokea. The nearest fire station is about 4.4 miles away at Kapolei Fire Station 40. The proposed Honokea Surf Village will not affect police services in the area and fire protection access and firefighting support requirements for the facilities will be satisfied.

Fire department access roads will be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 ft from fire department access roads, as measured by an approved route around the exterior of the building or facility. A fire

department access road will extend to within 50 ft of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. The unobstructed width and unobstructed vertical clearance of a fire apparatus access road will meet county requirements, and civil drawings will be submitted to the Honolulu Fire Department for review and approval.

## 3.16 Potential Cumulative and Secondary Impacts

Cumulative impacts are the result of incremental effects of an activity when combined with other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Minor but collectively significant actions over a period of time can result in cumulative impacts to a place. The project site has been previously disturbed from former operations under the Navy. Under oversight of the Navy, the site was used to conduct stationary engine tests, which stimulate extreme environmental operating conditions and lengthy endurance tests. Since the BRAC process, the site remains undeveloped and overgrown with vegetation. The buildout of the Honokea Surf Village will be a positive addition to the Kalaeloa area. The site will be cleaned up of debris, archaeological sites will be preserved as directed by SHPD, drought tolerant plants native to the area will be used in landscaping, stormwater will be captured and recycled onsite, and the use of on-site brackish water wells to dispose of filtered and de-chlorinated water will supplement the groundwater table.

Additional anticipated projects in the area include the Hunt's Kalaeloa Strategic Implementation Plan, which includes the Advanced Leeward Outpatient Healthcare Access Veterans Affairs project (projected 2023) and the Gentry Kalaeloa Housing project (projected 2023), as well as the DOT-A 2020 Kalaeloa Airport Development Plan project (on-going). Additionally, as part of the Hoakalei Resort/Ocean Pointe Master Plan, Haseko Development Inc., is constructing Wai Kai Lagoon. Wai-Kai Lagoon will offer a surf wave park, restaurants, retail shops, sand volleyball courts, a beach front lagoon, and an open space lawn area, similar to the Honokea Surf Village. Wai Kai Lagoon is anticipated to be open to the public in 2023. Overall, the addition of the Honokea Surf Village is not anticipated to contribute to additional cumulative effects.

Secondary effects are impacts that are associated with an activity but do not result directly from the activity. Overall, the addition of the Honokea Surf Village will provide beneficial secondary effects for the surrounding community by improving the functionality and aesthetics at the undeveloped site. The Honokea Surf Village will be the first of its kind in Hawai‘i and will provide residents and visitors of all abilities and ages with a sports and recreational facility and wellness destination that fosters the culture of surfing in Hawai‘i.

The addition of the Honokea Surf Village is anticipated to support the local economy and provide both short- and long-term socioeconomic benefits with jobs generated in the Kalaeloa area. Approximately 200 jobs will be created in the short-term including site preparation and construction, and approximately 150 long-term jobs will be generated with operations at the Honokea Surf Village. The air quality may even improve by reducing the commute time for local workers. In addition, the Honokea Surf Village will provide secondary benefits by partnering with local educational organizations to create an environment that encourages progressive educational opportunities in engineering, sustainability, wellness, medicine, entertainment, and Hawaiian surf history for both for residents and visitors.

Section 4

# Alternatives to the Proposed Project

Chapter 4

# Alternatives to the Proposed Project

The following presents an analysis of the alternatives to the proposed project.

## 4.1 Alternative A – No-Action Alternative

The "No-Action" alternative is the baseline against which all other alternatives are measured. "No-action" refers to the future site conditions that would result should the project not proceed.

The No-Action Alternative would result with no development of the Honokea Surf Village, thereby leaving the existing HCDA property vacant and undeveloped. As HCDA is the landowner for the parcel, the no-action alternative would result in the authority not being able maximize the potential use of the parcel and revenue stream therein. The no-action alternative would run counter to HCDA's mission for Kalaeloa per their Kalaeloa Strategic Plan:

*"…to lead a sustained, long-term public/private commitment for the realization of Kalaeloa as a Center for Excellence through partnerships, planning, advocacy, and stewardship."*

This alternative would result in the continued lack of recreational and economic opportunities in Kalaeloa, and would result in the historically Hawaiian sport of surfing ceding more of its influence to the continental United States and abroad.

This alternative would not properly address the current needs for recreational opportunities, film industry resources, or potential visitor awareness to the Kalaeloa area. The economy would not diversify, and no new jobs would be created in short term construction and long-term facilities operations. Hawaii's surfing and film industries would not be promoted, cultural education, smart tourism, and economic development would not be supported. Local surf-related businesses would not benefit from the state-of-the-art facilities, and the State could lose its position as a leader in surfboard design, manufacturing, and testing. No employment opportunities and opportunities to promote an awareness of surf history and its cultural heritage would be provided in the area. No artificial surf facility would be built in Hawai'i to serve as a training and meet venue for local and national Olympians and elite athletes, including the use of the facility for future Olympic training, and no opportunities would be provided for surfboard and fin design testing facilities. No world-class surf and aquatic film studio would be built to support and attract local, national, and international film projects. For these reasons, the "No-Action" alternative was not considered a viable alternative.

## 4.2 Alternative B – Alternate Location

The proposed project site is sized and situated ideally to support the Honokea Surf Village vision. The inclusion of this project is complementary to other on-going recreational, park, and cultural initiatives in the surrounding Kalaeloa area. The proposed project site was chosen for its advantages relative to other planned future uses for the area. The proposed recreational uses are consistent with the current land use designation as Rural/Open Space under the KCDD Regulating Plan.

At this time, there are no other alternative site options within the Kalaeloa district, as the opportunity at the current site features HCDA as the landowner. The proposed site would help meet the recreational and economic needs of Kalaeloa and the ‘Ewa region as a whole. This alternative was dismissed in favor of exploring alternative programs and configurations within the project parcel.

## 4.3 Alternative C – Alternate Use (Tent Camping)

Alternative C is an alternative that was considered earlier in the design process which featured up to 50 camping sites. No permanent structures would be constructed for the overnight camping use, and no more than 50 camping sites would be implemented. This alternative was rejected in favor of overnight accommodations that would allow for users, particularly those with disabilities, easier access to the facilities through allowing them to stay on-site for multiple days to fully engage the recreational facilities without having to transport themselves off-site on a daily basis.

Tent accommodations would have no means of noise mitigation for overnight users that you would find in cabins or typical construction. Built structures would allow mitigation measures for potential future nighttime aircraft flights if nighttime use increased over time.

Although tent camping could potentially be interpreted by HCDA as an allowable use in the T2 Rural/Open Space Zone, current rules do not allow for it. A waiver would need to be requested by the applicant for this use. HCDA is currently undergoing revisions to their Kalaeloa District Development Rules. An Administrative Draft of the Kalaeloa Master Plan released in May 2022 provides a Day-Night Average Sound Level (DNL) Land Use Compatibility Table for Recreational Land Use – Camping for up to 75 DNL. While not yet codified in the new Development Rules, camping could be a permitted use by spring 2023, after the Governor signs off on the new rules. At that point, Honokea would have the opportunity to proceed with adding tent camping as an allowable use.

## 4.4 Alternative D – Alternate Use (No Overnight Use and New Film Studio)

Earlier iterations of the Honokea Surf Village plan included different program configurations and adjacencies. Alternative D features a plan configuration with a lower intensity of land uses, including no permanent overnight accommodations, no camping tent pads, and no permanent overnight pads or supporting facilities for overnight accommodations. The remaining program uses are all permitted by right per HCDA Kalaeloa Community Development District (KCDD) rules.

In place of the overnight and camping program uses, the project would instead add an approximately 10,000 sf film studio building on site to help supplement the film industry uses and services planned for the Surf Lagoon and associated facilities.

The lack of overnight accommodations in Alternative D would greatly limit the type of users and user programs/experiences the facility is able to offer. Multiple day programs would be constrained by daily travel time and distance, disabled users would not be able to stay on site and reduce the barrier to accessing the facilities, and the limited programs would limit additional revenue generation. This alternative would be inconsistent with other allowable camping and overnight stays in similar configurations to runways such as the Beach Cottages near Kalaeloa Airport and camping at the nearby beach park.

## 4.5 Alternative E – Alternate Use (Open Space Recreation)

Alternative E is similar to Alternative D in that it features a plan configuration with a lower intensity of land uses, including no permanent overnight accommodations, no camping tent pads, and no permanent overnight pads or supporting facilities for overnight accommodations. In place of the overnight and camping program uses, the project would instead keep the area as recreational open space, allowing for activities, day cabanas, hosting functions, etc. The area south of the Clubhouse would have similar recreational opportunities as those that would occur at the Family Lawn.

While this alternative would expand the number of cabanas available for day use, the lack of overnight accommodations in Alternative E would greatly limit the type of users and user programs/experiences the facility is able to offer. Multiple day programs would be constrained by daily travel time and distance, disabled users would not be able to stay on site and reduce the barrier to accessing the facilities, and the limited programs would limit additional revenue generation and decrease user affordability.

## 4.6 Preferred Alternative/Proposed Action – Surf Lagoon Facility Plan

The preferred alternative is the proposed Surf Lagoon facility plan, which includes overnight accommodations with up to 50 cabins, and the full range of program uses and activities (See *Chapter 2.0).* All uses except for the cabins are an allowable use under the T2 Rural/Open Space Zone. A waiver would need to be requested by the applicant for the use of cabins. While the intent of the cabins is meant to be closer in standard to camping structures with durable materials (similar to those found at Camp Mokulēʻia, Malaekahana Beach Campground, Waiʻānapanapa State Park, and Barbers Point Beach Cottages, for example), HCDA currently views structures with overnight accommodations as lodging, and lodging is currently not allowed in the T2 Zone.

Should the waiver be denied under the current HCDA rules, there may be more flexibility to re-apply for a waiver after the new Kalaeloa District Development Rules are approved by spring 2023. As discussed in Alternative D, an Administrative Draft of the Kalaeloa Master Plan released in May 2022 provides the opportunity for Recreational Land Use – Camping. In addition, the Kalaeloa Master Plan discusses land uses where the airport creates demand, such as motels. The proposed camp cabin structures could potentially be viewed as somewhere in between tent camping and motels. Should both of these uses be allowed, Honokea would have the opportunity to proceed with adding camp cabins as an allowable use. Allowing camp cabins would also provide additional revenue and result in increased project viability and overall user affordability.

The development of the Honokea Surf Village will advance the State's interests by providing recreational opportunities in West Oʻahu, promoting Hawaiʻi's surfing and film industries, expanding research into emerging industries including artificial wave design and surf related equipment technology and design, providing essential life safety training for the military, first responders, and City and State agencies, while also supporting historic preservation and cultural education, smart tourism, and economic development.

Drainage calculations are roughly equal for impervious surface area in Alternatives C, D, E and the Preferred Alternative. Water and other utility demands for camping and overnight facilities will be similar in either Alternative. Ultimately, the final plan chosen featured the ideal combination of recreational opportunities, sizing, adjacencies, functionality, cultural and environmental sensitivity, and support from community members, organizations, local agencies, and elected officials.

Section 5

# Plans and Policies

Chapter 5

# Plans and Policies

The project's consistency with applicable Federal, State of Hawai'i and City and County of Honolulu planning and land use objectives, policies, principles, and guidelines are discussed below.

## 5.1 Americans with Disabilities Act of 1991

In 1991, the Federal government enacted the American with Disabilities Act (ADA) to provide equal accessibility for persons with disabilities. Part of this statute requires building designs to consider and incorporate the needs of persons with disabilities. Chapter 103-50 of the Hawai'i Revised Statutes (HRS) states,"…all plans and specifications for the construction of public buildings, facilities, and sites shall be prepared so that the buildings, facilities, and sites are accessible to and usable to persons with disabilities." The Disability and Communication Access Board (DCAB) shall adopt rules for the design of buildings, facilities, and site, by or on behalf of the State and Counties.

An advisory issued by DCAB will became effective January 2, 2017, enacted outdoor recreational guidelines as required by the State of Hawai'i. The Hawai'i Outdoor Developed Areas Accessibility Guidelines apply to camping areas, picnic areas, trails and viewing areas by persons with disabilities, and are in addition to sections of the ADA Accessibility Guidelines, 36 CFR 1191.

Discussion: The site improvements and facilities at Honokea, including the Surf Lagoon, associated facilities, camp cabins and educational areas, will comply with ADA and DCAB accessibility requirements. The project will provide recreational training programs specifically designed for disabled users who would otherwise be unable to safely participate in sports such as surfing in open water conditions. The project will also host national and international events for adaptive surfing, including the International Surfing Association World Adaptive Championships.

## 5.2 Federal Aviation Act of 1958 and Federal Aviation Regulations Part 77

The Federal Aviation Act of 1958 established the Federal Aviation Administration (FAA), which has the sole responsibility for the management of air navigation and air traffic control in the United States. Federal Regulation Title 14 Part 77 establishes standards and notification requirements for objects affecting navigable airspace. This notification evaluates the effects of a construction project on operating procedures, determines the potential hazardous effects of the proposed construction on air navigation, and identifies mitigating measures to enhance safe air navigation in order to prevent or minimize the adverse impacts to the safe and efficient use of navigable airspace.

As stated in Part 77 of Federal Aviation Regulations, the Administrator of the FAA is to be notified as to any proposed construction or alteration of an object that extends outward and upward at a slope of 25:1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of an airport, which could affect navigable air space, including approach and departure surfaces

of airfields. The Federal Aviation Regulations Part 77 also requires a clear zone approach slope of 34:1 within a designated boundary. Part 77 also addresses concerns of glint and glare, attraction of hazardous wildlife, and obstruction hazards.

Discussion: The proposed components of the Honokea project will be designed to comply with applicable FAA requirements and regulations. The project team has consulted with the FAA and Department of Transportation Airports Division (DOT-A) and will continue to coordinate with both agencies throughout the entitlements process and detailed design stage to ensure regulatory compliance. Compliance with specific FAA requirements relative to glint and glare, hazardous wildlife, and obstruction hazards is described in greater detail in *Section 5.6,* which outlines the State of Hawai'i Office of Planning's Technical Assistance Memorandum 2016-1, issued 01 August 2016.

## 5.3 Hawaii Community Development Authority, HRS Chapter 206E and HAR Chapter 15-215

The Hawaii Community Development Authority (HCDA), as a State agency, was established to supplement traditional community renewal methods by promoting and coordinating public and private sector community development. The creation of the entity (per HRS §206E) was to plan for the future development of underutilized urban areas in Hawai'i. The Legislature first designated the Kaka'ako area of Honolulu as the Authority's first Community Development District. In 2002, the State Legislature voted to transfer responsibility for a portion of Kalaeloa lands from the Barbers Point Naval Air Station Redevelopment Commission to HCDA, expanding HCDA's role to include redevelopment of 3,700 acres of the Kalaeloa Community Development District (KCDD) land. Lawmakers also approved the addition of new HCDA board members to represent the Kalaeloa District, in which the Honokea project will reside.

In September 2012, Hawai'i Administrative Rules (HAR) Chapter 15-215 were adopted for HCDA to protect and promote the public health, safety, and general welfare of the community and to protect and preserve places and areas of historical, cultural, architectural, or environmental importance and significance. These rules carry out the visions and concepts of the Kalaeloa Master Plan (see *Section 5.4)* by classifying and regulating the types and intensities of development and land uses within the KCDD, consistent with the policies and objectives of HRS, 206E, which defines the purpose, powers, and program of the HCDA.

HCDA is currently working with a consultant team to update the Kalaeloa Master Plan and the HAR §15-215 Kalaeloa Rules. HCDA is currently projecting the update will be finalized by the fall of 2023.

Discussion

The Honokea project parcel is within the HCDA KCDD, and is regulated per HAR §15-215. Per the KCDD, the project is located in the T2 Rural/Open Space transect zone *(Figure 1.4).* Per KCDD §15-215-23, the T2 Rural/Open Space zone shall consist primarily of open space, parks and limited agricultural use. Outdoor recreation, sports facilities, conference centers, cultural facilities, public buildings, religious facilities, consulates, hospitals, light industrial, research and development, agriculture, farmers markets, recycling collection facilities, solar farms and wind farms shall also be located within the T2 Rural/Open Space zone, by right or as required via Conditional Use Permit. Per KCDD §15-215-40 any one or more land uses in KCDD Figure 1.7 Land Use may be established on any T2 Rural/Open Space lot by right including uses under the Civic, Industrial and Sustainability categories: conference centers, cultural facilities, park and recreation, public buildings, light industrial, agriculture, farmer's market, recycling collection facility, and solar farm. And by Conditional Use Permit,

outdoor recreation, arenas and sports facilities, religious facilities, consulates, hospital, research and development, and wind farms are allowed.

The Project will have a variety of skill and adventure-based recreation activities which will include a comprehensive program of healthy recreation, education and training, sustainability, culture, and community attractions. The project's primary uses are outdoor recreation, conference center, cultural facility, industrial, agriculture and solar farm (due to the photovoltaic system planned for over 1 megawatt); with all other program uses functioning as ancillary uses to the before mentioned primary uses allowed in T2, which shall be allowed up to the maximum density allowed under building form within KCDD Development Summary Standards. The artificial wave lagoon complies with HCDA KCDD regulations as an outdoor recreational land use, and the project as a whole features ancillary uses supporting that use including lockers, bathrooms, showers, equipment rentals, grab n' go food and other associated uses that aim to support facility users in their recreational activity experiences.

See *Table 5.1* for a list of allowable uses per HCDA regulations.

**Table 5.1 Honokea Project Use Table**

| **Primary Defined Uses** | **Ancillary to Primary Use** |
|---|---|
| **Cultural Facility** (Permitted) | |
| • Surf museum and education center | • Outfitter / Proshop |
| **Conference Center** (Permitted) | |
| • Conference center/Banquet room<br>• Pre-function lawn | • Main Kitchen<br>• Loading/receiving/storage |
| **Industrial** (Permitted) | |
| • Film Production<br>• Surfboard Shaping | • Outfitter / Proshop |
| **Agriculture** (Permitted) | |
| • Greenhouse – plant nursery<br>• Chef's garden | |
| **Solar Farm** (Permitted) | |
| • PV Panels | |
| **Outdoor Recreation** (Conditional Use Permit) | |
| • Surf Lagoon<br>• Clubhouse<br>• Sand Volleyball<br>• Adventure Pool: Rock diving, walking trails, lazy river, exercise course, rock climbing, dive tank, paddle boarding<br>• Activity lawns<br>• Dipping Pools<br>• Playground/splashpad<br>• Skatepark<br>• Camping | Ancillary to Surf Lagoon<br>• Outfitter / Proshop<br>• Surf Lagoon Machinery, Equipment and Service Area<br>• Equipment Rentals<br>• Changing/Restrooms<br>• Shade structures: pavilions and cabanas<br>• Maintenance/storage<br>• Staff lockers/lounge<br>• Arrival Pavilion/Boardwalk<br>• Front office<br>• Restaurant<br>• Grab and Go / Bar / Juice Bars, Grill, Food Truck, and dining areas<br>Ancillary to Clubhouse:<br>• Clubroom/Terrace<br>• Grill/Dining Area<br>• Reception/Lobby<br>• Lockers/Changing/Restrooms |
| **Parks and Recreation** (Permitted) | |

| | |
|---|---|
| • High performance training center<br>• Fitness pavilion<br>• Surf Lagoon<br>• Sand Volleyball<br>• Adventure Pool: Rock diving, walking trails, lazy river, exercise course, rock climbing, dive tank, paddle boarding<br>• Activity lawns<br>• Dipping Pools<br>• Playground/splashpad<br>• Skatepark<br>• High performance training center<br>• Fitness pavilion<br>• Temporary Structures over 28'-0" | |

While HCDA is targeting a fall 2023 timeframe for their Kalaeloa Master Plan and Rules Update, this project is working to be submitted under the current rules.

The project will require an approved Conditional Use Permit (CUP) by HCDA for outdoor recreational use. As part of the permitting process for a CUP, a public hearing will be held. Furthermore, because the parcel is greater than 40,000 SF, a Development Permit (DP) is also required. The CUP and DP will be filed concurrently, pursuant to HAR 15-215-83(f). Following the issuance of the CUP and DP, the applicant will file Waivers or wait for the updated rules to implement the preferred camping/cabin use at the Honokea Surf Village. The petition for waiver or suspension of HAR rules to allow Camp. Cabins for the HCDA Development Permit would require a written summary request submitted to the HCDA Board for review, and a separate waiver request for a public hearing (in addition to the Development Permit presentation hearing) to be considered and determined at a final decision-making hearing.

## 5.4 Kalaeloa Master Plan

In 2006, HCDA prepared the Kalaeloa Master Plan to identify a course towards transforming Kalaeloa as a Wahi Ho'okela - a Center of Excellence within the 'Ewa region. The Kalaeloa Master Plan (KMP) is intended to serve as an amendment to the existing Kalaeloa Community Redevelopment Plan that was prepared as part of the U.S. Navy's Base Realignment & Closure (BRAC) process. The plan includes a regional economic analysis, infrastructural analysis, cash-flow model, noise study, land uses and urban design guidelines, and an assessment of the impacts to the area proposed by the U.S. Department of Defense (DOD) for the homeporting of an aircraft carrier strike group at Pearl Harbor. The vision of the KMP identifies opportunities that define the conceptual framework for the area's future land use plan. The opportunities include the following:

- Creating social value
- Providing new economic development & employment opportunities
- Balancing development
- Addressing regional traffic congestion
- Protecting open space and cultural and natural resources
- Integrating the possibility of military reuse

### Land Uses and Design Guidelines

4.1.7 Open Space, Parks, and Recreation

Open space and recreational-oriented park space continue to be a principal focus for Kalaeloa. The KMP identifies White Plains Beach and Nimitz Beach as invaluable assets for the entire ‘Ewa region. The Master Plan proposes to improve access to the beaches through a combination of a new, more direct vehicular route and new bicycle routes. The KMP also identifies the Honokea Surf Village parcel as being located near the largest dedication to open space, the preserve/cultural park situated to the east of Kalaeloa Airport. The KMP identifies the opportunity for recreational uses at Kalaeloa, including parks and related land uses.

4.2 Design Guidelines

The “Kalaeloa Design Guidelines” are form-based guidelines intended to foster a vibrant urban center built upon a lively mix of residential and commercial uses. These guidelines set careful and coherent controls on building form, while employing more flexible parameters relative to building use and density. This greater emphasis on physical form will produce safe, attractive, and enjoyable public spaces (good streets, neighborhoods, and parks), complemented with a healthy mix of uses.

The Kalaeloa Design Guidelines constitute a guidance document for HCDA in its continued collaboration and dialog with the City & County of Honolulu towards the promulgation of administrative rules to regulate development in Kalaeloa by setting careful and coherent controls on building form—while employing more flexible parameters relative to building use and density. This greater emphasis on physical form is intended to produce safe, attractive and enjoyable public spaces (good streets, neighborhoods and parks) complemented with a healthy mix of uses.

The Kalaeloa Design Guidelines are comprised of the following components:

(1) Urban Design Framework, which consists of Street and Landscape Design Guidelines; and

(2) Site Development Guidelines, consisting of Mixed-Use, and Industrial Development Guidelines

> The Site Development Guidelines for the Master Plan include: (1) Mixed-Use Development Guidelines, (2) Industrial Development Guidelines, and (3) Sustainable Design Guidelines.
>
> Sustainable Design Guidelines
> The Sustainable Design Guidelines promote active inclusion of current and future best-practices in all site planning, building, and landscape design. Rather than being prescriptive, this section addresses general principles and elements to benefit both Kalaeloa as a whole, as well as individual developments. Features discussed include shading, heating and cooling equipment, passive solar design, storm water disposal, and alternative energy generation techniques that may be used by individual developments.

Discussion

The proposed project would meet the objectives of the KMP through providing environmentally compatible development that protects open space and provides recreational opportunities within the Kalaeloa Community Development District. Section 3.2.3 of the KMP cites technology research and development (which the project provides through artificial wave technology and related industries, surf training, and surf equipment research and development, and state of the art wave filming and underwater filming technologies) as potential development opportunities for Kalaeloa. The project will diversify the economy and create educational opportunities for Kalaeloa and O‘ahu as a whole.

Honokea Surf Village complies with and supports the KMP's Land Use and Design Guidelines. The KMP preferred land uses map shows the project area located in a space designated for Open Space/Recreation, specifically recreation and cultural uses (*Figure 5.1*). The project's protection of historical, cultural, and archaeological resources as described in EA *Sections 3.6 and 3.7*, along with its lower height low impact sustainable design strategies that preserve view planes and open space, complies with the intent of this zoning. Also, the project is consistent with allowable uses in the Kalaeloa Community Development District, which is the current regulating plan for the district, as it is located in an area designated as part of a T2 Rural/Open Space transect overlay zone which includes parks and recreational activities.

Honokea Surf Village will comply with street and landscape design guidelines along Coral Sea Road, and will provide a safe, attractive, and enjoyable space that provides a healthy mix of uses for the Kalaeloa region. The project incorporates sustainable design components that are in line with the KMP's sustainable design guidelines, including shading, passive solar design, storm water disposal, and alternative energy generation techniques.


**Figure 5.1** **Kalaeloa Master Plan Preferred Land Uses Map**

## 5.5 Kalaeloa Airport Master Plan (1998) and Development Plan (2016)

In 1998, the future use of the Naval Air Station Barbers Point (NASBP) was determined by the NASBP Redevelopment Commission's decision to transfer a portion of the Base to the State for use as a civilian public-use general aviation reliever airport. The State DOT-Airports, working with the Redevelopment Commission, created an Airport Master Plan to accommodate the various aviation needs identified for the Kalaeloa Airport.

The master plan's main objective is to help relieve Honolulu International Airport of its congestion and prevent potential delays by making Kalaeloa Airport available as a reliever airport for public-use general aviation. The master plan's objectives provide facilities for U.S. Coast Guard, Hawai'i National Guard, and University of Hawai'i training activities. Other goals of the master plan include providing jobs and providing space for other new aviation related revenue producing facilities.

The Kalaeloa Airport Master Plan aims to retain compatibility with other existing and planned uses in the area. The Master Plan states it retains a large amount of land for a regional park, recreational activities, and public access to the beach and shoreline. It has a smaller noise footprint than the previous military airfield, and maximizes aircraft takeoffs and landings over water to provide land use compatibility benefits for adjacent properties.

The 2016 Kalaeloa Airport Development Plan provided updates and guidance for planned airport improvements for safety and security upgrades, capital improvement projects for existing facilities, and developing new facilities to meet growing demands at the airport. The three main plan categories include:

- General Aviation – Apron Area (developing 140 T-hangars and 120 aircraft tie downs, aviation museum relocation, parking upgrades, 20,000 gallon jet "A" fuel tank and dispenser system, etc).
- Airfield Improvements (upgraded airfield markings, lighting, signage, pavement maintenance, navigational aids)
- Airport Support Facilities (upgraded perimeter fences, security upgrade including card control gate access, upgraded infrastructure, upgraded perimeter road)

Discussion

The project parcel is located outside of any avigation easements or controlled activity areas as listed on the Kalaeloa Airport Master Plan. The maximum height of project structures will not exceed 28 ft from the finished grade. A FAA Form 7460-1 (2-12) Notice of Proposed Construction or Alteration along with supporting attachments will be submitted to FAA for their review to ensure that the project does not physically interfere with protected airspace around the airport, interfere with radar, or create a potential glare hazard. Honokea shall grant an avigation easement to the HDOT-A as required.

## 5.6 State of Hawai‘i Office of Planning, Technical Assistance Memorandum (TAM-2016-1)

In August 2016, the State of Hawai‘i Office of Planning issued a Technical Assistance Memorandum on that discusses FAA Order 5190.6B in regard to the use of land adjacent to or in the immediate vicinity of Hawai‘i’s airports. FAA Order 5190.6B’s main goal is to ensure compatible land uses near federally obligated airports. Compatibility is determined by noise level, hazardous attraction of wildlife, glint and glare, structure height, and compatibility with avigation easements.

The TAM-2016-1 specifically cites concerns about “Water features on properties such as fountains or ponds, areas of permanent or temporary standing water, and furrow irrigation and drainage systems”.

Per Hawai‘i Revised Statutes (HRS) Chapter 262, the Airport Zoning Act, it is necessary in the interest of the public health, public safety, and general welfare that the creation, maintenance, or establishment of airport hazards be prevented as the airport hazards are a public nuisance and an injury to the community served by an airport.

Discussion: The project facilities and features have been designed to comply with FAA Order 5190.6B. The Honokea project will continue ongoing coordination with the FAA throughout the project to ensure regulatory compliance. The surf lagoon will be running from approximately 7am to 10pm daily, which avoids standing water during daylight hours due to wave action and use.

In compliance with HRS Chapter 262, the Airport Zoning Act, any potential airport hazards such as glint, glare, or potential wildlife attracting elements have been reviewed in this report, and mitigation measures to reduce impacts have been outlined in *Section 3.5 Biological Resources* and *Appendix D*.

Per the KCDD rules, the Project is a compatible recreational use in the designated T2 Rural/Open Space transect overlay zone.

## 5.7 Hawai‘i State Plan

The Hawai‘i State Planning Act, adopted in 1978, and promulgated in HRS Chapter 226, resulted in the *Hawai‘i State Plan*, recently revised in 1991. The *Hawai‘i State Plan* provides goals, objectives, policies, and priority guidelines for growth, development and the allocation of resources throughout the state in various areas of State interest. The purpose of the *Hawai‘i State Plan* is to improve the planning process in the State; increase the effectiveness of government and private actions; improve coordination among different agencies and levels of government; and provide for wise use of Hawai‘i’s resources and to guide the future development of the State.

State goals under the Hawai‘i State Planning Act are set to guarantee, for present and future generations, those elements of choice and mobility that insure individuals and groups may approach their desired levels of self-reliance and self-determination:

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai‘i present and future generations.
- A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

- Physical, social, and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Objectives and policies of the *Hawai‘i State Plan* are presented and discussed based on their relevance to the Project in the below *Table 5.2, Hawai‘i State Plan*.

| **Table 5.2 Hawai‘i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable** | **S** | **N/S** | **N/A** |
|---|---|---|---|
| **§226-1: Findings and Purpose** | | | |
| **§226-2: Definitions** | | | |
| **§226-3: Overall Theme** | | | |
| §226-4: State Goals. In order to guarantee, for the present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve: | | | |
| (1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai‘i’s present and future generations | X | | |
| (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people. | X | | |
| (3) Physical, social and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life. | X | | |
| Discussion: The Project will contribute to the social and economic well-being for local users; support a physical environment, characterized by beauty and cleanliness; and contribute to economic growth. Honokea will help to diversify the economy by providing a world class recreation facility, sports training, life safety training, additional surf research industries (board shaping, etc), and film industry wave and underwater filming opportunities, while retaining an open area environment that does not encroach upon Kalaeloa view planes, and fosters community responsibility and cultural understanding through cultural tours, youth scholarships, educational programs, and community events. | | | |
| **§226-5: Objective and policies for population**<br>(a) It shall be the objective in planning for the State’s population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter;<br>(b) To achieve the population objective, it shall be the policy of this State to: | | | |
| (1) Manage population growth statewide in a manner that provides increased opportunities for Hawai‘i’s people to pursue their physical, social and economic aspirations while recognizing the unique needs of each county. | | | X |
| (2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs-and desires. | | | X |
| (3) Promote increased opportunities for Hawai‘i's people to pursue their socioeconomic aspirations throughout the islands. | | | X |
| (4) Encourage research activities and public awareness programs to foster and understanding of Hawai‘i's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai‘i's population. | | | X |
| (5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among states, provided that such actions do not prevent the reunion of immediate family members. | | | X |
| (6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state’s population | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area | | | X |
| Discussion: While the Project will contribute to increased short- and long-term jobs and earnings, the objectives and policies specified in HRS §226-5 are not directly applicable to the Project. | | | |
| §226-6 Objectives and policies for the economy in general. | | | |
| (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. | X | | |
| (2) A steadily growing and diversified economic base that is not overly dependent on a few industries and includes the development and expansion of industries on the neighbor islands. | X | | |
| (b) To achieve the general economic objectives, it shall be the policy of this State to: | | | |
| (1) Promote and encourage entrepreneurship within Hawai'i by residents and nonresidents of the State. | X | | |
| (2) Expand Hawai'i's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State. | X | | |
| (3) Promote Hawai'i as an attractive market for environmentally and socially sound investment activities that benefit Hawai'i's people. | X | | |
| (4) Transform and maintain Hawai'i as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities. | X | | |
| (5) Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawai'i. | X | | |
| (6) Seek broader outlets for new or expanded Hawai'i business investments. | X | | |
| (7) Expand existing markets and penetrate new markets for Hawai'i's products and services. | X | | |
| (8) Assure that the basic economic needs of Hawai'i's people are maintained in the event of disruptions in overseas transportation. | | | X |
| (9) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives. | X | | |
| (10) Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawai'i's small-scale producers, manufacturers, and distributors. | | | X |
| (11) Encourage labor-intensive activities that are economically satisfying, and which offer opportunities for upward mobility. | | | X |
| (12) Encourage innovative activities that may not be labor-intensive, but may otherwise contribute to the economy of Hawai'i. | X | | |
| (13) Foster greater cooperation and coordination between the government and private sectors in developing Hawai'i's employment and economic growth opportunities. | | | X |
| (14) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems. | X | | |
| (15) Maintain acceptable working conditions and standards for Hawai'i's workers. | | | X |
| (16) Provide equal employment opportunities for all segments of Hawai'i's population through affirmative action and nondiscrimination measures. | | | X |
| (17) Stimulate 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. | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (18) Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy. | X | | |
| (19) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy. | X | | |
| (20) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular. | | | X |
| (21) Foster a business climate in Hawai'i--including attitudes, tax and regulatory policies, and financial and technical assistance programs--that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry. | | | X |
| Discussion: The project promotes many of the objectives and policies for the economy in general, including diversifying employment opportunities in multiple industries, and promoting entrepreneurship within Hawai'i through providing space for local businesses in the master plan. The project also aims to expand Hawai'i's national and international marketing through the reestablishment of surfing's historical roots and excellence in the State, promoting the project as an attractive market for investment activities in the Honokea project and related industries that will benefit the region and the State as a whole, while inviting and providing innovative activities like artificial wave research, aquaculture, and new water related film industry opportunities. The project also encourages growth in the west side of O'ahu, consistent with State growth objectives, and provides a new year-round facility that will provide an estimated 150 full time jobs, while promoting the beauty of the ocean and values of the Aloha Spirit through surfing and other recreational activities. | | | |
| §226-7 Objectives and policies for the economy - agriculture. | | | |
| (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives: | | | |
| (1) Viability of Hawai'i's sugar and pineapple industries. | | | X |
| (2) Growth and development of diversified agriculture throughout the State. | | | X |
| (3) An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being. | | | X |
| (b) To achieve the agriculture objectives, it shall be the policy of this State to: | | | |
| (1) Establish a clear direction for Hawai'i's agriculture through stakeholder commitment and advocacy. | | | X |
| (2) Encourage agriculture by making best use of natural resources. | | | X |
| (3) Provide the governor and the legislature with information and options needed for prudent decision making for the development of agriculture. | | | X |
| (4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits. | | | X |
| (5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawai'i's economy. | | | X |
| (6) Seek the enactment and retention of federal and state legislation that benefits Hawai'i's agricultural industries. | | | X |
| (7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawai'i's producers and consumer markets locally, on the continental United States, and internationally. | | | X |
| (8) Support research and development activities that provide greater efficiency and economic productivity in agriculture. | | | X |
| (9) Enhance agricultural growth by providing public incentives and encouraging private initiatives. | | | X |
| (10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs. | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (11) Increase the attractiveness and opportunities for an agricultural education and livelihood. | | | X |
| (12) Expand Hawai'i's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises. | | | X |
| (13) Promote economically competitive activities that increase Hawai'i's agricultural self-sufficiency. | | | X |
| (14) Promote and assist in the establishment of sound financial programs for diversified agriculture. | | | X |
| (15) Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment. | | | X |
| (16) Facilitate the transition of agricultural lands in economically non-feasible agricultural production to economically viable agricultural uses. | | | X |
| (17) Perpetuate, promote, and increase use of traditional Hawaiian farming systems, such as the use of loko i'a, māla, and irrigated lo'i, and growth of traditional Hawaiian crops, such as kalo, 'uala, and 'ulu. | X | | |
| (18) Increase and develop small-scale farms. | X | | |
| Discussion: While not the primary use or focus of the project, ancillary uses included that support the primary recreational facilities include lo'i and limu farms, as well as an onsite greenhouse to provide farm to table food and ingredient opportunities for restaurants and food service options on site. | | | |
| §226-8 Objective and policies for the economy--visitor industry.<br>(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.<br>(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. | X | | |
| (2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people. | X | | |
| (3) Improve the quality of existing visitor destination areas. | | | X |
| (4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities. | | | X |
| (5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawai'i's people. | X | | |
| (6) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the visitor industry. | X | | |
| (7) Foster a recognition of the contribution of the visitor industry to Hawai'i's economy and the need to perpetuate the aloha spirit. | X | | |
| (8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values. | X | | |
| Discussion: The project will support and assist in the promotion of Hawai'i as a visitor attraction and training facility, and will showcase the history and culture of surfing and the region, which includes the historical connection to Hawai'i's visitor industry. The variety of recreational sports activities, including specialized surf training, life safety training, film industry opportunities, and related surf research industries will provide new job opportunities and opportunities for Hawai'i's people to obtain job training and education to allow for upward mobility within the visitor industry, and recreational sports industries as well. The project will emphasize the large amount of goodwill and social/economic/cultural contributions surfing and sports have had on the history of Hawai'i, and will foster an understanding of visitors and local users alike to the unique and sensitive character of Hawai'i's cultures and values through Native plant tours, and traditional Native planting and cultural practices. | | | |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| **§226-9 Objective and policies for the economy--federal expenditures.** | | | |
| (a) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai'i's economy. | | | |
| (b) To achieve the federal expenditures objective, it shall be the policy of this State to: | | | |
| (1) Encourage the sustained flow of federal expenditures in Hawai'i that generates long-term government civilian employment. | | | X |
| (2) Promote Hawai'i's supportive role in national defense. | | | X |
| (3) Promote the development of federally supported activities in Hawai'i that respect state-wide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment. | | | X |
| (4) Increase opportunities for entry and advancement of Hawai'i's people into federal government service. | | | X |
| (5) Promote federal use of local commodities, services, and facilities available in Hawai'i. | | | X |
| (6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawai'i. | | | X |
| (7) Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties. | | | X |
| Discussion: The objectives and policies specified in HRS §226-9 are not directly applicable to the Project. | | | |
| **§226-10 Objectives and policies for the economy--potential growth and innovative activities.** | | | |
| (a) Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion of potential growth and innovative activities that serve to increase and diversify Hawai'i's economic base. | | | |
| (b) To achieve the potential growth and innovative activity objective, it shall be the policy of this State to: | | | |
| (1) Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawai'i's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, health care, and science and technology-based sectors; | | | x |
| (2) Facilitate investment in innovative activity that may pose risks or be less labor-intensive than other traditional business activity, but if successful, will generate revenue in Hawai'i through the export of services or products or substitution of imported services or products; | | | x |
| (3) Encourage entrepreneurship in innovative activity by academic researchers and instructors who may not have the background, skill, or initial inclination to commercially exploit their discoveries or achievements; | | | x |
| (4) Recognize that innovative activity is not exclusively dependent upon individuals with advanced formal education, but that many self-taught, motivated individuals are able, willing, sufficiently knowledgeable, and equipped with the attitude necessary to undertake innovative activity; | | | x |
| (5) Increase the opportunities for investors in innovative activity and talent engaged in innovative activity to personally meet and interact at cultural, art, entertainment, culinary, athletic, or visitor-oriented events without a business focus; | X | | |
| (6) Expand Hawai'i's capacity to attract and service international programs and activities that generate employment for Hawai'i's people; | X | | |
| (7) Enhance and promote Hawai'i's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts; | X | | |
| (8) Accelerate research and development of new energy-related industries based on wind, solar, ocean, underground resources, and solid waste; | X | | |
| (9) Promote Hawai'i's geographic, environmental, social, and technological advantages to attract new or innovative economic activities into the State; | X | | |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (10) Provide public incentives and encourage private initiative to attract new or innovative industries that best support Hawai'i's social, economic, physical, and environmental objectives; | | | X |
| (11) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research; | X | | |
| (12) Develop, promote, and support research and educational and training programs that will enhance Hawai'i's ability to attract and develop economic activities of benefit to Hawai'i; | X | | |
| (13) Foster a broader public recognition and understanding of the potential benefits of new or innovative growth-oriented industry in Hawai'i; | X | | |
| (14) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawai'i's social, economic, physical, and environmental objectives; | | | X |
| (15) Increase research and development of businesses and services in the telecommunications and information industries; | | | X |
| (16) Foster the research and development of nonfossil fuel and energy efficient modes of transportation; and | | | X |
| (17) Recognize and promote health care and health care information technology as growth industries. | | | X |
| **Discussion:** The project will support the potential growth and innovative activity objectives for the economy through providing investment opportunities in national and international Olympic wave training facilities to attract local and national talent in athletic and entertainment events without a business focus, including hosting national/international surf competitions and AVP pro beach volleyball tour events. The project will enhance, promote, and reclaim Hawai'i's historic role as the international center for surfing, while also providing research into ocean-based surfing and recreation technologies (i.e. board shaping, underwater and artificial wave filming technology), and diversifying educational and training programs that will enhance Hawai'i's ability to attract and develop progressive and new activities of benefit to the State. | | | |
| §226-10.5 Objectives and policies for the economy--information industry.<br>(a) Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawai'i as a leader in broadband and wireless communications and applications in the Pacific Region.<br>(b) To achieve the information industry objective, it shall be the policy of this State to: | | | |
| (1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawai'i and between Hawai'i and the world, and make high speed communication available to all residents and businesses in Hawai'i; | | | X |
| (2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth and innovation in Hawai'i's economy; | | | X |
| (3) Facilitate the development of new or innovative business and service ventures in the information industry which will provide employment opportunities for the people of Hawai'i; | | | X |
| (4) Encourage mainland- and foreign-based companies of all sizes, whether information technology-focused or not, to allow their principals, employees, or contractors to live in and work from Hawai'i, using technology to communicate with their headquarters, offices, or customers located out-of-state; | | | X |
| (5) Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry; | | | X |
| (6) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people; | | | X |
| (7) Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry; | | | X |
| (8) Foster a recognition of the contribution of the information industry to Hawai'i's economy; and | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (9) Assist in the promotion of Hawai'i as a broker, creator, and processor of information in the Pacific. | | | X |
| Discussion: The objectives and policies specified in HRS §226-10 are not directly applicable to the Project. | | | |
| §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. | X | | |
| (2) Effective protection of Hawai'i's unique and fragile environmental resources. | X | | |
| (b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to: | | | |
| (1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources. | X | | |
| (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems. | X | | |
| (3) Take into account the physical attributes of areas when planning and designing activities and facilities. | X | | |
| (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage. | | | X |
| (5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions. | | | X |
| (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i. | X | | |
| (7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion. | | | X |
| (8) Pursue compatible relationships among activities, facilities and natural resources. | X | | |
| (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational and scientific purposes. | X | | |
| Discussion: The Project improvements are consistent with State and City land use designations. The Site is located in former Kalaeloa airfield lands, on a previously disturbed site. Physical attributes of the Site were considered to ensure that the Site was used in a prudent manner and the proposed improvements were compatible with existing activities in the area and existing natural resources. The Project will not obstruct public access to inland or shoreline areas used for public recreational purposes. Proper mitigation measures will be implemented to ensure that threatened or endangered flora and fauna species that traverse the Site are protected. For further discussion, see *Section 3.5, Biological Resources.* | | | |
| §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 objectives, it shall be the policy of this State to: | | | |
| (1) Promote the preservation and restoration of significant natural and historic resources. | X | | |
| (2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities. | | | X |
| (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features. | X | | |
| (4) Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage. | X | | |
| (5) Encourage the design of developments and activities that complement the natural beauty of the islands. | X | | |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| Discussion: The Project is not anticipated to have an impact on significant views or vistas. The Project will not detract from surrounding natural beauty; instead the project will be designed to focus on nature with spaces that minimize the need for structures where possible and complement the existing environment through design and material selection. The Project will promote the preservation and protection of historic resources. For further discussion, see *Sections 3.6* and *3.7, Historical Cultural, and Archaeological Resources* and *Section 3.9, Visual Resources.* | | | |
| §226-13 Objectives and policies for the physical environment--land, air, and water quality. | | | |
| (a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives: | | | |
| (1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources. | X | | |
| (2) Greater public awareness and appreciation of Hawai'i's environmental resources. | | | X |
| (b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to: | | | |
| (1) Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources. | | | X |
| (2) Promote the proper management of Hawai'i's land and water resources. | X | | |
| (3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground and coastal waters. | X | | |
| (4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people. | X | | |
| (5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters. | | | X |
| (6) Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities. | X | | |
| (7) Encourage urban developments in close proximity to existing services and facilities. | X | | |
| (8) Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors. | | | X |
| Discussion: The Project is not anticipated to have a significant impact on land, air, and water (surface, ground and coastal) resources. The Project is on a site that is part of a larger, previously developed parcel near existing infrastructure services and facilities. The Project will not increase the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters. The project will provide recreational activities for community members of all ages to enhance the health and well-being of Hawai'i's people. For further discussion, see *Section 3.1 Climate, Section 3.3 Drainage and Hydrology, Section 3.4 Natural Hazards,* and *Section 3.12 Air Quality.* | | | |
| §226-14 Objective and policies for facility systems--in general. | | | |
| (a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives. | | | |
| (b) To achieve the general facility systems objective, it shall be the policy of this State to: | | | |
| (1) Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans. | | | X |
| (2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities. | | | X |
| (3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user. | | | X |
| (4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems. | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| Discussion: The objectives and policies specified in HRS §226-14 are not directly applicable to the Project. | | | |
| **§226-15 Objectives and policies for facility systems--solid and liquid wastes.** | | | |
| (a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives: | | | |
| (1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes. | X | | |
| (2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas. | | | X |
| (b) To achieve solid and liquid waste objectives, it shall be the policy of this State to: | | | |
| (1) Encourage the adequate development of sewerage facilities that complement planned growth. | X | | |
| (2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic. | X | | |
| (3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes. | | | X |
| Discussion: The Project involves the development of wastewater infrastructure to adequately meet the needs of the surf park users and staff. Wastewater treatment will meet all Department of Health requirements and guidelines. Users and staff will be encouraged to recycle to reduce solid and liquid wastes. For further discussion, see *Section 3.10 Utilities.* | | | |
| **§226-16 Objective and policies for facility systems--water.** | | | |
| (a) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities. | | | |
| (b) To achieve the facility systems water objective, it shall be the policy of this State to: | | | |
| (1) Coordinate development of land use activities with existing and potential water supply. | X | | |
| (2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs. | | | X |
| (3) Reclaim and encourage the productive use of runoff water and wastewater discharges. | X | | |
| (4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use. | | | X |
| (5) Support water supply services to areas experiencing critical water problems. | | | X |
| (6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs. | X | | |
| Discussion: Discussions with Hawai'i Water Service regarding water demands to accommodate the project are on-going. The availability of water will be confirmed when the building permit application is submitted. The Project will implement water conservation measures such as incorporating Native plants with more drought tolerant qualities to reduce water irrigation demands and will explore sourcing non-potable water for irrigation, such as harvesting rainwater in catchments or storm water in holding tanks. For further discussion, see *Section 3.10.1 Water.* | | | |
| **§226-17 Objectives and policies for facility systems--transportation.** | | | |
| (a) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives: | | | |
| (1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods. | | | X |
| (2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State. | | | X |

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|---|---|---|---|
| (b) To achieve the transportation objectives, it shall be the policy of this State to: | | | |
| (1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter; | | | X |
| (2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives; | | | X |
| (3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties; | | | X |
| (4) Provide for improved accessibility to shipping, docking, and storage facilities; | | | X |
| (5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs; | | | X |
| (6) Encourage transportation systems that serve to accommodate present and future development needs of communities; | | | X |
| (7) Encourage a variety of carriers to offer increased opportunities and advantages to inter-island movement of people and goods; | | | X |
| (8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs; | | | X |
| (9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification; | | | X |
| (10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai'i's natural environment; | | | X |
| (11) Encourage safe and convenient use of low-cost, energy- efficient, non-polluting means of transportation; | | | X |
| (12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and | | | X |
| (13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency. | | | X |
| Discussion: The objectives and policies specified in HRS §226-17 are not directly applicable to the Project. | | | |
| §226-18 Objectives and policies for facility systems--energy.<br>(a) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all: | | | |
| (1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people; | | | X |
| (2) Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawai'i's dependence on imported fuels for electrical generation and ground transportation; | | | X |
| (3) Greater diversification of energy generation in the face of threats to Hawai'i's energy supplies and systems; | | | X |
| (4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use; and | | | X |
| (5) Utility models that make the social and financial interests of Hawai'i's utility customers a priority. | | | X |
| (b) To achieve the energy objectives, it shall be the policy of this State to ensure the short- and long-term provision of adequate, reasonably priced, and dependable energy services to accommodate demand.<br>(c) To further achieve the energy objectives, it shall be the policy of this State to: | | | |
| (1) Support research and development as well as promote the use of renewable energy sources; | | | X |

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|---|---|---|---|
| (2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth; | | | X |
| (3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits; | | | X |
| (4) Promote all cost-effective conservation of power and fuel supplies through measures, including:<br>(A) Development of cost-effective demand-side management programs;<br>(B) Education;<br>(C) Adoption of energy-efficient practices and technologies; and<br>(D) Increasing energy efficiency and decreasing energy use in public infrastructure; | | | X |
| (5) Ensure to the extent that new supply-side resources are needed, the development or expansion of energy systems utilizes the least-cost energy supply option and maximizes efficient technologies; | | | X |
| (6) Support research, development, and demonstration of energy efficiency, load management, and other demand-side management programs, practices, and technologies; | | | X |
| (7) Promote alternate fuels and energy efficiency by encouraging diversification of transportation modes and infrastructure; | | | X |
| (8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications; and | | | X |
| (9) Support actions that reduce, avoid, or sequester Hawai'i's greenhouse gas emissions through agriculture and forestry initiatives. | | | X |
| (10) Provide priority handling and processing for all state and county permits required for renewable energy projects; | | | X |
| (11) Ensure that liquefied natural gas is used only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation and does not impede the development and use of other cost-effective renewable energy sources; and | | | X |
| (12) Promote the development of indigenous geothermal energy resources that are located on public trust land as an affordable and reliable source of firm power for Hawai'i. | | | X |
| Discussion: The objectives and policies specified in HRS §226-18 are not directly applicable to the Project. | | | |
| §226-18.5 Objectives and policies for facility systems--telecommunications.<br>(a) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.<br>(b) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.<br>(c) To further achieve the telecommunications objective, it shall be the policy of this State to: | | | |
| (1) Facilitate research and development of telecommunications systems and resources; | | | X |
| (2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning; | | | X |
| (3) Promote efficient management and use of existing telecommunications systems and services; and | | | X |
| (4) Facilitate the development of education and training of telecommunications personnel. | | | X |
| Discussion: The objectives and policies specified in HRS §226-18.5 are not directly applicable to the Project. | | | |

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|---|---|---|---|
| **§226-19 Objectives and policies for socio-cultural advancement--housing.** | | | |
| (a) Planning for the State's socio- cultural advancement with regard to housing shall be directed toward the achievement of the following objectives: | | | |
| (1) Greater opportunities for Hawai'i's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more rental and for sale affordable housing is made available to extremely low-, very low-, lower-, moderate-, and above moderate-income segments of Hawai'i's population. | | | X |
| (2) The orderly development of residential areas sensitive to community needs and other land uses. | | | X |
| (3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people. | | | X |
| (b) To achieve the housing objectives, it shall be the policy of this State to: | | | |
| (1) Effectively accommodate the housing needs of Hawai'i's people. | | | X |
| (2) Stimulate and promote feasible approaches that increase affordable rental and for sale housing choices for extremely low-, very low-, lower-, moderate-, and above moderate-income households. | | | X |
| (3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing. | | | X |
| (4) Promote appropriate improvement, rehabilitation, and maintenance of existing rental and for sale housing units and residential areas. | | | X |
| (5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas. | | | X |
| (6) Facilitate the use of available vacant, developable, and underutilized urban lands for housing. | | | X |
| (7) Foster a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community. | | | X |
| (8) Promote research and development of methods to reduce the cost of housing construction in Hawai'i. | | | X |
| Discussion: The objectives and policies specified in HRS §226-19 are not directly applicable to the Project. | | | |
| **§226-20 Objectives and policies for socio-cultural advancement--health.** | | | |
| (a) Planning for the State's socio- cultural advancement with regard to health shall be directed towards achievement of the following objectives: | | | |
| (1) Fulfillment of basic individual health needs of the general public. | X | | |
| (2) Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities. | | | X |
| (b) To achieve the health objectives, it shall be the policy of this State to: | | | |
| (1) Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse. | | | X |
| (2) Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State. | | | X |
| (3) Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs. | | | X |
| (4) Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures. | | | X |

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|---|---|---|---|
| (5) Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions. | | | X |
| (6) Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement. | | | X |
| (7) Prioritize programs, services, interventions, and activities that address identified social determinants of health to improve native Hawaiian health and well-being consistent with the United States Congress' declaration of policy as codified in title 42 United States Code section 11702, and to reduce health disparities of disproportionately affected demographics, including native Hawaiians, other Pacific Islanders, and Filipinos. The prioritization of affected demographic groups other than native Hawaiians may be reviewed every ten years and revised based on the best available epidemiological and public health data. | | | X |
| Discussion: While the Project is focused on healthy recreation activities, the objectives and policies specified in HRS §226-20(b) are not directly applicable to the Project. | | | |
| §226-21 Objective and policies for socio-cultural advancement--education.<br>(a) Planning for the State's socio- cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.<br>(b) To achieve the education objective, it shall be the policy of this State to: | | | |
| (1) Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups. | X | | |
| (2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs. | X | | |
| (3) Provide appropriate educational opportunities for groups with special needs. | X | | |
| (4) Promote educational programs which enhance understanding of Hawai'i's cultural heritage. | X | | |
| (5) Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands. | | | X |
| (6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities. | | | X |
| (7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning. | | | X |
| (8) Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence. | | | X |
| (9) Support research programs and activities that enhance the education programs of the State. | | | X |
| Discussion: The Project features a variety of educational programs and opportunities that support the State's socio-cultural advancement – education objectives. The Project features surf training, life safety training, recreational activities, a museum, and cultural outreach programs that enhance the understanding of Hawai'i's cultural history and heritage through surfing history and Native plants and cultural practice tours. The Project also will provide recreational training and opportunities for disabled guests who would otherwise not be able to safely learn and participate in surfing and other recreational activities provided on site. | | | |
| §226-22 Objective and policies for socio-cultural advancement--social services.<br>(a) Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.<br>(b) To achieve the social service objective, it shall be the policy of the State to: | | | |
| (1) Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities. | | | X |

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|---|---|---|---|
| (2) Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society. | | | X |
| (3) Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawai'i's communities. | | | X |
| (4) Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations. | | | X |
| (5) Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect. | | | X |
| (6) Promote programs which assist people in need of family planning services to enable them to meet their needs. | | | X |
| Discussion: The objectives and policies specified in HRS §226-22 are not directly applicable to the Project. | | | |
| §226-23 Objective and policies for socio-cultural advancement--leisure.<br>(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.<br>(b) To achieve the leisure objective, it shall be the policy of this State to: | | | |
| (1) Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities. | | | X |
| (2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently. | X | | |
| (3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance. | X | | |
| (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. | X | | |
| (5) Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources. | X | | |
| (6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs. | | | X |
| (7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawai'i's people. | X | | |
| (8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms. | | | X |
| (9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawai'i's population to participate in the creative arts. | | | X |
| (10) Assure adequate access to significant natural and cultural resources in public ownership. | X | | |
| Discussion: The Project will provide recreational opportunities with fitness programs that promote physical and mental well-being in the form of a surf park and other sports activities, fulfilling the cultural and recreational needs of diverse and special groups including disabled athletes and guests who want to participate in sports that would otherwise be unsafe in open water conditions. Surf lessons and life safety training will enhance the enjoyment of recreational experiences in the park and throughout the State as more people will be better prepared and experienced in the ocean and other areas through these programs. | | | |

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|---|---|---|---|
| **§226-24 Objective and policies for socio-cultural advancement--individual rights and personal well-being.** | | | |
| (a) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations. | | | |
| (b) To achieve the individual rights and personal well-being objective, it shall be the policy of this State to: | | | |
| (1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment. | | | X |
| (2) Uphold and protect the national and state constitutional rights of every individual. | | | X |
| (3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice. | | | X |
| (4) Ensure equal opportunities for individual participation in society. | | | X |
| Discussion: The objectives and policies specified in HRS §226-24 are not directly applicable to the Project. | | | |
| **§226-25 Objective and policies for socio-cultural advancement--culture.** | | | |
| (a) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people. | | | |
| (b) To achieve the culture objective, it shall be the policy of this State to: | | | |
| (1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i. | X | | |
| (2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs. | X | | |
| (3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i. | | | X |
| (4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors. | X | | |
| Discussion: The Project will provide cultural and educational programs related to surfing and regional cultural history, while also utilizing Native landscaping, providing Native Plant tours, and collaborating with the Kalaeloa Heritage Park to the south to coordinate potential community education opportunities. | | | |
| **§226-26 Objectives and policies for socio-cultural advancement--public safety.** | | | |
| (a) Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives: | | | |
| (1) Assurance of public safety and adequate protection of life and property for all people. | | | X |
| (2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances. | | | X |
| (3) Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people. | | | X |
| (b) To achieve the public safety objectives, it shall be the policy of this State to: | | | |
| (1) Ensure that public safety programs are effective and responsive to community needs. | | | X |
| (2) Encourage increased community awareness and participation in public safety programs. | | | X |
| (c) To further achieve public safety objectives related to criminal justice, it shall be the policy of this State to: | | | |
| (1) Support criminal justice programs aimed at preventing and curtailing criminal activities. | | | X |

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|---|---|---|---|
| (2) Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies. | | | X |
| (3) Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community. | | | X |
| (d) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to: | | | |
| (1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times. | | | X |
| (2) Enhance the coordination between emergency management programs throughout the State. | | | X |
| Discussion: The objectives and policies specified in HRS §226-26 are not directly applicable to the Project. However, during construction, Federal, State and City requirements will be implemented to ensure the safety of staff, construction crews and community members at the Site. | | | |
| §226-27 Objectives and policies for socio-cultural advancement--government. | | | |
| (a) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives: | | | |
| (1) Efficient, effective, and responsive government services at all levels in the State. | | | X |
| (2) Fiscal integrity, responsibility, and efficiency in the state government and county governments. | | | X |
| (b) To achieve the government objectives, it shall be the policy of this State to: | | | |
| (1) Provide for necessary public goods and services not assumed by the private sector. | | | X |
| (2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response. | | | X |
| (3) Minimize the size of government to that necessary to be effective. | | | X |
| (4) Stimulate the responsibility in citizens to productively participate in government for a better Hawai'i. | | | X |
| (5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns. | | | X |
| (6) Provide for a balanced fiscal budget. | | | X |
| (7) Improve the fiscal budgeting and management system of the State. | | | X |
| (8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible. | | | X |
| Discussion: The objectives and policies specified in HRS §226-27 are not directly applicable to the Project. | | | |
| §226-101 Purpose. The purpose of this part is to establish overall priority guidelines to address areas of statewide concern. | | | |
| §226-102 Overall direction. The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation. | | | |
| Discussion: The Project supports the Overall Direction of the State Plan's major areas of statewide concern which merit priority attention, including economic development and sustainable design strategies, materials, and practices. For additional information about the project's sustainability strategies and initiatives, see *Section 2.15.* | | | |

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|---|---|---|---|
| §226-103 Economic priority guidelines. | | | |
| (a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy: | | | |
| (1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises. | | | |
| (A) Encourage investments which: | | | |
| (i) Reflect long term commitments to the State; | X | | |
| (ii) Rely on economic linkages within the local economy; | | | X |
| (iii) Diversify the economy; | X | | |
| (iv) Reinvest in the local economy; | X | | |
| (v) Are sensitive to community needs and priorities; and | X | | |
| (vi) Demonstrate a commitment to provide management opportunities to Hawai'i residents. | X | | |
| (B) Encourage investments in innovative activities that have a nexus to the State, such as: | | | X |
| (i) Present or former residents acting as entrepreneurs or principals; | X | | |
| (ii) Academic support from an institution of higher education in Hawai'i; | | | X |
| (iii) Investment interest from Hawai'i residents; | | | X |
| (iv) Resources unique to Hawai'i that are required for innovative activity; and | X | | |
| (v) Complementary or supportive industries or government programs or projects. | | | X |
| (2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements. | X | | |
| (3) Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations. | | | X |
| (4) Seek to ensure that state business tax and labor laws and administrative policies are equitable, rational, and predictable. | | | X |
| (5) Streamline the processes for building and development permit and review and telecommunication infrastructure installation approval and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where scientific evidence indicates that public health, safety, and welfare would not be adversely affected. | | | X |
| (6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawai'i's small-scale producers, manufacturers, and distributors. | | | X |
| (7) Continue to seek legislation to protect Hawai'i from transportation interruptions between Hawai'i and the continental United States. | | | X |
| (8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics: | | | X |
| (A) An industry that can take advantage of Hawai'i's unique location and available physical and human resources. | X | | |
| (B) A clean industry that would have minimal adverse effects on Hawai'i's environment. | | | X |
| (C) An industry that is willing to hire and train Hawai'i's people to meet the industry's labor needs at all levels of employment. | X | | |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (D) An industry that would provide reasonable income and steady employment. | X | | |
| (9) Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawai'i business. | | | X |
| (10) Enhance the quality of Hawai'i's labor force and develop and maintain career opportunities for Hawai'i's people through the following actions: | | | X |
| (A) Expand vocational training in diversified agriculture, aquaculture, information industry, and other areas where growth is desired and feasible. | | | X |
| (B) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities. | | | X |
| (C) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired. | | | X |
| (D) Promote career opportunities in all industries for Hawai'i's people by encouraging firms doing business in the State to hire residents. | X | | |
| (E) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on- the-job training opportunities. | | | X |
| (F) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment. | | | X |
| (b) Priority guidelines to promote the economic health and quality of the visitor industry: | | | |
| (1) Promote visitor satisfaction by fostering an environment which enhances the aloha spirit and minimizes inconveniences to Hawai'i's residents and visitors. | X | | |
| (2) Encourage the development and maintenance of well-designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access. | | | X |
| (3) Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities. | | | X |
| (4) Encourage visitor industry practices and activities which respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources. | X | | |
| (5) Develop and maintain career opportunities in the visitor industry for Hawai'i's people, with emphasis on managerial positions. | | | X |
| (6) Support and coordinate tourism promotion abroad to enhance Hawai'i's share of existing and potential visitor markets. | X | | |
| (7) Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter. | | | X |
| (8) Support law enforcement activities that provide a safer environment for both visitors and residents alike. | | | X |
| (9) Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques. | | | X |
| (c) Priority guidelines to promote the continued viability of the sugar and pineapple industries: | | | |
| (1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries. | | | X |
| (2) Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawai'i. | | | X |
| (3) Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops. | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | | | S | N/S | N/A |
|---|---|---|---|---|---|
| (d) | Priority guidelines to promote the growth and development of diversified agriculture and aquaculture: | | | | |
| | (1) | Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands. | | | X |
| | (2) | Assist in providing adequate, reasonably priced water for agricultural activities. | | | X |
| | (3) | Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture. | | | X |
| | (4) | Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs. | | | X |
| | (5) | Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawai'i's agricultural community. | | | X |
| | (6) | Seek favorable freight rates for Hawai'i's agricultural products from interisland and overseas transportation operators. | | | X |
| | (7) | Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities. | X | | |
| | (8) | Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans. | | | X |
| | (9) | Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions. | | | X |
| | (10) | Support the continuation of land currently in use for diversified agriculture. | | | X |
| | (11) | Encourage residents and visitors to support Hawai'i's farmers by purchasing locally grown food and food products. | X | | |
| (e) | Priority guidelines for water use and development: | | | | |
| | (1) | Maintain and improve water conservation programs to reduce the overall water consumption rate. | X | | |
| | (2) | Encourage the improvement of irrigation technology and promote the use of nonpotable water for agricultural and landscaping purposes. | X | | |
| | (3) | Increase the support for research and development of economically feasible alternative water sources. | | | X |
| | (4) | Explore alternative funding sources and approaches to support future water development programs and water system improvements. | | | X |
| (f) | Priority guidelines for energy use and development: | | | | |
| | (1) | Encourage the development, demonstration, and commercialization of renewable energy sources. | X | | |
| | (2) | Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy. | | | X |
| | (3) | Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings. | | | X |
| | (4) | Encourage the development and use of energy conserving and cost-efficient transportation systems. | | | X |
| (g) | Priority guidelines to promote the development of the information industry: | | | | |
| | (1) | Establish an information network that will serve as the catalyst for establishing a viable information industry in Hawai'i. | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (2) Encourage the development of services such as financial data processing, a products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center. | | | X |
| (3) Encourage the development of small businesses in the information field such as software development, the development of new information systems and peripherals, data conversion and data entry services, and home or cottage services such as computer programming, secretarial, and accounting services. | | | X |
| (4) Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields. | | | X |
| (5) Encourage research activities, including legal research in the information and telecommunications fields. | | | X |
| (6) Support promotional activities to market Hawai'i's information industry services. | | | X |
| (7) Encourage the location or co-location of telecommunication or wireless information relay facilities in the community, including public areas, where scientific evidence indicates that the public health, safety, and welfare would not be adversely affected. | | | X |
| Discussion: The Project will deliver significant economic benefits, including diversifying the local economy into new and emerging industries such as artificial wave technology, surf equipment research and design, life safety training, and new cutting-edge wave and underwater filming technologies. The Project is run by present residents acting as entrepreneurs and principals, focusing on a resource unique to Hawai'i (Hawai'i's cultural heritage and experience founding the sport of surfing) and gathering investment interest from Hawai'i residents and legislature members. The project also has environmental benefits, including energy conservation and green energy production through photovoltaics. Aquaculture and agriculture are also featured in the project program, including lo'i patches, an on-site greenhouse to provide farm to table food and ingredients for on-site restaurants and food service locations, and limu harvesting as a part of the water feature infrastructure. The Project will also promote the use of captured rainwater and recaptured non-potable water for landscaping. | | | |
| §226-104 Population growth and land resources priority guidelines. | | | |
| (a) Priority guidelines to effect desired statewide growth and distribution: | | | |
| (1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawai'i's people. | | | X |
| (2) Manage a growth rate for Hawai'i's economy that will parallel future employment needs for Hawai'i's people. | | | X |
| (3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State. | | | X |
| (4) Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate. | | | X |
| (5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands. | | | X |
| (6) Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands. | | | X |
| (7) Support the development of high technology parks on the neighbor islands. | | | X |
| (b) Priority guidelines for regional growth distribution and land resource utilization: | | | |
| (1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles. | | | X |
| (2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district. | | | X |

| Table 5.2 Hawai'i State Plan<br>Part 1. Overall Theme, Goals, Objectives, and Policies<br>S = Supportive, N/S = Not Supportive, N/A = Not Applicable | S | N/S | N/A |
|---|---|---|---|
| (3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area. | | | X |
| (4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use. | | | X |
| (5) In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core. | | | X |
| (6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces. | | | X |
| (7) Pursue rehabilitation of appropriate urban areas. | | | X |
| (8) Support the redevelopment of Kaka'ako into a viable residential, industrial, and commercial community. | | | X |
| (9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized. | | | X |
| (10) Identify critical environmental areas in Hawai'i to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources. | X | | |
| (11) Identify all areas where priority should be given to preserving rural character and lifestyle. | | | X |
| (12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations. | | | X |
| (13) Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources. | | | X |
| Discussion: Proper mitigation measures will be implemented to ensure that threatened or endangered flora and fauna species that potentially may migrate through the site are protected. The Project will not obstruct public access to inland or shoreline areas used for public recreational purposes. For further discussion see *Sections 3.5 Biological Resources* and *3.9 Visual Resources.* | | | |
| §226-105 Crime and criminal justice. Priority guidelines in the area of crime and criminal justice: | | | |
| (1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment. | | | X |
| (2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders. | | | X |
| (3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities. | | | X |
| (4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community. | | | X |
| (5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions. | | | X |
| (6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization. | | | X |
| Discussion: The priority guidelines specified in HRS §226-105 are not directly applicable to the Project. | | | |
| §226-106 Affordable housing. Priority guidelines for the provision of affordable housing: | | | |

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|---|---|---|---|
| (1) Seek to use marginal or nonessential agricultural land, urban land, and public land to meet housing needs of extremely low-, very low-, lower-, moderate-, and above moderate-income households. | | | X |
| (2) Encourage the use of alternative construction and development methods as a means of reducing production costs. | | | X |
| (3) Improve information and analysis relative to land availability and suitability for housing. | | | X |
| (4) Create incentives for development which would increase home ownership and rental opportunities for Hawai'i's extremely low-, very low-, lower-, and moderate-income households and residents with special needs. | | | X |
| (5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawai'i's people for the purchase of initial owner-occupied housing. | | | X |
| (6) Encourage public and private sector cooperation in the development of rental housing alternatives. | | | X |
| (7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations. | | | X |
| (8) Give higher priority to the provision of quality housing that is affordable for Hawai'i's residents and less priority to development of housing intended primarily for individuals outside of Hawai'i. | | | X |
| Discussion: The priority guidelines specified in HRS §226-106 are not directly applicable to the Project, as housing is not included in the Project scope. | | | |
| §226-107 Quality education. Priority guidelines to promote quality education: | | | |
| (1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement; | | | X |
| (2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs; | | | X |
| (3) Initiate efforts to improve the quality of education by improving the capabilities of the education workforce; | | | X |
| (4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities; | | | X |
| (5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for: | | | |
| (A) The electronic exchange of information; | | | X |
| (B) Statewide electronic mail; and | | | X |
| (C) Access to the Internet. | | | X |
| Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives; | | | X |
| (6) Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific; | | | X |
| (7) Develop resources and programs for early childhood education; | | | X |
| (8) Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and | | | X |
| (9) Strengthen and expand educational programs and services for students with special needs. | | | X |
| Discussion: While the priority guidelines specified in HRS §226-107 are not directly applicable to the Project, Honokea is planning to provide school outreach programs to provide underserved island youth opportunities to train and utilize the project facilities, and is also planning to provide scholarship opportunities to local students in the community as well. | | | |
| §226-108 Sustainability. Priority guidelines and principles to promote sustainability shall include: | | | |

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|---|---|---|---|
| (1) Encouraging balanced economic, social, community, and environmental priorities; | X | | |
| (2) Encouraging planning that respects and promotes living within the natural resources and limits of the State; | | | X |
| (3) Promoting a diversified and dynamic economy; | X | | |
| (4) Encouraging respect for the host culture; | X | | |
| (5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations; | | | X |
| (6) Considering the principles of the ahupua'a system; and | | | X |
| (7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawai'i. | X | | |
| Discussion: The Project will deliver significant environmental benefits, including energy conservation, green energy production through photovoltaics, use of sustainable design strategies and materials, and landscaping. For further discussion, see *Sections 2.5 Description of the Proposed Action, Section 2.14 Landscaping, and Section 2.15 Sustainable Strategies.* | | | |
| §226-109 Climate change adaptation priority guidelines. Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy shall: | | | |
| (1) Ensure that Hawai'i's people are educated, informed, and aware of the impacts climate change may have on their communities; | | | X |
| (2) Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies; | | | X |
| (3) Invest in continued monitoring and research of Hawai'i's climate and the impacts of climate change on the State; | | | X |
| (4) Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change; | X | | |
| (5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change; | | | X |
| (6) Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments; | | | X |
| (7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options; | | | X |
| (8) Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities; | | | X |
| (9) Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and | | | X |
| (10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy. | | | X |
| Discussion: The priority guidelines specified in HRS §226-109 are not directly applicable to the Project. However, the Project will deliver significant cultural benefits, such as utilization of Native plants and landscaping practices, and environmental benefits, including energy conservation, green energy production through roof PV systems, and use of sustainable materials. | | | |

## 5.8 Hawai‘i 2050 Sustainability Plan

The long-term strategy of the Hawai‘i 2050 Sustainability Plan is supported by its main goals and objectives of respect for culture, character, beauty, and history of the State's island communities; balance among economic, community, and environmental priorities; and an effort to meet the needs of the present without compromising the ability of future generations to meet their own needs.

The 2050 Plan delineates five goals toward a sustainable Hawai‘i accompanied by strategic actions for implementation and indicators to measure success or failure. The goals and strategic actions that are pertinent to the Honokea project are as follows:

Goal One: *Living sustainably is part of our daily practice in Hawai‘i.* Strategic Actions: *Develop a sustainability ethic.*

Goal Two: *Our diversified and globally competitive economy enables us to meaningfully live, work, and play in Hawai‘i.* Strategic Actions: *Develop a more diverse and resilient economy; support the building blocks for economic stability and sustainability.*

Goal Three: *Our natural resources are responsibly and respectfully used, replenished, and preserved for future generations*. Strategic Actions: *Provide greater protection for air, and land-, fresh water- and ocean-based habitats; conserve agricultural, open space and conservation lands and resources.*

Goal Four: *Our community is strong, healthy, vibrant and nurturing, providing safety nets for those in need.* Strategic Actions: *Provide access to diverse recreational facilities and opportunities*.

Goal Five: *Our Kanaka Maoli and island cultures and values are thriving and perpetuated.* Strategic Actions: *Honor Kanaka Maoli culture and heritage; Celebrate our cultural diversity and island way of life.*

Discussion: Sustainability is a key ethos of the Honokea project vision. The project will be focused on nature and outdoor spaces, preferring to be open to the environment and minimize structures wherever possible. Sustainable design concepts will be implemented throughout the site, including natural ventilation strategies, deep overhangs, cross ventilation when possible, to reduce conditioned spaces, and strategic use of landscape and trees to block sunlight. The project will expand recreational, cultural, and educational opportunities in the Kalaeloa region. Kānaka Maoli values rooted in Hawai‘i's surfing heritage will be honored and perpetuated through the on-site history museum as well as through cultural practices and Native landscaping tours that will be incorporated into the project program. Wastewater strategies including captured rainwater and recaptured gray water will complement the sustainably designed buildings with appropriate materials and finishes to help protect the environment for generations to come.

## 5.9 Strategic Plan 2020-2025 Hawai‘i Tourism Authority

The Hawai‘i Tourism Authority (HTA) was established in 1998, and is the lead state agency associated with Hawai‘i's visitor industry and associated interests. The agency is responsible for establishing statewide tourism policy and direction, and is funded through a set percentage of the transient accommodations tax (TAT) assessed on hotels, vacation rentals, and other accommodations. HTA's mission is "To strategically manage Hawai‘i tourism in a sustainable manner consistent with economic goals, cultural values, preservation of natural resources, community desires, and visitor industry needs",

At the start of 2020, the HTA introduced their Strategic Plan 2020-2025 document, a six-year strategic plan to guide their organization's vision and responsibilities in support of Hawai'i tourism through 2025. HTA has been reorganized around four interacting "Pillars" supported by research and other administrative functions. This plan establishes a general goal for each Pillar as shown below:

- NATURAL RESOURCES - Respect for Our Natural & Cultural Resources
- HAWAIIAN CULTURE - Support Native Hawaiian Culture & Community
- COMMUNITY - Ensure Tourism & Communities Enrich Each Other
- BRAND MARKETING - Strengthen Tourism's Contributions

Under the goal for each Pillar, this plan establishes several objectives and specific milestones or measures for tracking success. The Pillars are intended to support an integrated destination management system, with four overall Key Performance Indicators (KPIs), representing the most important ways HTA will be accountable to our stakeholders:

- Resident Satisfaction
- Average Daily Visitor Spending
- Visitor Satisfaction
- Total Visitor Spending

Discussion

As a visitor destination, Honokea Surf Village complies with and enhances all four of the HTA Strategic Plan 2020-2025. The project respects natural and cultural resources through featuring sustainability as a core tenet, incorporating sustainable design approaches and practices, and integrating cultural education and practices such as limu farming and lo'i into the facility's programs. The Surf Village also supports native culture through proposed partnerships with cultural resources and practitioners such as their neighbor the Kalaeloa Heritage Park, native plant tours, and a cultural museum highlighting the significance of surfing in Hawaiian culture. The project will educate visitors on the importance of surfing as a cultural tradition as well as the importance of respecting the natural environment, including safety and safe practices in the ocean. Honokea Surf Village will also improve the brand marketing of Hawai'i and marketing of surfing in Hawai'i, as it will provide opportunities for Olympic training and international exposure to once again show to the world that Hawai'i is and will always be the birthplace of surfing.

## 5.10 Hawai'i State Land Use District Boundaries

Under the Chapter 205, HRS, all lands of the State are to be classified in one of four categories: urban, rural, agricultural, and conservation lands. The State Land Use Commission (LUC), an agency of the State Department of Business, Economic Development, and Tourism (DBEDT), is responsible for each district's standards and for determining the boundaries of each district (Chapter 205-2(a), HRS). The LUC is also responsible for administering all requests for district reclassifications and/or amendments to district boundaries, pursuant to Chapter 205-4, HRS, and the HAR, Title 15, Chapter 15 as amended. Under this Chapter, all lands in Hawai'i are classified into four land use districts: (1) Conservation, (2) Agricultural; (3) Urban, and (4) Rural.

The Urban District generally includes lands characterized by "city-like" concentrations of people, structures and services. This District also includes vacant areas for future development. Jurisdiction

of this district lies primarily with the respective counties. Generally, lot sizes and uses permitted in the district area are established by the respective County through ordinances or rules.

Discussion

As classified by the State of Hawai'i LUC, the project site is situated within the State Urban District. The project is consistent with permitted uses for the Urban District and will not require district reclassification or boundary amendments.

## 5.11 Ka Pa'akai v. Land Use Commission

In this section, a cultural analysis of the project's potential effect on or impairment of valued cultural, historical, or natural resources in the petition area, including traditional and customary native Hawaiian rights, is performed to address the case Ka Pa'akai v. Land Use Commission, 94 Hawai'i 31, 74, 7 P.3d 1068, 1084 (2000). The Court in Ka Pa'akai held that the following analysis is to be conducted:

1. The identity and scope of valued cultural, historical, or natural resources in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;
2. The extent to which those resources - including traditional and customary native Hawaiian rights - will be affected or impaired by the proposed action; and
3. The feasible action, if any, to be taken by the Land Use Commission to reasonably protect native Hawaiian rights if they are found to exist.

Discussion: This Ka Pa'akai cultural analysis draws from the landscape plan *(Section 2.14),* natural resources assessment *(Section 3.5* and *Appendix D),* Cultural Impact Assessment (*Section 3.6* and *Appendix E*) and Archaeological Literature Review and Field Study (ALRFI) *(Section 3.7* and *Appendix F)* to determine the project's potential effect on or impairment of valued cultural, historical, or natural resources in the petition area, including traditional and customary native Hawaiian rights.

The ALRFI identified 17 archaeological sites on TMK: (1) 9-1-013:068. The sites are comprised of at least 51 individual features and are mostly historic military remnants, given the intensive military usage of the Barbers Point Naval Air Station. In addition, 12 unmodified and uninhabitable sinkholes were documented. Two of the 17 sites have possible pre-contact features, including coral mounds and C-shaped coral structures. These have been identified by the design team and a 30-foot non-development buffer will be utilized to protect the features in the event they require preservation.

The findings of the botanical survey conducted for the project site shows a mix of 30 non-native and native species. Five (17%) are native species, one (3%) is an early Polynesian introduction (the *Morinda citrifolia* or noni). There were four (13%) indigenous species that are common species on O'ahu in dry and mesic environments.

The Cultural Impact Assessment found that no evidence of the exercise of traditional and customary native Hawaiian rights within the project area for at least forty years. This is mainly due to the unintentional preservation of the area as a result of the property being a part of military airport lands. Work and accessory uses in the project area would not affect or impair traditional and customary native Hawaiian rights in any event.

Considering the analysis required under the Ka Pa'akai case, there is a determination that the project will not affect or impair valued cultural, historical, or natural resources in the petition area, including traditional and customary native Hawaiian rights. The project will add cultural resources including preserving potential pre-contact coral structures, utilizing Native landscaping and creating a Native plant tour with traditional cultural practices such as lo'i and limu harvesting, and a museum honoring the historic legacy of surfing in Hawaiian culture, as well as the history of Native Hawaiians in the Kalaeloa region.

In the event that any previously unidentified historic sites or native Hawaiian burials are encountered during site work and construction phases, all work in the immediate area will cease and SHPD will be notified. Work in the area will be suspended until further recommendations are made for the appropriate treatment of cultural materials.

## 5.12 Hawai'i Coastal Zone Management Program

The Coastal Zone Protection Act of 1996 (16 U.S.C. Section 1451), as amended through Public Law 104-150, created the coastal management program and the National Estuarine Research Reserve system. The coastal states are authorized to develop and implement a state coastal zone management program. Hawai'i Coastal Zone Management (CZM) Program received federal approval in the late 1970s. The objectives of the State's Hawai'i CZM Program, HRS §205A-2, are to protect valuable and vulnerable coastal resources such as coastal ecosystems, special scenic and cultural values and recreational opportunities. The objectives of the program are also to reduce coastal hazards and to improve the review process for activities proposed within the coastal zone.

The State's CZM Program charges each County with designating and administering Special Management Areas (SMA) within the State's coastal areas to implement guidelines for potential development impacts on the shoreline, near shore, and ocean area environments. Any "development," as defined by the CZM Law, located within the SMA requires an SMA Use Permit.

Discussion

Although Honokea is located outside of the SMA as delineated by the City and County of Honolulu, HRS §205A requires all state and county agencies to enforce CZM objectives and policies as set forth in HRS §205A-2. *Table 5.3* examines the project's conformance with the objectives of the Hawai'i CZM Law.

| Table 5.3 CZM Objectives/Policy Applicable to the Project | |
|---|---|
| **Subject Area** | **Objective/Policy** |
| Recreational resources | Honokea is not located along the shoreline and will not affect existing public access to coastal recreational resources. |
| Historic resources | Archaeological studies have been conducted for this Environmental Assessment (EA), where archaeological resources were identified and analyzed. |
| Scenic and open space resources | As discussed in *Section 3.9,* the proposed project is not expected to adversely affect vistas or scenic resources. The design of facilities will be reflective of the natural environment and the area's existing visual qualities. The planned facilities are not anticipated to alter the existing characteristics of the area, nor will they further reduce the visual quality of the area. |
| Coastal ecosystems | Honokea will promote water quantity and quality planning and management practices that maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures. |
| Economic uses | The project is not anticipated to result in adverse social, visual, and environmental impacts in the coastal zone management area. The project's artificial wave pool will allow for support and expansion of local surf-related industries without placing an additional physical burden on coastal development itself, as it allows users and researchers to safely experience the wave environment in-land from coastal areas, preserving and reducing impacts on coastal environments. |
| Coastal hazards | The Honokea project and its associated programs will not cause coastal flooding. |
| Managing development | All improvement activities will be conducted in compliance with State and County environmental rules and regulations. This EA is prepared in accordance with HRS, Chapter 343 and HAR, Chapter 11-200.1 and complies with the requirements for assessing and communicating the potential short and long-term impacts. |
| Public participation | Public notification of the proposed action will be provided with publication of the Draft EA. See *Chapter 7* of this EA for a list of agencies, organizations and individuals consulted in the preparation of this EA. |
| Beach protection | Not applicable. |
| Marine resources | The project is not anticipated to adversely affect marine resources. Although the project is located in Kalaeloa and is far inland from the coastal area, appropriate BMPs, as discussed throughout this EA, will be used during construction to prevent the release of materials that have the potential to affect marine and coastal resources. |

# 5.13 Hawai'i Water Quality Standards

The State of Hawai'i Department of Health, Clean Water Branch Hawai'i Water Quality Standards 11-54, Hawai'i Administrative Rules (HAR) were adopted in 2014 and revised in 2021.

The project is consistent with the applicable objectives and policies for state water quality standards as described below.

General Policy of water quality antidegradation

(a) Existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

(b) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the director finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the director shall assure water quality adequate to protect existing uses fully. Further, the director shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(c) Where existing high-quality waters constitute an outstanding resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(d) In those areas where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Clean Water Act.

Discussion

Construction BMPs will be implemented to control water quality impacts from the project area.

No underground drainage impacts to the karst system are anticipated. Injection wells will discharge treated lagoon water into the groundwater (below the water table). Lagoon water will be treated to have solids and contaminants removed and be suitable for discharge into the environment. Discharge of lagoon water will be infrequent. The discharge is to allow for scheduled maintenance of lagoon, for planning purposes the timeframe for this maintenance is drainage once up to a two-year timeframe. No adverse impacts are anticipated to the upper caprock groundwater system. It is expected that the injection of relatively low salinity water from the lagoon will benefit the aquifer by providing additional recharge for ecosystem use and possibly other users.

Long term water quality impacts are not anticipated from the project.

## 5.14 O‘ahu General Plan

The General Plan of the City and County of Honolulu (1992 edition, as amended in 2021) is a comprehensive statement of objectives and policies that sets forth the long-range aspirations of O‘ahu’s residents and the strategies to achieve them. It is the first tier of and lays the foundation for a comprehensive planning process that addresses physical, social, cultural, economic and environmental concerns affecting the City and County of Honolulu. This planning process serves as the coordinative means by which the City government provides direction to the population projected for O‘ahu. The 2021 amendment to the Revised General Plan was signed by the mayor in January, 2022.

While the O‘ahu General Plan does not apply to the Honokea Surf Village, as it is under HCDA jurisdiction, the project is still supportive of many of the City and County’s objectives and policies.

The City’s planning process is comprised of three distinct tiers. As the first tier of planning, the General Plan establishes policy guidance for O‘ahu as a whole, with all subsequent community development plans, policy plans, and implementing regulations of the City and County of Honolulu required to be consistent with the General Plan. The second tier consists of the eight regional Development Plans (DPs) and Sustainable Communities Plans (SCPs). These plans relate to specific regions of the island, and (1) conceptually describe the pattern of land use desired for the region, (2) provide guidance for functional infrastructure planning, and (3) identify areas within the DP/SCP boundary that might benefit from more detailed planning. The third tier is comprised of the specific mechanisms to implement the two higher levels of the planning hierarchy (City and County of Honolulu Revised Charter, Chapter 15, Sec. 6-1508).

The General Plan is a guide for all levels of government, private enterprise, neighborhood and citizen groups, organizations, and individual citizens. It is intended to guide land use and development decisions and to influence actions in 11 key areas.

Discussion

The Honokea project is supportive of and helps implement many of the City and County’s key area objectives and policies.

The project helps support key area #2 of a balanced economy, Objective A, through the creation of a diverse set of industries and economic opportunities unique to the project that are not currently active in the project area, including recreation, film industry, and surf equipment technologies. The project supports Objective B of maintaining a successful visitor industry by providing a sports and recreation attraction, as well as providing surfing and life safety training to help bolster safer tourist recreational use and awareness throughout the island, improving the quality of the visitor experience. The project’s strong cultural component, including on site museum and historical and educational opportunities for visitors, will emphasize the values of Native Hawaiian culture. The project will also encourage the development of surfing in ocean research as an ocean-related industry through surfboard shaping and research technology.

The project will also support Objective C, Policies 5 and 6, through providing an on site garden to supply farm to table food and ingredients, as well as encouraging local food production and aquaculture through lo‘i on site, as well as limu farming activities. It also supports Policy 8, as the on-site roof PV systems will co-exist with the aforementioned sustainable farming activities.

The project will support Objectives D and E through private training and employment programs to hire residents for future jobs. Artificial wave technology is an emerging industry identified by this project, and development of the project will encourage investment in the industry. The project's emphasis on the cultural roots of surfing in Hawaiian history and cultural practices will allow for opportunities to help preserve and educate guests and visitors about the importance of Hawaiian cultural resources.

The project also will support key area #3, natural environment and resource stewardship, through championing sustainability, and to the extent possible, Objective A through reducing energy and resource consumption by utilizing sustainable practices to protect the natural environment from damaging levels of air, water, carbon, and noise pollution. The project will also comply with all state and federal regulations to protect flora and fauna unique to Hawai'i and O'ahu.

The project will support Objective B as it is a low density open air site, and will preserve scenic views of O'ahu including views of the ocean from H-1 and Coral Sea Road, by minimizing obstruction and height of structures.

The project will also assist the physical development key area #7 Objective D of encouraging continued development in the area of Kalaeloa Barbers Point.

In support of the Health and Education key area #9 objective of providing educational opportunities for the people of O'ahu, Honokea will support education programs that encourage development of employable skills through surfing training and associated industries, and will encourage outdoor learning opportunities through being a venue reflecting the natural environment of the ocean and the Native Hawaiian culture of surfing.

The project supports key area 10, Culture and Recreation, Objective A (respecting the host culture) through education and cultural sensitivity, the project will also respect the host culture of Native Hawaiian people, promote the preservation and enhancement of local culture, values, and traditions through surfing, encourage greater awareness and appreciation of local surf heritage, and foster equity and increased opportunities for positive interaction among a variety of social and economic backgrounds.

The project will also support Objective B, protecting, preserving, and enhancing O'ahu's cultural, historic, and archaeological resources through compliance with HRS Chapter 6E, including conducting an ALRFI with proper testing, monitoring, and mitigation as necessary.

Honokea will strongly promote the culture and recreation key area Objective D, as it provides surfing facilities and services for residents and visitors alike, encouraging surfing as an ocean recreation activity without adversely impacting the natural environment, cultural assets, or overcrowding and overusing beaches. The project will promote cultural events and activities, maintain cultural practices, and create and promote a recreational venue for all ages, ranging from keiki to kūpuna, and for kama'āina and malihini alike.

## 5.15 City and County of Honolulu ‘Ewa Development Plan

The island of O‘ahu is divided into eight regional plan areas. Each plan implements the objectives and policies of the General Plan and provides guidance on public policy, investment, and decision-making within each respective region. Together with the General Plan, they guide population and land use growth over a 20- to 25-year time span.

The Project is located in the region encompassed by the ‘Ewa Development Plan (EDP) *(Figure 5.2).* The EDP is a revision of the original ‘Ewa Development Plan which was adopted by the City Council in 1997. The most recent update was amended in December 2020. The Plan’s vision for ‘Ewa focuses on providing a second urban center for O‘ahu with its nucleus in the City of Kapolei; providing a wide range of master planned residential areas to relieve developmental pressures on O‘ahu’s rural areas; protecting and promoting diversified agriculture on prime agricultural lands along Kunia Road and in the Explosive Safety Quantity Distance arc around the Pearl Harbor West Loch Naval Munitions Command; and providing resort areas at Ko Olina and Ocean Pointe.

Honokea Surf Village relates to the following policies and principles of the EDP:

Open Space Preservation and Development

General Policies:

*Use open space to:*

- *Protect scenic views and natural, cultural, and historic resources;*
- *Provide recreation;*

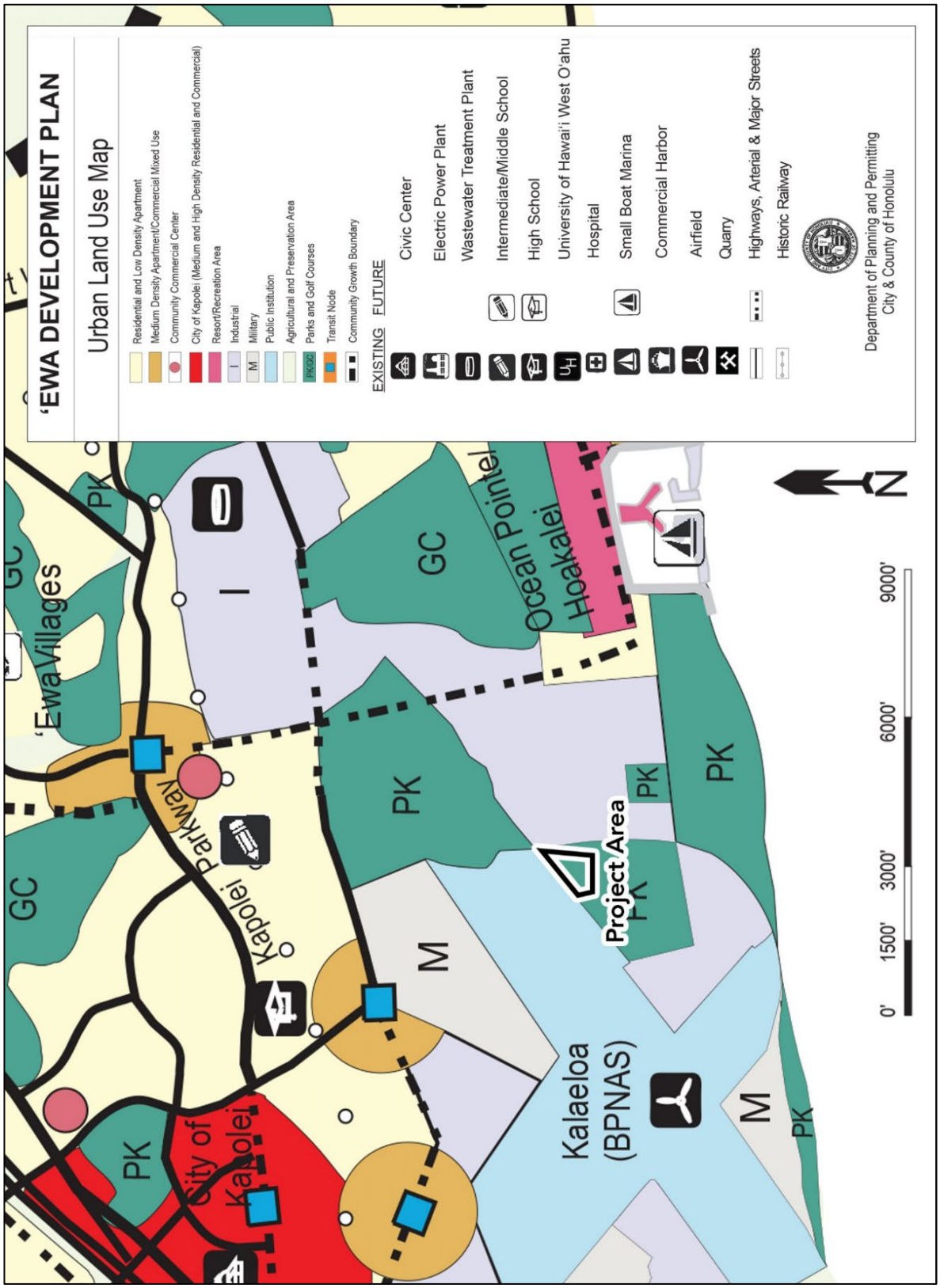


**Figure 5.2** **'Ewa Development Plan Urban Land Uses Map**

Guidelines:

- *Maintain prominent landforms at Pu'u O Kapolei and Pu'u Pālailai as natural visual features and regional landmarks.*

Regional Parks and Recreation Complexes

Regional parks and recreation complexes include the Kalaeloa Regional Park proposed for surplus lands at the former Barbers Point Naval Air Station, Kapolei Regional Park, various beach and shoreline parks, and public and private golf courses.

General Policies:

- *Consider using public-private partnerships to build, and maintain new park and recreation complexes in order to sustain economic development.*
- *Design the built environment to avoid adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area.*

*Recreation Complexes*

- *Design recreation complexes to be compatible with surrounding land uses and environmental features.*

Guidelines:

*3.2.2.1 Appropriate Scale and Siting*

- *Use architectural elements and siting to heighten the visibility of major recreation events areas as they are approached from principal travel corridors.*

*3.2.2.2 Environmental Compatibility*

- *Locate and operate uses that generate high noise levels in a way that keeps noise to an acceptable level in existing and planned residential areas.*
- *To retain a sense of place, incorporate natural features of the site and use landscape materials that are indigenous to the area in the design of recreation areas where feasible.*
- *Use xeriscaping (the use of native landscape materials with low water demand), non-potable water for irrigation, and efficient irrigation systems wherever possible to conserve groundwater resources.*

*3.2.2.4 Islandwide and Regional Parks*

- *Develop a major park within Kalaeloa that provides beach-oriented recreation and support facilities near the shoreline, other active recreation facilities in mauka areas, and preserves for cultural and archaeological resources and for wildlife habitats such as wetlands and endangered plant colonies.*
- *Provide facilities for tent and cabin camping within the new park at Kalaeloa in the major recreational area that includes a beach camping area.*
- *Maintain prominent landforms at Pu'u O Kapolei and Pu'u Pālailai as natural visual features and regional landmarks.*

*3.2.2.5 Sports and Recreation Complexes*

*Definition of Use Areas*

- *Separate uses that attract a high number of people for events as much as possible from residential areas and wildlife habitats.*
- *Provide amenities and service facilities to accommodate "tailgate" picnics, as well as nearby picnic tables and outdoor grills in parking areas for sporting events.*

*Transportation Facilities*

- *Locate bus loading areas, shelters and bicycle parking facilities as close as possible to entry gates for special events areas.*
- *Locate bus stops at all principal activity areas.*

*Views*

- *Locate and design facilities for special events to be readily visible and identifiable from the principal transportation corridors that lead to them.*
- *Establish the visual identity of the complex through distinctive architecture, landscaping, or natural setting.*

*Landscape Treatment*

- *Minimize the visibility of perimeter fencing, loading areas, parking lots and garages and other utilitarian elements through plantings or other appropriate visual screens along roadway frontages.*
- *In large parking lots, use canopy trees to provide shade. Use special paving or pavement markings to indicate pedestrian routes to destinations and differentiate sections of the parking area.*

*Natural Environment*

- *Retain, protect, and incorporate wetland and other wildlife habitat areas as passive recreational resources.*

*3.2.2.6 Siting*

- *Island-wide and regional parks and golf courses are shown on the Open Space Map and the Public Facilities Maps in Appendix A.*
- *Change in the location of an island-wide park or a golf course shall require a City review and approval process, such as the Plan Review Use process, which provides adequate public notice and input, complete technical analysis of the project, and approval by the City Council. Approval of changes in size and configuration may be done administratively.*
- *Regional sports and recreation complexes may be located in Kalaeloa, on the fringes of the City of Kapolei, and in areas designated for commercial or park use, subject to a City review and approval process which provides public review and complete analysis.*

Community-Based Parks

General Policies:

- *Provide adequate parks to meet residents' recreational needs. The Department of Parks and Recreation (DPR) standard for community- based parks is that a minimum of two acres of community-based parks should be provided per 1,000 residents, with one acre per thousand needed for district parks and one acre needed for community parks, neighborhood parks, and mini-parks. (Even if these standards are met, there may still be unmet park needs due to demographic or other community conditions.) The need for community-based parks can be met either through public parks operated by the City or private community parks and recreation centers operated by home owner associations.*
    - *Currently, ʻEwa has significantly less district park acreage than the DPR standard indicates is needed for its existing population. To meet the DPR standard, ʻEwa's population of 101,397 in 2010 needed 203 acres with 101 acres needed in district parks. The combined total of ʻEwa public and private community-based parks in 2008 was 140 acres, with only one 25-acre district park, ʻEwa Mahikō.*
    - *ʻEwa's population is projected to grow to 164,500 by 2035. Based on the DPR standards, 189 more acres of community-based parks should be added to the existing park acreage to meet the needs of the projected 2035 ʻEwa population, including 140 acres at district parks.*
    - *As shown in Table 3.1, land has been set aside for development of future community-based parks as part of master-planned communities throughout ʻEwa. There are plans to develop 350 acres of new parks, including 162 in district parks.*
- *Protect and expand access to recreational resources in the mountains, at the shoreline, and in the ocean. Trails to and through natural areas of the gulches and mountains are an important public recreational asset. Some areas are difficult to access because of landowner restrictions.*
- *Support efforts to expand access to mountain and gulch trails in areas where urban development will not occur.*

Guidelines:

*3.3.2.1 Development of Community-Based Parks*

- *Coordinate the development and use of athletic facilities such as swimming pools and gymnasiums with the State Department of Education (DOE) where such an arrangement would maximize use and reduce duplication of function.*
- *Use xeriscaping (the use of native landscape materials with low water demand), non-potable water for irrigation, and efficient irrigation systems wherever possible to conserve groundwater resources.*

## Historic and Cultural Resources

'Ewa contains several different types of historic and cultural sites, which are representative of its history and valuable as historic records and cultural references. In addition, public views which include views along streets and highways, mauka-makai view corridors, panoramic and significant landmark views from public places, views of natural features, heritage resources, and other landmarks, and view corridors between significant landmarks, can be important cultural resources.

### General Policies:

- *Emphasize physical references to 'Ewa's history and cultural roots to help define 'Ewa's unique sense of place.*
- *Protect existing visual landmarks, and support creation of new culturally appropriate landmarks.*
- *Preserve significant historic features from the plantation era and earlier periods.*
- *Vary the treatment of sites according to their characteristics and potential value.*
- *Use in situ preservation and appropriate protection measures for historic, cultural, or archaeological sites with high preservation value because of their good condition or unique features, as recommended by the State Historic Preservation Officer. In such cases, the site should be either restored or remain intact out of respect for its inherent value.*
- *Retain significant vistas whenever possible.*
- *Where known archaeological and cultural sites have been identified and impact mitigations approved as part of prior development approvals, assume that the mitigations carry out the Plan vision and policies for preservation and development of historic and cultural resources in 'Ewa.*

### Guidelines:

The following guidelines suggest how the general policies for Historic and Cultural Resources should be implemented:

*3.4.2.1 Sites Under Review*

- *Accessibility - Public access to an historic site can take many forms, from direct physical contact and use to limited visual contact. Determine the degree of access based on what would best promote the preservation of the historic, cultural and educational value of the site, recognizing that economic use is sometimes the only feasible way to preserve a site. In some cases, however, it may be highly advisable to restrict access to protect the physical integrity or sacred value of the site.*

*SIGNIFICANT VIEWS AND VISTAS*

- *Distant vistas of the shoreline from the H-1 Freeway above the 'Ewa Plain;*
- *Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Wai'anae Development Plan Area;*
- *Views of the Wai'anae Range from H-1 Freeway between Kunia Road and Kalo'i Gulch and from Kunia Road;*

- *Views of Nā Puʻu at Kapolei, Pālailai, and Makakilo;*
- *Mauka and makai views; and Views of central Honolulu and Diamond Head, particularly from Puʻu O Kapolei, Puʻu Pālailai, and Puʻu Makakilo.*

*3.4.2.2 Impacts of Development on Historic and Cultural Resources*

- *Compatible Setting - The context of an historic site is usually a significant part of its value. Plan and design adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity and historic or cultural value of the site. The appropriate treatment should be determined by the particular qualities of the site and its relationship to its physical surroundings.*
- *Public Views - Design and site all structures, where feasible, to reflect the need to maintain and enhance available views of significant landmarks and vistas. Whenever possible, relocate or place underground overhead utility lines and poles that significantly obstruct public views, under criteria specified in State law.*

*3.4.2.5 Native Hawaiian Cultural and Archaeological Sites*

*Method of Preservation*

- *Require preservation in situ for those features that the State Historic Preservation Officer has recommended for such treatment.*
- *Determine the preservation method, ranging from restoration to "as is" condition, on a site-by-site basis, in consultation with the State Historic Preservation Officer.*

*Adjacent Uses*

- *Determine appropriate delineation of site boundaries and setbacks and restrictions for adjacent uses on a site-by-site basis in consultation with the State Historic Preservation Officer.*
- *Include the sight lines that are significant to the original purpose and value of the site as criteria for adjacent use restrictions.*

*Public Access*

- *Determine the appropriateness of public access on a site-by-site basis in consultation with the State Historic Preservation Officer, Hawaiian cultural organizations and the owner of the land on which the site is located.*

Natural Resources

General Policies:

- *Conserve potable water.*
- *Protect valuable habitat for waterbirds and other endangered animals and plants.*
- *Protect endangered fish and invertebrates in sinkholes.*
- *Clean up contaminated areas that pose hazards to soil and water quality, especially in Kalaeloa.*

- *Require surveys for proposed new development areas to identify endangered species habitat, and require appropriate mitigations for adverse impacts on endangered species due to new development.*
- *Reduce light pollution's adverse impact on wildlife and human health and its unnecessary consumption of energy by using, where sensible, fully shielded lighting fixtures using lower wattage.*

Discussion: The project is located in a "Parks and Golf Courses" land use designation per the EDP. The project uses are compatible with the EDP's intended land use designation. The project will maintain existing views and will not obstruct any significant view planes or sites. Honokea will not have any structures taller than 28'-0", and will fit with the existing setting in Kalaeloa.

The project will also provide recreational areas and recreational activity opportunities, which is identified as an area of need in EDP Section 3.2.

## 5.16 City and County of Honolulu Land Use Ordinance Guidelines

The purpose of the LUO is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies, including the County General Plan and development plans. The LUO is also intended to provide reasonable development and design standards. These standards are applicable to the location, height, bulk and size of structures, yard areas, off-street parking facilities, and open spaces, and the use of structures and land for agriculture, industry, business, residences or other purposes (Revised Ordinance for the City and County of Honolulu, Chapter 21).

Discussion

The KCDD Rules supersede any provisions of the City and County of Honolulu Land Use Ordinance.

## 5.17 City and County of Honolulu Special Management Area

The SMA is a designation established to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai'i. Special controls on developments within the SMA are necessary to avoid permanent loss of valuable resources and foreclosure of management options. The review guidelines of ROH §25-3.2 are used by Department of Planning and Permitting (DPP) and the City Council for the review of developments proposed in the SMA. These guidelines are derived from HRS §205A-26.

Discussion

Honokea Surf Village is not located within the SMA as delineated by the County. In addition, the potential environmental impacts of the improvements have been evaluated and determined to not pose a threat to the nearshore and coastal areas.

## 5.18 City and County of Honolulu Complete Streets Policies

The Department of Transportation adopted a Complete Streets policy (Act 54, Session Laws of Hawai'i 2009, HRS §264-20.5 and ROH 12-15) to guide and direct more comprehensive and balanced transportation systems. Under this policy, the city is committed to encourage the development of transportation facilities or projects that are planned, designed, constructed, operated, and maintained to provide safe mobility for all users, including pedestrians, bicyclists, transit users, motorists, and persons of all ages and abilities. Every transportation facility or project, whether new construction, reconstruction, or maintenance, provides the opportunity to implement complete streets policy and principles. This policy provides that a context sensitive solution process and multi-modal approach be considered in all planning documents and for the development of all city transportation facilities and projects.

Discussion: The Honokea Surf Village project will comply with Complete Streets policies, including specific adherence to key Complete Streets principles, as follows:

(1) **Safety** will be improved though the planning, design, and construction of an environment that reduces risk and supports the safe movement of people and goods by all modes. Examples include directional signage and consistent lighting for increased pedestrian visibility. A service road will provide a separate driveway to the loading zone so that service vehicles do not drive through the visitor parking lot.

(2) A **Context Sensitive Solution** process using best practices has been applied to Honokea transportation facilities that integrates community values and recognizes the importance of the surrounding region's context and environment.

(3) Protection and promotion of **accessibility and mobility for all** is made available through the planning and designing of Honokea transportation facilities for ease of use and access to destinations by providing an appropriate path of travel for all users. This enhances the ability to move people and goods throughout the state, its counties, and at the project site. Americans with Disabilities Act (ADA) parking is provided, and ramps allow visitors with wheelchairs or strollers to easily access the project's facilities and common areas.

(4) Balancing the **needs and comfort of all modes and users** by providing access as appropriate for multiple modes of travel at multiple driveways, including allowing for uses by coach buses, vans, cars, motorcycles, and bicyclists as appropriate, with ample room to allow motor vehicles to safely pass bicyclists and pedestrians when possible.

(5) Honokea Surf Village will **consistently** use national industry best practice **design guidelines and standards** to select complete streets design elements within their driveway and connections to Coral Sea Road where possible.

(6) Honokea Surf Village strives to improve **energy efficiency** in travel and mitigate vehicle emissions by promoting multiple modes of travel and by providing parking for electric vehicles, motorcycles, and bicycles.

(7) Honokea Surf Village fully encourages opportunities for physical activity through surfing and the many other recreational activities offered on site, and recognizes the **health** benefits of an active lifestyle and in providing alternative mode choices; and

(8) **Green infrastructure** is incorporated, including trees and landscaping to provide both human and ecosystem benefits, such as shade, to reduce the urban heat island effect, vegetation for carbon sequestration, reducing/filtering non-point source pollution and sediments, capturing rainwater, recapturing gray water, and retaining stormwater.

Section 6

# Findings Supporting the Anticipated Determination

Chapter 6

# Findings Supporting the Anticipated Determination

## 6.1 Anticipated Determination

Based on a review of the significance criteria outlined in Chapter 343, HRS, and Section 11-200-12, State Administrative Rules, Contents of EA, the project has been determined to not result in significant adverse effects on the natural or human environment. A Finding of No Significant Impact (FONSI) is anticipated.

## 6.2 Reasons Supporting the Anticipated Determination

The potential impacts of the project have been fully examined and discussed in this EA. As stated earlier, there are no significant environmental impacts expected to result from the project. This determination is based on the assessments as presented below for criterion (1) to (13).

*(1) Involve an irrevocable loss or destruction of any natural or cultural resources.*

The archaeological and cultural landscapes have been documented in studies conducted specifically for the project area. As detailed in *Section 3.6 and 3.7* of this report, the project is not anticipated to have an impact to historically significant resources. There is the unknown potential for the inadvertent discovery of subsurface historical or cultural resources, including the unknown but highly unlikely possibility of iwi kūpuna (ancestral remains). If any cultural or archaeological resources are unearthed or ancestral remains are inadvertently discovered, the DLNR, SHPD, the O'ahu Island Burial Council representative and participating interests from recognized lineal and/or cultural descendants will be notified. The treatment of these resources will be conducted in strict compliance with the applicable historic preservation and burial laws.

*(2) Curtail the range of beneficial uses of the environment.*

The project will not curtail the range of beneficial uses of the environment. Sustainability is one of the core values of the Honokea Surf Village. The project will provide beneficial effects, such as re-introducing native plants to the area, recharging the upper 'Ewa Caprock Aquifer, and producing its own energy.

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

The project does not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

*(4) Substantially affects the economic or social welfare of the community or State.*

The project will result in both short-term and long-term economic benefits. Short-term economic benefits during construction will include direct, indirect, and induced employment opportunities and multiplier effects. Long-term economic benefits include creating an estimated 150 full time jobs, diversification of O'ahu's economy including a destination surf instruction facility, artificial wave pool research and equipment industry jobs and opportunities, state of the art, professional level facilities for a variety of sports, and additional film industry support by providing a world-class surf and aquatic film studio to support and attract local, national, and international film projects.

*(5) Substantially affects public health.*

The project is consistent with existing land uses and is not expected to negatively affect public health. However, there will be temporary short-term impacts to air quality from possible dust emissions and temporary degradation of the acoustic environment in the immediate vicinity resulting from construction equipment operations. The project will comply with State and County regulations during the construction period and will implement best management practices to minimize temporary impacts. The project's benefits of creating recreational opportunities for Kalaeloa, West O'ahu, and the State and Island as a whole will provide a positive effect on overall public health in the community.

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

The Honokea Surf Village will not result in a change in population and is not anticipated to generate or stimulate growth in the residential population. The project does not create any substantial secondary impacts on the existing population or on public facilities. Secondary impacts to infrastructure are minimized through the provision of processed injection wells, BMPs, and sustainable practices such as water recirculation at water features, water capture and recycling of rainfall runoff for toilet flushing or irrigation, and capture, storage and recycling of non-potable water into the camp cabins pool for irrigation use.

*(7) Involves a substantial degradation of environmental quality.*

The project will not involve a substantial degradation of environmental quality. Long-term impacts to air and water quality, noise, and natural resources are not anticipated. Sustainability is a core principle of the project vision, and design strategies including passive ventilation, deep overhangs, cross ventilation when possible, reduction of conditioned spaces, strategic use of landscaping and trees to block sunlight, maximizing utilization of outdoor spaces, minimizing structure size and footprint to blend buildings into the landscape, PV power, adaptive reuse such as repurposed shipping containers, and practices including use of captured rainwater, recaptured gray water, climate-appropriate landscaping, and use of high-efficiency/low flow fixtures on all water dispensing appliances including toilets, sinks, showers and spigots. The use of standard construction and erosion control BMPs will minimize the anticipated construction-related short-term impacts.

*(8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.*

The development and implementation of the Honokea Surf Village will have a limited and negligible impact on the natural environment while providing an overall general improvement to social, recreational, and economic environments. Culturally, the project is emphasizing and preserving the Native Hawaiian practice of surfing and will incorporate educational opportunities and cultural

collaborations with the local community and organizations such as the Kalaeloa Heritage Park. The project does not require or influence a commitment for larger actions.

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

The project site does not contain known identified rare, threatened, or endangered species or habitat. As outlined in *Section 3.5,* tree disturbance will be timed outside of the bat birthing and pup rearing season to avoid potential impacts to Hawaiian hoary bats. Further, measure to avoid potential impacts to Hawaiian seabirds are identified in *Section 3.5,* in the unlikely event that they may nest within the project area. No impacts are anticipated.

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

General temporary impacts associated with construction are identified in *Section 3.0* of this EA. Mitigation measures which are outlined in this EA will be applied during the on-going construction activity. No detrimental long-term impacts to air, water, or acoustic quality are anticipated with the project improvements. The improvements are not anticipated to detrimentally affect air or water quality or ambient noise levels.

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

The entire project site lies within Zone D (Unstudied Areas When Flood Hazards are Undetermined, but Flooding is Possible) and is located outside of the designated tsunami zone. No impact is anticipated.

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

The project will not affect any scenic vistas and view-planes identified in City or State plans within the project vicinity. Views of the ocean from Coral Sea Road and the H-1 Freeway will not be obstructed by the project. No significant adverse impacts are anticipated.

*(13) Require substantial energy consumption.*

Construction of the project will not require substantial energy consumption relative to other similar sized projects. Operations throughout the life of the project will actively reduce energy consumption through sustainable practices such as energy efficient light fixtures and accessories, PV systems on building roofs, cross ventilation when possible, reduction of conditioned spaces, strategic use of landscaping and trees to block sunlight, maximizing utilization of outdoor spaces, and the minimization of structure size and footprint where possible to reduce built environment and blend buildings into the landscape.

## 6.3 Summary

Based on the above findings, further evaluation of the project's impacts through the preparation of an Environmental Impact Statement is not warranted. The EA recommends mitigation measures to alleviate impacts when such impacts are identified. A Finding of No Significant Impact (FONSI) is anticipated for this project.

The project is consistent with the Hawai‘i State Land Use District Boundaries; the Hawai‘i State Plan; 2050 Sustainable Plan, the Hawai‘i Coastal Zone Management Plan, Hawai‘i Water Quality Standards, Hawai‘i Community Development Authority HRS Chapter 206E, the Kalaeloa Master Plan, the Kalaeloa Airport Master Plan, the City’s General Plan; the City’s Land Use Ordinances, ‘Ewa Development Plan, the Special Management Area, and the City’s Complete Streets Policies.

The project will have beneficial effects through providing recreational resources for the community, cultural benefits related to the preservation and promotion of the Native Hawaiian sport of surfing and its history, short-term and long-term economic benefits from construction, 150 permanent full-time employees during facility operations, economic benefits in emerging industries related to artificial wave pools, sport training, national and international competitions, the promotion of related industries including ocean safety training and surf equipment industries, and providing a world-class surf and aquatic filming location options to support and attract local, national, and international film projects. Overall, the project will provide a large public benefit while resulting in minimal impacts to the surrounding environment.

Section 7

# List of Agencies, Organizations and Individuals Receiving Copies of the EA

Chapter 7

# List of Agencies, Organizations and Individuals Receiving Copies of the EA

| Table 7.1 Agencies, Organizations and Individuals Receiving Copies of the EA | | | |
|---|---|---|---|
| **Respondents and Distribution** | **Early Consultation** | **Receiving Draft EA** | **Draft EA Comments Received** |
| **Federal Agencies** | | | |
| Naval Facilities Engineering Systems Command (NAVFAC) - Hawaii | | X | |
| U.S. Army Corps of Engineers, Honolulu District | X | X | |
| U.S. Coast Guard – Air Station Barbers Point | X | X | |
| U.S. Department of the Interior, Fish and Wildlife Service | X | X | |
| U.S. Department of the Interior, United States Geological Survey | X | X | |
| U.S. DOT Federal Aviation Administration – Honolulu Airports District Office | X | X | |
| U.S. Environmental Protection Agency | X | X | |
| U.S. Navy –Commander, Navy Region Hawaii | X | X | |
| **State of Hawai'i Agencies** | | | |
| Department of Business, Economic Development & Tourism (DBEDT) | X | X | |
| DBEDT – Hawai'i Community Development Authority | X | X | |
| DBEDT – Hawai'i Tourism Authority | | X | |
| DBEDT – Creative Industries Division | | X | |
| Department of Hawaiian Home Lands | X | X | |
| Department of Health, Hazard Evaluation and Emergency Response Office | X | X | |
| Department of Health, Clean Water Branch | X | X | |
| Department of Health, Wastewater Branch | X | X | |
| Department of Land and Natural Resources (DLNR) | X | X | |
| DLNR – State Historic Preservation Division | X | X | |
| DLNR – Office of Conservation and Coastal Lands | | X | |

| Table 7.1 Agencies, Organizations and Individuals Receiving Copies of the EA | | | |
|---|---|---|---|
| **Respondents and Distribution** | **Early Consultation** | **Receiving Draft EA** | **Draft EA Comments Received** |
| **State of Hawai'i Agencies** | | | |
| DLNR – Division of Forestry and Wildlife | | X | |
| DLNR – Division of Aquatic Resources | | X | |
| Department of Transportation, Airports Division | X | X | |
| Department of Transportation, Highways Division | X | X | |
| Hawaii Army National Guard | | X | |
| Office of Hawaiian Affairs | X | X | |
| Office of Planning and Sustainable Development | X | X | |
| Senator Mike Gabbard – Senate District 20 | X | X | |
| Senator Kurt Fevella – Senate District 19 | X | X | |
| Senator Maile Shimabukuro – Senate District 21 | X | X | |
| Representative Stacelynn Eli – House District 43 | X | X | |
| Representative Sharon Har – House District 42 | X | X | |
| Representative Matt LoPresti – House District 41 | X | X | |
| Representative Bob McDermott – House District 40 | X | X | |
| **City and County of Honolulu Agencies** | | | |
| Board of Water Supply | X | | |
| Department of Emergency Management | | X | |
| Department of Environmental Services | | X | |
| Department of Facility Maintenance | X | X | |
| Department of Parks & Recreation | X | X | |
| Department of Planning & Permitting | X | X | |
| Department of Transportation Services | X | X | |
| Honolulu Authority for Rapid Transportation | | X | |
| Honolulu Fire Department | X | X | |
| Honolulu Police Department | X | X | |
| Office of the Mayor | | X | |
| Councilmember Andria Tupola, City Council District 1 | X | X | |

| Table 7.1 Agencies, Organizations and Individuals Receiving Copies of the EA | | | |
|---|---|---|---|
| **Respondents and Distribution** | **Early Consultation** | **Receiving Draft EA** | **Draft EA Comments Received** |
| **City and County of Honolulu Agencies** | | | |
| Councilmember Augie Tulba, City Council District 9 | X | X | |
| Makakilo/ Kapolei/Honokai Hale Neighborhood Board No. 34 | X | X | |
| Ewa Neighborhood Board No. 23 | X | X | |
| **Private Organizations** | | | |
| Hawai'i Water Service | | X | |
| 'Ahahui Siwila Hawai'i o Kapolei | X | X | |
| Kalaeloa Heritage and Legacy Foundation | X | X | |
| Kanehili Cultural Hui | X | X | |
| Hunt Development Group | X | X | |

## 7.1 Summary of Comments

A summary of comments received during the Draft EA comment period by major topics and associated responses is provided in *Table 7.2* below. Refer to comment letters located after *Table 7.2*.

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| **Construction Impacts and Best Management Practices (BMPs)** | | |
| As the primary feature of the proposed surf village will be a man-made 5.5-acre wave lagoon, the applicant should consult with the State of Hawaii Department of Health for the requirements of any permits and approvals relating to the construction and operation of the proposed project. | OPSD | DOH approval is required for the project water system, including wave pool water system, and wastewater system, including the pool wastewater treatment disposal system. |
| The OPSD has developed guidance documents on stormwater runoff strategies, which offer techniques to prevent land-based pollutants and sediment from potentially affecting water resources. The OPSD recommends that the subject EA consider the following stormwater assessment guidance to mitigate stormwater runoff impacts:<br>Stormwater Impact Assessments can be used to identify and analyze information on hydrology, sensitivity of coastal and riparian resources, and management measures to control runoff, as well as consider secondary and cumulative impacts to the area.<br>https://files.hawaii.gov/dbedt/op/czm/initiative/stormwater_impact_assessments_guidance.pdf | OPSD | Complete onsite retention of storm runoff flows through drywells and other infiltration structures is anticipated to adequately respond to the City's "Rules Relating to Water Quality" for a Priority "A" project. |
| The subject EA should include information on the cumulative impacts that may result from the proposed project during construction and lifetime of the proposed development and associated activities. | OPSD | Cumulative impacts are identified in Section 3.16. The Honokea Surf Village is anticipated to support the local economy through generating economic revenue and providing over 150 full time jobs. In addition, the initiatives tied to the project will provide secondary benefits for local culture, community, and local businesses by creating educational and research interfaces to increase Honokea user knowledge and opportunities for local businesses. |
| **HRS Chapter 205A Hawai'i CZM Law** | | |
| Hawaii CZM Law, HRS Chapter 205A, requires all state and county agencies to enforce the CZM objectives and policies. The subject EA should include an assessment with mitigation measures, if needed, as to how the proposed project conforms to each of the CZM objectives and their supporting policies set forth in HRS Chapter 205A-2, as amended. | OPSD | Although the Honokea Surf Village is located outside of the SMA as delineated by the City and County of Honolulu, HRS §205A requires all state and county agencies to enforce CZM objectives and policies as set forth in HRS §205A-2. Table 5.1 in Chapter 5 examines the project's conformance with the objectives of the Hawai'i CZM Law. |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| **Cultural and Historical Resources** | | |
| The OPSD recommends that the subject EA include a Cultural Impact Assessment and Archaeological Inventory Survey, with mitigation measures, if needed, of how the proposed project might impact cultural or historic resources in the area. | OPSD | An Archaeological Reconnaissance Survey and a Cultural Impact Assessment are being conducted for the project. The project will continue to coordinate with SHPD through the 6E process which is on-going. |
| DHHL has 550 acres in Kalaeloa that are designated for industrial use. We are currently working on potential solar projects that would be located to the immediate east of the Honokea Kalaeloa parcel and share a common boundary of Coral Sea Road. Therefore, it would be important that your project details, activities and construction schedule be coordinated with DHHL's projects.<br>In addition, DHHL encourages Honokea Kalaeloa and its agents to consult with native Hawaiian organizations to establish partnerships and programs to develop and implement community-based initiatives that would mutually benefit the community and the project. | DHHL | The project will not conflict with the DHHL General Plan, O'ahu Island Plan, or Kapolei Regional Plan. Honokea will have a positive impact on DHHL homesteads and beneficiary communities in the region through the preservation of Hawaiian Culture, community outreach including youth programs, potential scholarships, and other community events, will provide recreational opportunities for the beneficiaries in the area, and will provide positive economic benefits from the facility itself as well as opportunities for local businesses and the addition of 150 full time employees as part of the project. |
| **Development Standards** | | |
| It is our understanding that the subject property is located on Hawai'i Community Development Authority (HCDA) lands and will be under HCDA jurisdiction for zoning and planning. | DPP | The Honokea Surf Village parcel is within the HCDA KCDD, and is regulated per HAR Chapter 15-215. Per the KCDD, the project is located in the T2 – Rural/Open Space transect overlay zone. |
| **Disability and Communication Access Board (DCAB).** Project plans (vehicular and pedestrian circulation, sidewalks, parking and pedestrian pathways, vehicular ingress/egress, etc.) should be reviewed and approved by DCAB to ensure full compliance with Americans with Disabilities Act requirements. | DTS | Honokea understands that DCAB will be reviewing the project during the design and building permit stage to ensure compliance with ADA requirements. |
| No comments, as we do not have any facilities or easements on the subject property. Please note that Coral Sea Road was identified to be under the jurisdiction of the State of Hawai'i, Department of Transportation (HDOT). | DFM | Coral Sea Road runs along the east boundary of the site and is classified by the State Department of Transportation (HDOT) Highways Division as a primary local collector roadway. The 80-foot wide right-of-way (based on Land Court mapping) is owned and maintained by HDOT. |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| **Airport Impacts** | | |
| The proposed project site is adjacent to Kalaeloa Airport (JRF). All projects within five miles from Hawaii State airports are advised to read the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at this link:<br>http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf. | HDOT-A | The project facilities and features have been designed to comply with FAA Order 5190.6B. The Honokea Surf Village will continue ongoing coordination with the FAA throughout the project to ensure regulatory compliance. The project has no standing waters or potentially hazardous land use practices which could attract wildlife on-site to create potentially hazardous conditions for aircraft approaches at the Kalaeloa Airport, as the surf lagoon will be running from approximately 7am to 10pm daily, avoiding standing water during daylight hours due to wave action and use.<br>In compliance with HRS Chapter 262, the Airport Zoning Act, any potential airport hazards such as glint, glare, or potential wildlife attracting elements have been reviewed in this EA, and mitigation measures to reduce impacts have been outlined in Appendix D (Biological Survey). |
| The Federal Aviation Administration (FAA) regulation requires the submittal of FAA Form 7460-1 Notice of Proposed Construction or Alteration pursuant to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. Construction equipment and staging area heights, including heights of temporary construction cranes, shall be included in the submittal. The form and criteria for submittal can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp. | HDOT-A | An FAA Form 7460-1 Notice of Proposed Construction or Alteration will be submitted to FAA as construction is within 20,000 feet of Kalaeloa Airport and exceeds a 100:1 surface from the closest point on the runway. |
| The JRF 2020 Noise Exposure Map (NEM) shows the proposed location for the development is within the 60-65 Day-Night Average Sound Level (DNL). The HDOT-A is opposed to the overnight camping cabins because transient lodging is an incompatible land use within the 60-65 DNL, per the State of Hawaii, Department of Transportation, Land Use Compatibility guidelines. | HDOT-A | Determining if the most recent noise contours are still valid has been a problem with the State airports' relatively outdated airport noise contours, which tend to be noisier than actual noise experienced due to progress in aircraft noise quieting. Also, the State Department of Transportation Airports Division (DOT-A) use of the 60 DNL threshold for park use, is due to DOT-A still using the local adaption of the FAA Part 150 Land Use Compatibility table developed when the state first started implementing the Part 150 Program in Hawai'i decades ago. A Noise Assessment survey was conducted for the site by Y. Ebisu & Associates in April 2022, and a draft report discussing the findings of the survey is currently in progress. Based on measurement results (see Appendix H), it was concluded that the Honokea Surf Village camp site is exposed to DNL levels less than 60 DNL |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| | | except for days when aircraft operating at Kalaeloa Airport overfly the project site.<br>Because the existing Kalaeloa Heritage Park adjoins the proposed Honokea Surf Village project site, which features educational tours and other cultural activities, and because low level aircraft overflights considered to be unnecessary have resulted in complaints at other state airports and below tour helicopter routes, it is recommended that all aircraft departing on Runway 04 avoid overflying the Kalaeloa Heritage Park at low altitudes, and maintain runway heading during takeoff until approximately 1,000 feet beyond the east end of Runway 04R. This is probably the airport noise modeling assumption for the local flight track which was used to develop the NEM's for Kalaeloa Airport in the past. |
| Due to the proximity of the project site to JRF, the developer should be aware of potential noise from aircraft operations. There is also a potential for fumes, smoke, vibrations, odors, etc., resulting from occasional aircraft flight operations over or near the project location. These impacts may increase or decrease over time, depending on airport operations | HDOT-A | Guests will be advised of the potential for noise and flight operations nuisances as a part of the conditions of the facility's use and their overnight stay. There are similar conditions with regards to noise and distance of camping activities to airports, such as Camp Mokuleia which is less than 700 ft away from the edge of the Dillingham Airfield runway. There are also examples of similar conditions in the KCDD, including cabins within Barbers Point Beach Cottages and open camp sites at Kalaeloa Beach Park, that are adjacent or near the airport. Initial conversations between the Honokea project team and the FAA and DOT Airports have been positive and constructive. Honokea Kalaeloa, LLC is willing to be a supportive adjacent land owner and hold harmless the FAA and Kalaeloa Airport in regards to potential complaints from guests regarding aircraft activity. The frequent northeasterly regional trade wind patterns experienced on the parcel will help disperse most airport emissions in outdoor areas off the property towards the western side of the site. The Project team will evaluate potential indoor filtration systems to help alleviate any exhaust particles in interior spaces. |
| Due to the nature of the development, the property owner shall grant an avigation easement to the HDOT-A. | HDOT-A | HCDA shall grant an avigation easement to the HDOT-A as required. |
| The HDOT-A requires that the proposed development does not provide landscape and vegetation that will create a wildlife attractant, which can potentially become a hazard to aircraft operations. Please review the FAA Advisory Circular 150/5200-33C, Hazardous Wildlife attractants On Or Near Airports for guidance. The maturity heights of trees should also be taken into | HDOT-A | The project facilities and features have been designed to comply with FAA Order 5190.6B. The Honokea Surf Village will continue ongoing coordination with the FAA throughout the project to ensure regulatory compliance. The project has no standing waters or potentially hazardous land use practices which could attract wildlife on-site to create potentially hazardous conditions for aircraft |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| consideration as they may become an obstruction to aircraft operations. If the proposed development and landscaping create a wildlife attractant and/or an obstruction to aircraft operations, the developer shall be prepared to immediately mitigate the hazard upon notification by the HDOT-A and/or FAA. | | approaches at the Kalaeloa Airport, as the surf lagoon will be running from approximately 7am to 10pm daily, which avoids standing water during daylight hours due to wave action and use.<br>In compliance with HRS Chapter 262, the Airport Zoning Act, any potential airport hazards such as glint, glare, or potential wildlife attracting elements have been reviewed in this report, and mitigation measures to reduce impacts have been outlined in Section 3.5 Biological Resources. |
| **Traffic Impacts** | | |
| The HDOT supports Travel Demand Management strategies to reduce the number of parking spaces required and trips generated. Examples include but are not limited to creating a ride-sharing program; building safe, secure bike storage for visitors and employees; and reducing parking spaces available if alternative modes of transportation are available. | HDOT-HWY | The Honokea Surf Village will provide bike parking and storage for staff and users of the facility. |
| A Permit to Perform Work Upon State Highways and a Traffic Management Plan is required for any work within the State right-of-way (ROW). The applicant shall identify and mitigate safety issues associated with ingress/egress from State highways, traffic-related construction, and post-construction operations. | HDOT-HWY | Honokea will coordinate with HDOT-HWY to obtain all necessary permits and management plans for work within the State ROW. |
| The project site has two existing accesses onto Coral Sea Road. If these accesses are to be utilized for the project, verify that the accesses meet current design standards for the type and volume of anticipated traffic. | HDOT-HWY | Due to the relatively low traffic volumes and desirable operating levels during peak periods, no turn lanes or additional vehicular access points are warranted or recommended. The driveways along Coral Sea Road are proposed as stop-controlled approaches but will also include gate control for inbound and outbound traffic. The gate for the Main Driveway is not anticipated to result in queuing issues along Coral Sea Road. To minimize the potential for vehicles entering the North and South to queue back onto Coral Sea Road, it is recommended that all on-site gates or ticketing booths include at least 100 ft of on-site vehicle storage for four (4) vehicles to queue. It is not anticipated adding a 100 ft entryway will affect the two-way circulation to all parking aisles . |
| Every driveway represents potential conflict points between motor vehicles, pedestrians, and bicyclists. An increased number of these conflict points and reduced distance between them can compromise the safety of the roadway. Consider reducing the site's access points form two accesses to one access. Consider closing off the southern access or relocate the access so that its | HDOT-HWY | The driveways along Coral Sea Road have been designed so that the path crossing locations of each driveway provide adequate sight distance for drivers and pedestrians and bicyclists. Signage such as monument signage, fencing, and other potential impediments to visibility will be added near the driveways to inform drivers, pedestrians, and bicyclists. Bicycle parking will be provided on- |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| nearest point is 35 feet from the intersection of Coral Sea Road and Long Island Street. | | site to encourage the use of non-automobile travel for both employees and guests. As the design of the Honokea Surf Village continues to progress, the project sponsor will coordinate with HCDA and/or DPP TRB as appropriate to determine the appropriate setbacks for the surf village. |
| Based on a review of the provided project information, the HDOT anticipates potential adverse impacts to HDOT highways. Submit a Traffic Impact Assessment Report (TIAR) prepared and stamped by a licensed engineer. The TIAR should include:<br>a. Description of existing traffic conditions and multimodal routes in the study area.<br>b. Description of the project's trip generation and distribution.<br>c. Forecasted traffic and multimodal conditions in the horizon year (year at full project build-out) without and with the project. If the project construction is phased over multiple years, interim horizon years should be analyzed for the completion of each phase.<br>d. Analysis of existing and future safety conditions.<br>e. Recommended mitigation | HDOT-HWY | A Mobility Analysis Report (MAR) was prepared by Fehr & Peers and is attached to the Draft EA as Appendix G. Further discussion regarding traffic analysis is provided in Section 3.11 Roadways, Access, and Traffic Conditions. |
| The Applicant shall mitigate the project's transportation impact to maintain the operating Level of Service and delay level conditions at the "without project condition" for all horizon years. The Applicant will be responsible for providing the mitigation as recommended in the TIAR (subject to final approval of the HDOT). Mitigation for direct impacts to State roadways shall be provided at no cost to the State. | HDOT-HWY | The Franklin D. Roosevelt/Coral Sea Road intersection will be significantly impacted by the implementation of the proposed project and one signal warrant is projected to be met in 2024 at the project opening. Because the intersection already includes separate turn lanes on all approaches and a refuge lane where appropriate, the traditional approach would be to recommend the installation of a signal. However, the installation of a roundabout is also a viable mitigation measure and is becoming much more common on Oahu, throughout Hawaii, and on the mainland. Roundabouts provide additional vehicular and active transportation safety benefits and often can provide greater capacity than traffic signals depending on the volumes served. |
| Transportation Impact Assessment (TIA). The applicant should perform a TIA to examine the vehicle, pedestrian, bicycle, and public transit stress and comfort levels at the nearby intersections and driveways with corresponding improvements to mitigate these impacts by applying Complete Streets principles. The applicant shall discuss the future year growth rate, trip distribution, mode split, and route assignment assumptions used in the TIA. | DTS | The Honokea Project team will maintain awareness of the project scope and new development plans in the area which may affect traffic flow at the Coral Sea Road intersection.<br>The traffic consultant for the Project will submit the technical traffic data directly to DTS. |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| The TIA should identify an appropriate speed limit for the streets adjacent to the project by analyzing conflict density and activity level, among other contextual factors, to determine the speed limit that will best minimize the risk of a person being killed or seriously injured. The National Association of City Transportation Officials Safe Speed Study methodology is recommended. A Safe Speed Study should be conducted for the longest relevant segment of a street corridor affected by the project.<br>The applicant shall submit all native files (e.g., Synchro, Excel, etc.) for the raw multi-modal counts and accompanying analyses to the Regional Planning Branch (RPB) at dtsplanningdiv@honolulu.gov. Please refer to the Department of Transportation Services (DTS) TIA Guide for multimodal assessment tools and recommended analyses. The TIA Guide can be found at http://www4.honolulu.gov/docushare/dsweb/View/Collection-7723. | | |
| **Parking.** A discussion regarding off-street parking and site generated parking demand should be added to this report. | DTS | Off-street parking and demand are addressed in Sections 2.13 and 3.11. |
| **Complete Streets.** i. A proposed Priority 2 Shared Use Path project (Project ID 2-37 in the 2019 O'ahu Bike Plan) is located on Coral Sea Road fronting the Project site. Any driveway or improvements shall be designed to minimize conflicts between bicyclists and turning vehicles. | DTS | Bike access will be provided at multiple entry drives off Coral Sea Road. Bike parking will also be provided for staff and visitors. Driveway designs will be mindful of multiple modes of transportation, and will minimize conflicts between bicyclists and vehicles. See Section 3.11 for further detail. |
| **Neighborhood Impacts.** The area representatives, neighborhood board, as well as the area residents, businesses, emergency personnel (fire, ambulance, and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., should be kept apprised of the details and status throughout the project and the impacts that the project may have on the adjoining local street area network. | DTS | Area representatives, neighborhood board, as well as the area residents will be notified regarding the construction period for the Project. This information has been added to Section 3.11 Roadways, Access, and Traffic Conditions. |
| **Waters of the United States and Flood Zone** | | |
| The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) | DLNR Engineering Division | A discussion on flood zones is provided in *Chapter 3.5 Natural and Manmade Hazards* of the EA. |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| (http://gis.hawaiinfip.org/FHAT) could also be used to research flood hazard information. | | |
| **Flora and Fauna** | | |
| The Hawaiian hoary bat roosts in woody vegetation across all islands and will leave their young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, June 1 through September 15, there is a risk that young bats could inadvertently be harmed or killed, since they are too young to fly or move away from disturbance. Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.<br>To avoid and minimize impacts to the endangered Hawaiian hoary bat we recommend you incorporate the following applicable measures into your project description:<br>• Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).<br>• Do not use barbed wire for fencing. | USFWS | Thank you for providing a list of protected species most likely to be encountered in O‘ahu and providing a list of species most likely to occur within the vicinity of the project area. Honokea is aware of the potential for ‘Ōpe‘ape‘a to occur in the vicinity of the project area. A discussion on Hawaiian Hoary Bat mitigation measures is provided in *Chapter 3.6 Flora and Fauna* of the EA. |
| Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable to light attraction.<br>To avoid and minimize potential project impacts to seabirds we recommend you incorporate the following measures into your project description:<br>• Fully shield all outdoor lights so the bulb can only be seen from below.<br>• Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.<br>• Avoid nighttime construction during the seabird fledging period, September 15 through December 15. | USFWS | A discussion on minimizing the effects of nighttime lighting on seabirds is provided in *Chapter 3.5 Biology* of the EA. |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| *Euphorbia skottsbergii var. skottsbergii* is a short-lived perennial subshrub and is endemic only to the Kalaeloa area. This area was once the largest known population of ʻEwa Plains ʻakoko and contains the last known wild individuals. Activities such as use of construction equipment and vehicles and increased human traffic (i.e. visitation, monitoring) can cause ground disturbance, erosion, and/or soil compaction. Soil disturbance or removal has the potential to negatively impact the soil seed bank of ʻEwa Plains ʻakoko if this species is present or historically occurred in the project area.<br>To avoid and minimize potential project impacts to ʻEwa Plains ʻakoko we recommend you incorporate the following measures into your project description:<br>• Conduct a botanical survey for listed plant species within the project action area, defined as the area where direct and indirect effects are likely to occur. Surveys should be conducted by a knowledgeable botanist with documented experience in identifying native Hawaiian and Pacific Islands plants, including listed plant species. Botanical surveys should optimally be conducted during the wettest part of the year (typically October to April) when plants and identifying features are more likely to be visible, especially in drier areas. If surveys are conducted outside of the wet season, the Service may assume plant presence. | USFWS | Honokea's biology consultant AECOS completed a biological survey encompassing botanical and fauna species on the project site in December 2021. The survey is included in the EA as Appendix D. |
| **Potable and Non-potable Water** | | |
| Treatment and disposal of domestic wastewater for this development was not addressed. We highly recommend that the project connects to the City and County of Honolulu's (CCH) sewer service system. As the proposed surf village and associated plan of development for the project apparently will result in considerable quantities of wastewater to be generated, if connection to CCH's sewer service system is not available, a wastewater treatment works in accordance with Hawaii Administrative Rules (HAR), Chapter 11-62, Subchapter 2, Wastewater Treatment Works will be required.<br>All wastewater systems are subject to conform to applicable provisions of the HAR, Chapter 11-62, "Wastewater Systems." Please be informed that the design plans should address any effects associated with the construction of | DOH WWB | An existing sewer force main runs in Coral Sea Road along the east boundary of the site. An onsite gravity collection system consisting of three new wet wells and duplex pump lift stations, with the last station output engineered to accommodate the pressure profile information of the force main, is proposed to dispose wastewater. Such a system would include off-line storage to allow for temporary emergency lift station or force main shutdown. A proposal to connect such an onsite system to the force main was presented informally to sewer system operator HWS who made no commitment.<br>If connection to the Coral Sea force main is not approved, onsite wastewater collection, treatment and disposal to infiltration beds or injection wells may be considered. In this case, onsite wastewater treatment and re-use of graywater or treated recycled water will meet applicable Department of Health |

| Table 7.2 DEA Summary of Early Consultation Comments and Responses | | |
|---|---|---|
| **Comments** | **Commenter** | **Responses** |
| and/or discharges from the wastewater systems to any public trust, Native Hawaiian resources or the exercise of traditional cultural practices. | | requirements and guidelines and maximum re-use and recycling of water must be considered to reduce the treatment and disposal quantities. Disposal would likely occur through shallow infiltration beds for the wastewater treatment works (WWTP). |
| The Honolulu Board of Water Supply does not have a water system in the vicinity of the project site. All water services shall be provided by the private water system serving the area. | CCH BWS | Hawaii Water Service (HWS) operates the area water system and suggested the local static pressure is about 60 psi. HWS operates the area sanitary sewer system and advises that no gravity sanitary sewage collection system serves the project site or adjacent TMK properties. |
| **Public Safety** | | |
| The Honolulu Police Department has reviewed the early consultation information and does not have any comments or concerns at this time. | HPD | Honokea acknowledges this comment. |

Section 8

# List of References

## Chapter 8

# List of References


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# 8.1 Geographical Information Systems Data

All maps produced using GIS are based on source data available from the Federal Government, State of Hawai‘i and City and County of Honolulu resources.

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# Appendices

Appendix A

# Preliminary Engineering Report

# PRELIMINARY ENGINEERING REPORT

for

## Honokea Surf Village at Kalaeloa

**TMK (1) 9-1-013:068**

**March 2022**

Prepared for:

Honokea Kalaeloa
74 Kihapai St.
Kailua, HI 96734

**Prepared by:**

Architecture • Civil Engineering • Planning • Interior Design • Environmental Services
111 S. King Street, Suite 170, Honolulu, Hawaii 96813 (808) 523-5866

# Contents

## 1. INTRODUCTION

The Honokea Surf Village project proposes to provide a recreation destination centered on a 5.4-acre man-made wave pool surrounded by a beach lifestyle environment and approximately 8 acres for non-surfing recreation and supporting program spaces. Approximately 2 acres will be used for camp cabins and the remainder for parking and support areas.

The park is proposed in a portion of the former Barber's Point Naval Air Station, conveyed to the Hawaii Community Development Authority (HCDA) who are the owner and governing authority regarding land use.

A more detailed description of the project amenities is presented in Appendix 1.

The purpose of this preliminary engineering report is to assess existing site infrastructure, and improvements necessary to support development of project as proposed.

## 2. EXISTING CONDITIONS

The project site consists of a single vacant Tax Map Key (TMK) parcel identified as (1) 9-1-013:068, owned by Hawaii Community Development Authority (HCDA) with a total area of 19.36 acres. HCDA acquired the parcel (Lot 13073-C, Land Court Application 1069 and other parcels) via quitclaim executed by the federal government in October 2011. See Figure 1 – Vicinity Map, and Figure 2 – Existing Conditions.

The site is bounded on the east by Coral Sea Road, a two-lane asphalt paved road under the jurisdiction of the State of Hawaii, Department of Transportation. The makai boundary runs along Long Island Street and the western boundary along Prince William Road, both of which are unmaintained poorly paved private accessways. The northwest site boundary runs along Kalaeloa Airport perimeter security fence (see Figure 3 - LIDAR Topo Survey).

City and County of Honolulu property records report the parcel is zoned F-1 Preservation – Military and Federal, however the Kalaeloa Master Plan prepared by landowner HCDA indicates the area in Recreation/Cultural Use.

Site vegetation consists of scattered to dense keawe and haole koa with nuisance weeds and grasses comprising the understory.

Record drawings showing waterlines, fire hydrants and scattered concrete slabs suggest that the site was developed by the Navy as an "Engine Test Cell Area".

### 2.1 Topography and Soils

Onsite slopes are irregular, see Figure 3 – LIDAR Topo Survey showing elevations ranging from about 19 feet to 25 feet MSL.

The project site is situated on the coastal plain of Pearl Harbor, south of the flows of the Waianae Range. The ground consists entirely of soil type CR Coral outcrop from an earlier higher stand of the sea. This soil type is described as consisting of bedrock from the surface to

greater than five feet depth. It is excessively drained, and flooding is rare. See Figure 4 - Soils Map.

## 2.2 Climate

Climate at the site is characterized as mostly sunny, with moderate (5-15 mph) trade winds from the east-northeast. Annual rainfall averages about 20.9 inches, and pan evaporation records indicate approximately 86 inches/year (7.16 inches/month) is typical.

## 2.3 Roadways and Site Access

Coral Sea Road runs along the east boundary of the site and is classified by the State Department of Transportation (HDOT) Highways Division as a primary local collector roadway. The 80-foot wide right-of-way (based on Land Court mapping) is owned and maintained by HDOT.

A 2010 Kalaeloa Infrastructure Master Plan study for HCDA proposed the right-of-way be developed from the present two, 12-foot wide paved lanes with unpaved sidewalks, to 16-foot sidewalks and planting strips, 6-foot bike lanes and 12-foot travel lanes in each direction, separated by a 12-foot wide center turn lane or median, but this has not been implemented.

Two locked, gated driveways enter the site from Coral Sea Road. Asphalt pavements at both entrances and within the site are old and severely deteriorated.

The south site boundary parallels Long Island Street (an unmaintained onsite road) which intersects Coral Sea Road immediately makai of the site boundary. The southwest boundary parallels Prince William Road (another unmaintained onsite road) which runs north.

## 2.4 Domestic and Fire Protection Water

Potable water service may be available onsite based on record drawings from US Navy records at the time of base closure (2010) showing an 8-inch waterline and two fire hydrants, although no hydrants or water meter were located during the topographic survey.

A 12-inch diameter main runs along Coral Sea Road at the eastern edge of the site. The main is part of a network of water lines installed by the Navy. There are two, one-million gallon water tanks and a well located mauka of Farrington Highway in Kapolei and a 24-inch water line that runs south along Kapolei Golf Course and into Kalaeloa near the intersection of Coral Sea Road and Roosevelt Avenue. Existing regional water service is shown in Figure 5 – Existing Regional Water Infrastructure.

Hawaii Water Service (HWS) operates the area water system and suggested the local static pressure is about 60 psi.

## 2.5 Wastewater

HWS operates the area sanitary sewer system and advises that no gravity sanitary sewage collection system serves the project site or adjacent TMK properties.

An 18-inch diameter sewer force main from a pump station at the USCG station collects sanitary flows from the majority of the central area of Kalaeloa, runs mauka in Coral Sea Road fronting the project site and discharges to a gravity collection system leading to the City's Honouliuli Wastewater Treatment Plant. Existing regional sewer service is shown in Figure 6 – Existing Regional Sewer Infrastructure.

### 2.6 Storm Drainage and Flood Hazards

Department of Health records indicate four closed (backfilled) drywells (Permit UO-2127, wells UO-2127-1, -2, -3 and -4) in the "old engine test cells area" or southern portion of the site. A ground topographic survey identifies five "holes" near the southwestern corner of the property, each about five feet deep but provides no further information. A Phase 1 Environmental Assessment of the site will be performed but is not available at the time of this writing.

Based on the geotechnical report ("Preliminary Geotechnical Engineering Recommendations, Honokea Kalaeloa" by Geolabs, Inc., dated February 16, 2022, attached as Appendix 3), infiltration rates at the site may be about 25 inches/hour.

The 50-year recurrence, 1-hour duration rainfall event (2.82 inches). According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) map, the project area is located in Zone "D", "unstudied areas where flood hazards are undetermined, but flooding is possible" see Figure 7 - Flood Hazard Assessment Report.

The site is approximately 3,200 feet from the shoreline at Kalaeloa Beach Park. Hawaii State Emergency Management Agency maps locate the site outside the "Tsunami Inundation Zone" but still entirely within the "Extreme Tsunami Inundation Zone".

### 2.7 Gas Service

There is no piped gas service to the project site.

## 3. PROPOSED IMPROVEMENTS

### 3.1 Site Layout, Parking, Pavement

The preliminary site layout is shown in Figure 8 - Concept Site and Grading Plan. Guests will access the attraction via three gated entry driveways connected to Coral Sea Road. A 284-stall parking lot will be provided at the mauka end of the site, and three additional parking areas totaling 104 stalls near the makai portion of the site will be designated to service staff and overnight visitors. A perimeter roadway will ensure the entire site will be vehicle accessible.

Roadway improvements along Coral Sea Road to accommodate traffic accessing the attraction generally considered in the "Kalaeloa Improvements Master Plan Update" were to include a makai-bound deceleration right turn lane into the driveways, and median acceleration/merge lane for traffic exiting onto Coral Sea Road. Full road right-of-way improvements have not been required by owner HCDA as a condition of the project.

Driveway connections and modifications to Coral Sea Road will need approval of the Hawaii State Department of Transportation (DOT), which has initially indicated that driveways will be allowable, subject to review of construction drawings. While DOT has requested that driveways be minimized, the project's 3 driveways will assist with mitigation of traffic impacts, improve circulation and emergency access. Utility work within the right-of-way will also likely require a Use and Occupancy agreement with DOT.

Pavement will consist of two inches of asphalt concrete over six inches of aggregate base course paving for vehicular areas, and six inches of concrete pavement over six inches of aggregate subbase course in high-load/high-traffic areas (Appendix 3).

Fire protection roadway layout is partially informed by NFPA requirements to provide road access and fire protection water supply. The following requirements are excerpted from NFPA 1:

- Fire vehicle access roads shall provide unobstructed 20 ft. width with 13.5 ft. unobstructed vertical clearance, to within 50 feet of at least one exterior door of every building, and such that all exterior building surfaces are not more than 150 feet away. If automatic fire sprinklers are provided, the access distance may be increased to 450 feet. Detached buildings of less than 400 square feet may not be required to be accessible.
- Where a fire access road greater than 150 feet long terminates in a dead end, an approved turnaround must be provided.

New perimeter security fencing will be provided where the site does not adjoin the Kalaeloa Airport security fence (makai, mauka, and Diamond Head sides).

## 3.2 Domestic Water

Proposed water lines are shown in Figure 9 - Concept Utility Plan.

The site is proposed to be served by two connections to the 12-inch water main in Coral Sea Road to provide redundancy in the event of an onsite service interruption. Each connection may be made through an 8” x 2” FM meter and backflow preventer.

A looped onsite perimeter water main with branches to various demand points is proposed, with additional branches to provide water to the camp cabins, structures and wave lagoon equipment on the west side of the site.

Guest-accessible water features, plus cooking and domestic uses will be potable water supplied by HWS.

Estimated water demands and wastewater generation rates are presented in Appendix 4.

Wave lagoon initial or periodic filling is estimated at 6,870,000 gallons and represents the single largest water demand. Draining and refilling water features is anticipated to occur every two years.

The average estimated potable water demand for domestic uses is estimated at **60,000 gpd**.

Water features demand (including makeup for evaporation, wave activity splash and pool filter backwash) is estimated **at 56,000 gpd**.

Irrigation demand is estimated at 5,000 gallons per acre per day over an estimated 4 acres of landscaped area (to be refined as project design progresses) totaling about **20,000 gallons per day.**

The daily potable water demand including irrigation totals to **136,000 gallons per day** (Appendix 4).

Actual water meter size will be reviewed during project design and must conform to HWS requirements. Informal discussion with purveyor HWS suggests large water demands (e.g., water feature refilling) may be made available over a multi-day period, subject to maximum allowable water meter flow and State-imposed source pumping rate restrictions. Daily water consumption in the range indicated above is currently available from Hawaii Water Service.

A formal water service request must be made to HWS to secure a one-year water commitment, which may be extended with HWS concurrence (if facility charges are paid) for an additional two years.

## 3.3 Water Demand Reduction Strategies

Potable water demand must be sensitive to recent events surrounding potable groundwater source contamination and usage restrictions imposed at the HWS source wells, water demand of other users of the HWS system, potential well closures and the overall cost of water. Thus, water demand reduction strategies must be considered and means to reduce water demands are considered:

- Water recirculation at water features.
- Climate-appropriate landscaping.
- Use of high-efficiency/low flow fixtures on all water dispensing appliances including toilets, sinks, showers and spigots.
- Capture and recycling of rainfall runoff for toilet flushing or irrigation.
- Capture, storage and recycling of non-potable water into the camp cabins pool for irrigation use.
- Drilling and use of onsite brackish water wells for irrigation water. A review of two potential irrigation supply schemes is presented in the Technical Memorandum attached as Appendix 5. In the first scheme two wells pumping at 21 gmp would supply 100% of irrigation needs; in the second scheme a single well pumping at 21 gpm would supply 50% of required irrigation and other sources the rest.

Implementation of water conservation measures may result in a 30% reduction of domestic, pool and irrigation water demand and 50% re-use of wastewater as tabulated below.

| Demand Type | Expected Potable Demand | Wastewater Reduction Method | Range of Reduction |
|---|---|---|---|
| Domestic | 60,000 gpd | Low flow fixtures | 20% – 30% |
| Pool | 56,000 gpd | Rainwater → Bungalow Pool | 0% – 5% |
| Irrigation | 20,000 gpd | Graywater<br>Rain<br>Brackish water wells:<br>1 well<br>2 wells | 80%<br>20%<br>Up to 100%<br>(50%)<br>(50% x2) |
| **Total** | **136,000 gpd** | | **Up to 30%** |

| Demand Type | Expected Wastewater Demand | Wastewater Reduction Method | Range of reduction |
|---|---|---|---|
| Wastewater | 50,000 gpd | Graywater capture and re-use<br>Low flow fixtures<br>On-site treatment and disposal | 50%<br>20 – 30%<br>100% (if DOH req's) |
| **Total** | **50,000 gpd** | | **Up to 50%** |

A typical water park of similar size and density is estimated to use 170,000 to 200,000 gpd and a typical wave lagoon park about 180,000 gpd. Implementation of water conservation measures and sustainable design and technologies may allow reduction in water demand to about 136,000 gpd or less (Appendix 4).

## 3.4 Water and Wastewater Budget

Water demand management is a complex combination of water demands encountered on different time scales, among those are daily domestic demands of cabins, restrooms, employee and administrative uses, food establishments, evaporative loss make-up, operational losses, filter backwash and salinity control, versus yearly water feature initial and periodic refilling. Water demand is complicated by considerations to reclaim, store and re-use graywater for irrigation and non-potable uses. A spreadsheet assessing the domestic water, irrigation and wastewater budget is presented in Appendix 4.

A discussion of the conservation measures in Appendix 6 proposes management of nonpotable water uses in four areas: water feature drain/refilling, graywater capture and re-use, onsite brackish irrigation wells, and rainfall capture/re-use. In these conceptual demand reduction strategies, water feature contents be recirculated to limit potable water makeup to evaporative losses and periodic maintenance drain/refill events. Irrigation demand could be limited to 16,000 gpd by selection of native/climate appropriate landscape elements and limited grass areas.

## 3.5 Wastewater

Proposed sanitary sewer lines are shown in Figure 9 - Concept Utility Plan. Sanitary wastewater generation is estimated in Appendix 4 or may be estimated using rates from HAR 11-62 "*Wastewater Systems*".

The tributary population is estimated based on the total number of daily users plus staff and is tabulated in Appendix 4. Total daily domestic wastewater generation is estimated at **50,000 gpd**.

An existing sewer force main runs in Coral Sea Road along the east boundary of the site. An onsite gravity collection system consisting of three new wet wells and duplex pump lift stations, with the last station output engineered to accommodate the pressure profile information of the force main, is proposed to dispose wastewater. Such a system would include off-line storage to allow for temporary emergency lift station or force main shutdown. A proposal to connect such an onsite system to the force main was presented informally to sewer system operator HWS who made no commitment.

If connection to the Coral Sea force main is not approved, onsite wastewater collection, treatment and disposal to infiltration beds or injection wells may be considered. In this case, onsite wastewater treatment and re-use of graywater or treated recycled water will meet applicable Department of Health requirements and guidelines and maximum re-use and recycling of water must be considered to reduce the treatment and disposal quantities. Disposal would likely occur through shallow infiltration beds for the wastewater treatment works (WWTP).

Periodic drainage of water features is anticipated to occur for maintenance, repair and replacement of equipment, requiring disposal of large amounts of water. Water feature filter backwash will also result in daily disposal of some 500 gpd. Disposal is proposed to be routed to other water features not drained that may be designed with additional holding capacity, or to onsite injection or infiltration structures.

pending the results of a forthcoming geotechnical investigation which will assess the permeability of the coral strata underlying the site. A review of conceptual injection well design is presented in the Technical Memorandum attached as Appendix 5.

Pending analysis of the overall water budget and disposal options as the project is further defined, gray and black wastewater streams may be treated separately or combined. As there are no drainage or sanitary wastewater facilities outside the site, the overall requirement is to collect and dispose sanitary wastewater to the Coral Sea force main, while gray water, pool filter backwash and pool waters may be disposed onsite to infiltration facilities or captured, treated, stored and re-used.

## 3.6 Fire Access and Fire Protection Water Supply

Fire water supply is assessed based on the BWS *Water System Standards*. A site characterized as “neighborhood business” should be provided with a fire flow of 2,000 gallons per minute for a 2-hour fire duration (total 240,000 gallons) via hydrants spaced not greater than 250 feet apart.

Further review and coordination with the Honolulu Fire Department (HFD) will be required as the site layout is developed, and hydrant spacing may be modified depending on structure spacing, type of construction, and use of fire sprinklers, for which information is not available at this point.

Two options are presented for fire water supply:

- Pending HWS approval fire water may be drawn from the 12” potable water main in Coral Sea Road. The approximate static pressure of 60 psi and 2,000-gpm delivery requirements will require 12-inch diameter or larger looped fire service lines throughout the project.
- Fire water may be pumped from onsite water features, which may not contain potable water. This option may reduce piping sizes but require an onsite pumping station with duplex, 2,000-gpm pumps designed to be immune to the potentially brackish fire water supply.

Design of onsite fire protection and water supply systems for the project will reference the Fire Code (National Fire Protection Agency (NFPA) 1).

Based upon NFPA 1, Chapter 18 the following criteria must be met to provide adequate onsite fire access:

- Fire vehicle access roads shall provide unobstructed 20 ft. width with 13.5 ft. unobstructed vertical clearance, to within 50 feet of at least one exterior door of every building, and such that all exterior building surfaces are not more than 150 feet away. If automatic fire sprinklers are provided, the access distance may be increased to 450 feet. Detached buildings of less than 400 square feet may not be required to be accessible.
- Where a fire access road greater than 150 feet long terminates in a dead end, an approved turnaround must be provided.

An approved water supply must be provided within 150 feet of all building exteriors (450 feet if provided with an automatic sprinkler system) but non-potable water may be used. Required fire flow will be as determined by NFPA 1, based on occupancy, type of construction, and separation from other structures and there must be at least 20 psi residual pressure.

## 3.7 Storm Drainage

The conceptual drainage scheme is shown in Figure 9 - Concept Utility Plan. Given there are no drain lines in the area, rainfall runoff will be retained onsite via infiltration, capture and re-use to serve irrigation needs or for toilet flushing via capture in cisterns.

Exterior drainage infrastructure shall be designed in accordance with the CCH Department of Planning and Permitting, *Storm Drainage Standards* and the *Rules Relating to Storm Drainage*.

City regulations allow pool effluent to be disposed via onsite infiltration without dechlorination if there is no surface flow to offsite areas.

The Rational Method will be used to compute peak stormwater runoff flow rates since the project area is less than 100 acres per the CCH *Storm Drainage Standards*. The site is considered a sump because all storm runoff must be retained onsite, thus the 50-year recurrence interval rainfall intensity shall be used to size drainage facilities.

The Rational Method formula is computed from the formula: Q=CIA

Where: Q = Peak Runoff Flow Rate (cubic feet per second)
C = Coefficient of Runoff = 0.7 (estimated pending confirmation of site layout and surface types)
I = 50-year recurrence interval rainfall intensity in inches per hour = 2.82 in/hr. (NOAA Atlas 14, accessed online)
A = Drainage area (19.36 acres)

A sample drainage basin of one-quarter of the total site less the wave pool yields a sample basin area of about 3.5 acres. The *Storm Drainage Standards*, Plates 1 and 4 determine the time of concentration and intensity correction factor to be applied to the rainfall intensity. Based on an estimated drainage path of 500 feet at 1% slope, the time of concentration will be about 10.5 minutes, and the corrected intensity about 6.37 and the approximate runoff of the sample basin is calculated as:

$$Q = C \times I \times A = 0.7 \times 6.37 \times 3.5 = 15.6 \text{ cfs}$$

The volume of runoff from a rain event of 2.82 inches over a 3.5-acre basin is approximately 35,800 cubic feet. This runoff volume suggests parking lots will need to be graded as sumps which drain to subsurface infiltration basins or injection wells (dry wells).

Revised hydrology calculations will be performed as site design progresses, allowing BMPs to be integrated into the design and ensuring that post development stormwater runoff can be managed onsite. A drainage report will be prepared for the project as part of the permitting and approval process. The preliminary geotechnical investigation suggests onsite disposal of runoff may be accomplished using a network of permitted eight-foot diameter, 20-foot deep drywells, see Figure 10 – Sample Drywell Detail, installed in each drainage basin.

Based on the size of the project the CCH *Rules Relating to Water Quality* require implementation of Category A stormwater quality permanent BMPs, through principles of Low Impact Design (LID). Low Impact Design is the use of bioretention, biofiltration and vegetated systems to treat, absorb, and infiltrate stormwater runoff. The purpose of LID components is to reduce runoff volume and the pollutant loads from new development and to protect the receiving waters. Complete onsite retention of storm runoff flows through drywells and other infiltration

structures is anticipated to adequately respond to the City's "*Rules Relating to Water Quality"* for a Priority "A" project.

### 3.8 Gas Service

Gas service is anticipated to be required at the project site and may be provided by point-of-use tanks, as no piped gas service is available.

### 3.9 Electrical, Telephone and Telecommunications

A summary review of electrical, telephone and telecommunications services is presented in Appendix 7.

## 4. CONCLUSIONS

Subject to further refinement as the design proceeds, development of the site for the stated purpose is considered feasible.

Guest and service vehicle access will be via three gated driveways from Coral Sea Road. Driveways. Onsite parking and interior circulation roads will be asphalt paved.

Domestic and water feature demands will be provided by HWS through a new metered connection, and a backup connection, to the water main along Coral Sea Road.

Fire protection water will be available via onsite hydrants but is also recommended to be available using fire pumps drawing water from onsite water features.

Wastewater is recommended to be collected at three onsite wet wells and discharged into the existing force main in Coral Sea Road.

Drainage from storm runoff will be entirely retained onsite and disposed via infiltration into underlying coral substrate.

# APPENDIX 1

# PROJECT DESCRIPTION

02/06/2022

# HONOKEA KALAELOA

## Project Summary

The Honokea Surf Village is a 19.4-acre recreation destination in Kalaeloa mauka and adjacent to the approximately 77ac Kalaeloa Heritage Park. After a four-year public RFP process, Honokea Management, LLC (Honokea) entered into an exclusive negotiating agreement with the HCDA in 2021 to lease the project site.

The 19.4-acre site provides the capacity that would allow Honokea to develop a comprehensive program of healthy recreation, sustainability, culture and community attractions that are necessary for commercial viability. The Honokea Surf Village will have a variety of skill and adventure-based recreation activities with the primary attraction being a 5.5-acre wave lagoon that will generate waves for surfing. The surf lagoon will be surrounded by a beach lifestyle environment and approximately 8 acres for (non-surfing) recreation and supporting program spaces. Approximately 2-acres will be used for camp cabins, and the remainder for parking and support areas.

The development of the Honokea Surf Village will advance the State's interest by promoting Hawaii's surfing and film industries while also supporting cultural education, smart tourism, and economic development. Other benefits of the surf center to provide include:

1. Supporting of local surf-related businesses by allowing the State to remain a leader in surfboard design, manufacturing, and testing;
2. Providing employment opportunities and opportunities to promote awareness of surf history and its cultural heritage;
3. Providing an artificial surf facility to serve as a training and meet venue, including the use of the facility for future Olympic training, and as a design testing facility; and
4. Providing a world-class surf and aquatic film studio to support and attract local, national, and international film projects.

Other partnerships and opportunities:

**Kalaeloa Heritage Park** - Since Native Hawaiian sensitivity is at the deepest levels of the Honokea development approach, any collaboration and partnership with Kalaeloa Heritage Park is not only possible but would be mutually beneficial.

**Access Surf** – Hawaii Adaptive Surf Team; providing access to the organization to the surf park

**Scholarships** – Scholarships for surf time and/or for life-safety training programs for underprivileged youth.

## Project Philosophy

Honokea Surf Village is about two things. One, It is all about surfing and the underlying Hawaiian culture that brought surfing into existence; and secondly, it is about a village, a place of community that allows visitors, residents, and patrons the opportunity to experience living with great connections to place, to

culture, and to each other. In many respects, surfing allows the opportunity to experience an authentic Hawaiian lifestyle translated to any location: informal, outgoing and social, outdoor oriented, and instilled with Aloha. Our mantra is to "Think Green, Dream Blue", and to create a place to "Live, Work, Stay, Play".

## Project Implementation of Kalaeloa as a ***Wahi Ho'okela***

HCDA's master plan vision for Kalaeloa was a *wahi ho'okela*, a center for excellence and a place for Hawai'i's people to come together:

> to share knowledge, develop expertise, and, advance themselves while remaining respectful of the past and place.

Honokea Surf Village is a unique project that advances the vision, core values, and guiding principles for Kalaeloa; and in doing so aligns with the local community's aspirations and values. The project will create a recreation area that propagates economic enterprises for Kalaeloa based on education, sports, and culture. It is fitting for a project like Honokea Surf Village whose primary goal is the sharing of values, culture, and history through surf and surf culture, to find a home here in Kalaeloa aligning with the master plan's following core values and guiding principles to:

- Pursue a balance of preservation and restoration of cultural and natural resources, the creation of public and recreational areas, and the development of economic enterprises.
- Support the multiplicity of uses at Kalaeloa and encourage the achievement of excellence in many fields of endeavor, including education, research, technology, environment, defense, commercial, sports, wellness, culture, and the arts.
- Focus redevelopment resources to create both social and economic values by emphasizing community needs for education, open space, recreational and olympic development facilities, and quality careers and jobs.

## Project Details

The Honokea Surf Village is organized into five major zones: the Arrival Pavilion, the Surf Lagoon, the Family Zone, the Adventure Zone, and the Membership Clubhouse & Camp Cabins. The primary use of the village is skill-and-adventure-based recreation with the primary attraction being the 5.5-acre wave lagoon that will generate waves for surfing. The surf lagoon will be surrounded by a beach lifestyle environment and approximately 8-acres for (non-surfing) recreation and supporting program spaces. Approximately 2-acres will be used for camp cabins, and the remainder for parking and support areas.

1) The Arrival Pavilion as the public entry to the Honokea Surf Village is mainly a single-story structure with a designated two-story structure and raised boardwalk fronting the surf lagoon that houses:
   - Guest check-in
   - Administrative offices
   - Surf museum and education center
   - A full-service restaurant and grab-n-go bar. The restaurant shall serve park goers, campers and patrons who do not have park access.
   - A sports outfitter/pro-shop that will sell branded items, sundry items, and sports related gear, apparel, and accessories. This space will also be used as a platform for the local surf industry to combine research & development, design, and testing of equipment such as boards, fins,

materials, paddles, wet-suits, life safety equipment, and life safety techniques. The outfitter/pro-shop will serve all shop patrons, inclusive of park users.
- Conference Center/Banquet with Kitchen and Pre-Function Lawn
- High performance Olympic training and cross training center

2) The Surf Lagoon: uniquely provides a surfing opportunity for disabled and handicapped

3) The Family Zone
   - Grab-n-go snack bar
   - Pavilions
   - Changing area/lockers/restrooms
   - Equipment rentals and storage
   - Surf museum
   - Skate Park
   - Splash area and dry play area for kids
   - Family lawn for activities and education

4) The Adventure Zone
   - Activity pool
   - A lazy river which will also be used for stand-up paddle boards.
   - Rock climbing
   - Beach volleyball
   - Walking and educational trails
   - Cliff jumping
   - Grab-n-go snack bar

5) Member's Clubhouse and Camp Cabins
   - Member's Clubhouse
   - Camp cabins for overnight use is part of the immersive recreation and surf experience. Fifty one-story overnight camp cabins are proposed for the project ranging from 400 square feet to 800 square feet per cabin. The camp cabins will sleep four to eight people each. Usage of the recreational areas will be included as part of the camp experience.

The surf lagoon, diving pool and potentially other areas of the park will be utilized by the film industry for filming. It is anticipated at this time that there will not be a dedicated building for film production, and that crews will set up trailers along the service drive during filming.

There will be an admission fee for access to the surfing village, which will include the use of amenities within the surfing village, with the exception of the surfing lagoon which will be a separate booking platform. Membership passes will also be available.

The park will open daily with an estimated annual attendance of up to 330,000 park visitors and have about 150 full-time employees.

Approximately 300 to 400 parking spaces will be available on-site for daily use.

## Support for the Project

The site lies within an Opportunity Zone and rural development area, an area at the center of City and State revitalization efforts. Honokea secured a $95 million revenue bond authority from the State of Hawaii for the Honokea Surf Village. The bill was approved by the Legislature and signed into law in June 2021. This bond bill authorizes State of Hawaii tax free revenue bond authority as a financing tool for the project. The bonds require no capital from the State as this is private capital and poses no financial risk to taxpayers (the returns are guaranteed by the project). It demonstrates the State of Hawaii's commitment to see this project happen from the highest level.

The project has another $30 million in federally guaranteed debt and $25 million in equity in two rounds. The entire project is designed to maximize social and community impact by creating over 150 local jobs, and by being a platform for local retailers, the local surf manufacturing industry and film industries. It encourages healthy living through food, hawaiian culture, sustainability, health & wellness, and sports for the entire family. The project will partner with local educational organizations to encourage progressive educational opportunities in engineering, sustainability, wellness, medicine, entertainment, and Hawaiian surf history.

## Sustainability

- Natural Resources
    - Adaptive reuse of old shipping containers for offices
    - Reuse of building materials
- Energy Conservation
    - Majority of spaces naturally ventilated, conditioned spaces only where necessary in high activity work areas
    - Native landscape
- Water Conservation
    - Brackish water used for irrigation
    - Wave lagoon
        - Option 1 - Bleed off to regulate salinity of wave lagoon; drainage of pools to cabin pond for irrigation storage pond; water would be dechlorinated for irrigation
        - Option 2 - Bleed off to regulate salinity of wave lagoon; drainage of pools to cabin pond for irrigation storage pond; water would be dechlorinated for irrigation
-

# APPENDIX 2

# GRAPHICS


# VICINITY MAP

FIGURE 1

STATE OF HAWAII DOT AIRPORTS DIVISION
TMK: 9-1-013:032

UNITED STATES OF AMERICA
TMK: 9-1-013:039

HAWAII COMMUNITY DEVELOPMENT AUTHORITY
TMK: 9-1-013:068

CORAL SEA ROAD

HAWAIIAN HOME LANDS
TMK: 9-1-013:040

HAWAII COMMUNITY DEVELOPMENT AUTHORITY
TMK: 9-1-013:067

HAWAII COMMUNITY DEVELOPMENT AUTHORITY
TMK: 9-1-013:069

LEGEND

- PROJECT PROPERTY LINE
- PROPERTY LINE
- 20 EXISTING CONTOUR

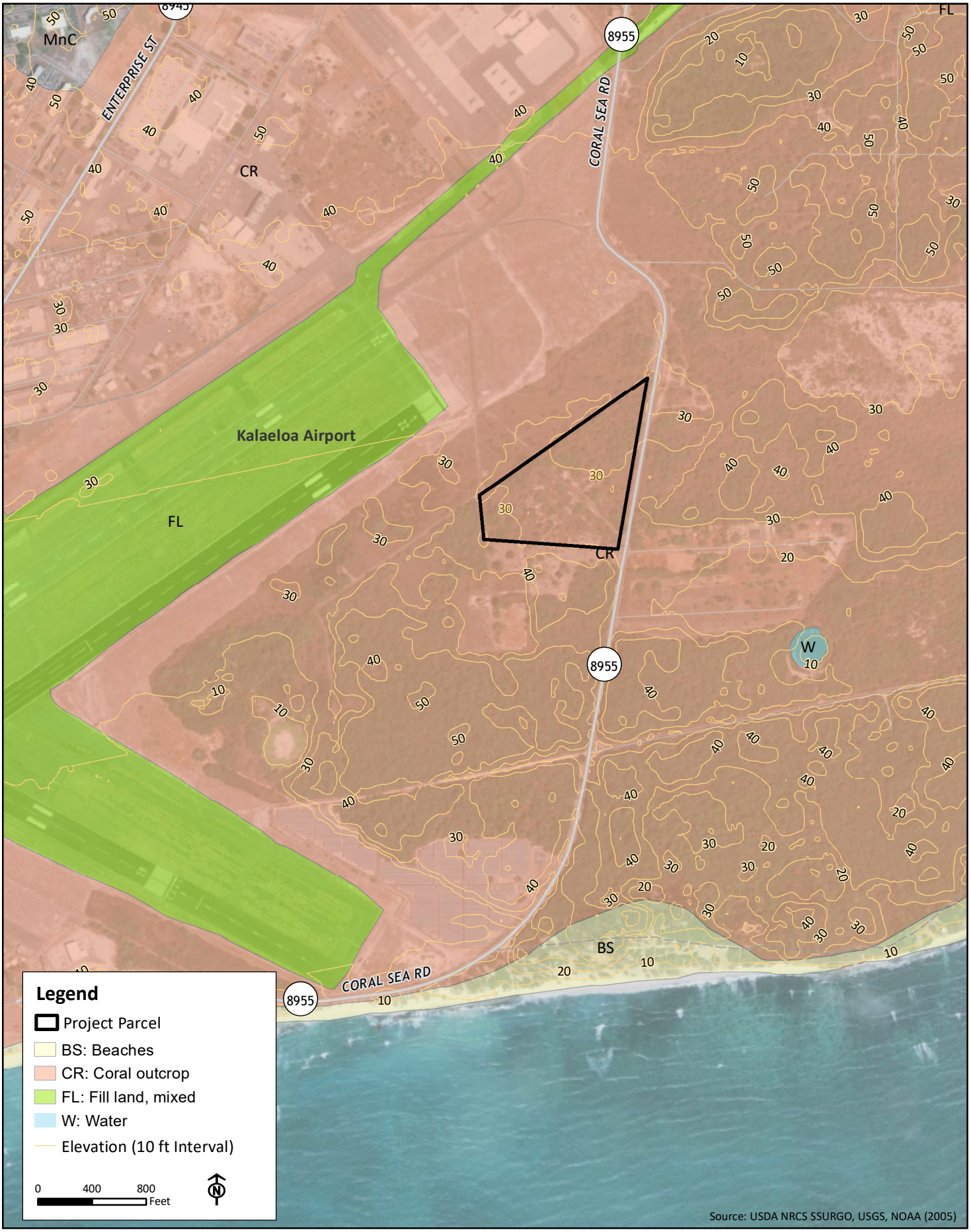
150 0 150 300
ORIGINAL SIZE: 11x17

G70 | HONOKEA surf parks

# EXISTING CONDITIONS

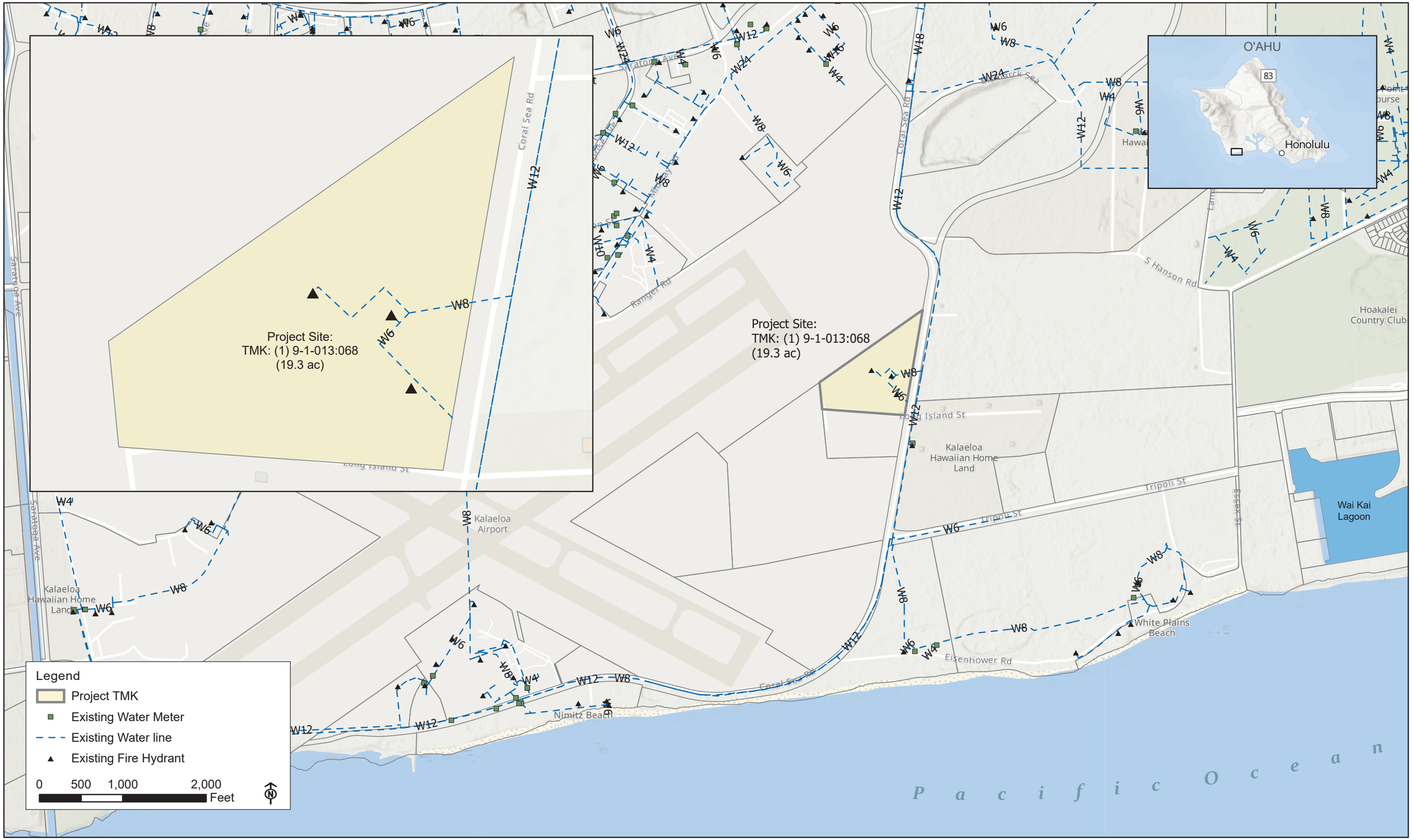
SCALE: 1" = 150'

FIGURE 2



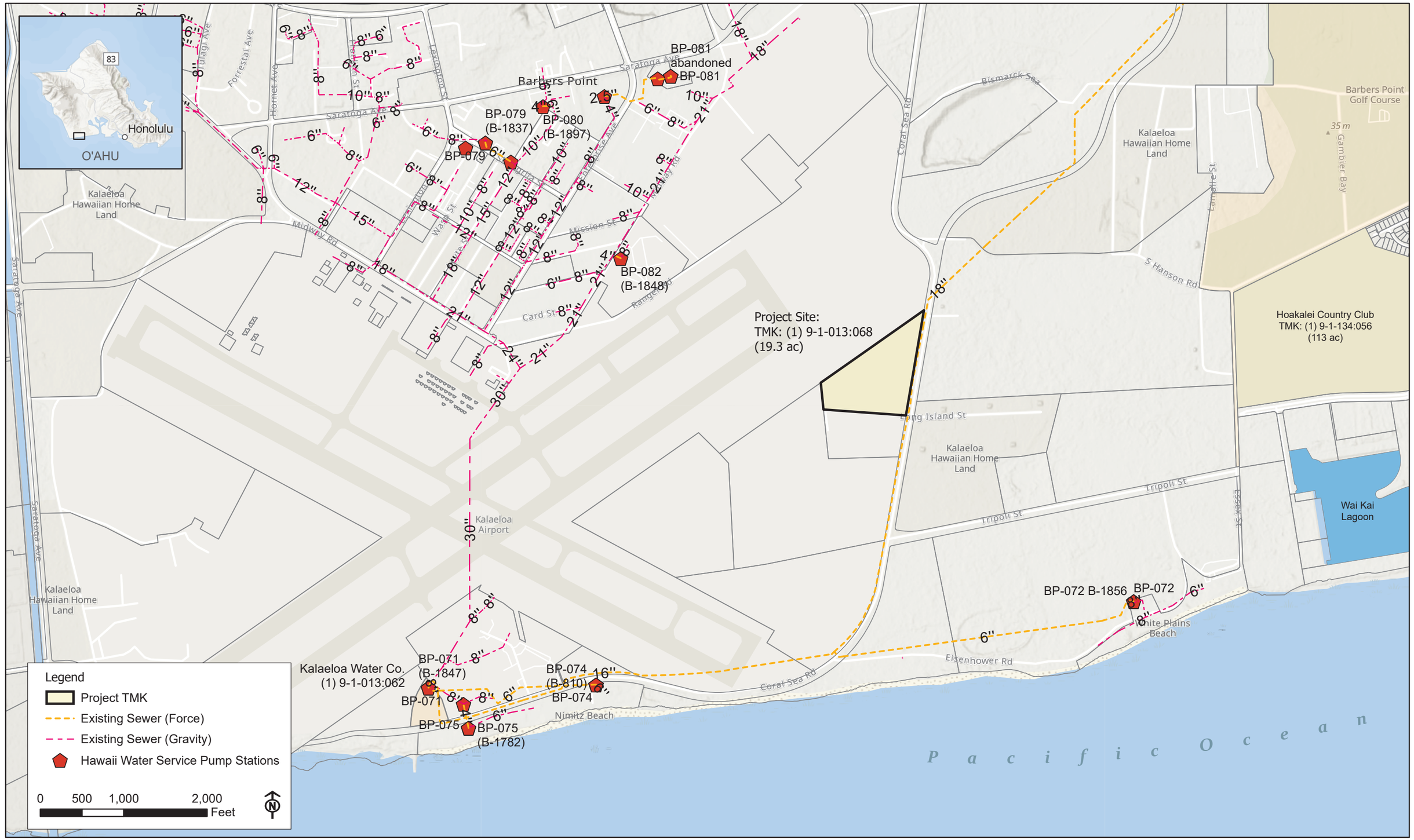

# SOILS & LIDAR MAP

FIGURE 3




# EXISTING REGIONAL WATER INFRASTRUCTURE MAP

FIGURE 4




# EXISTING REGIONAL SEWER INFRASTRUCTURE MAP

FIGURE 5


# Flood Hazard Assessment Report

www.hawaiinfip.org

Honokea Kalaeloa FHAT

## Property Information

| | |
|---|---|
| COUNTY: | HONOLULU |
| TMK NO: | (1) 9-1-013:068 |
| WATERSHED: | KALOI |
| PARCEL ADDRESS: | HONOKEA KALAELOA FHAT<br>KAPOLEI, HI 96707 |

## Notes:

## Flood Hazard Information

| | |
|---|---|
| FIRM INDEX DATE: | NOVEMBER 05, 2014 |
| LETTER OF MAP CHANGE(S): | NONE |
| FEMA FIRM PANEL - EFFECTIVE DATE: | 15003C0310G - JANUARY 19, 2011<br>15003C0316H - NOVEMBER 05, 2014<br>15003C0317G - JANUARY 19, 2011 |

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: NO
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 0.60 1.20 mi

*Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.*

*If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.*

**FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND**
**(***Note: legend does not correspond with NFHL)*

**SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD** - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

| | |
|---|---|
| | **Zone A**: No BFE determined. |
| | **Zone AE**: BFE determined. |
| | **Zone AH**: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined. |
| | **Zone AO**: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. |
| | **Zone V**: Coastal flood zone with velocity hazard (wave action); no BFE determined. |
| | **Zone VE**: Coastal flood zone with velocity hazard (wave action); BFE determined. |
| | **Zone AEF**: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE. |

**NON-SPECIAL FLOOD HAZARD AREA -** An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

| | |
|---|---|
| | **Zone XS (X shaded)**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood. |
| | **Zone X**: Areas determined to be outside the 0.2% annual chance floodplain. |

**OTHER FLOOD AREAS**

| | |
|---|---|
| | **Zone D**: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities. |

PROPERTY SIZE = 19.3 AC
PROJECT AREA = 19.3 AC
TMK 9-1-013:068

DPP ZONING = F-1 (FEDERAL & MILITARY PRESERVATION)
HCDA ZONING = RURAL

DISTRURBED AREA = 19.3 AC

EXISTING IMPERVIOUS AREA = 0.51 AC
PROPOSED IMPERVIOUS AREA = 6 AC

LID PRIORITY A
ESCP CATEGORY 5

APPROXIMATE EARTHWORK:
CUT = 41,000 CY
FILL = 39,000 CY

NOTES:

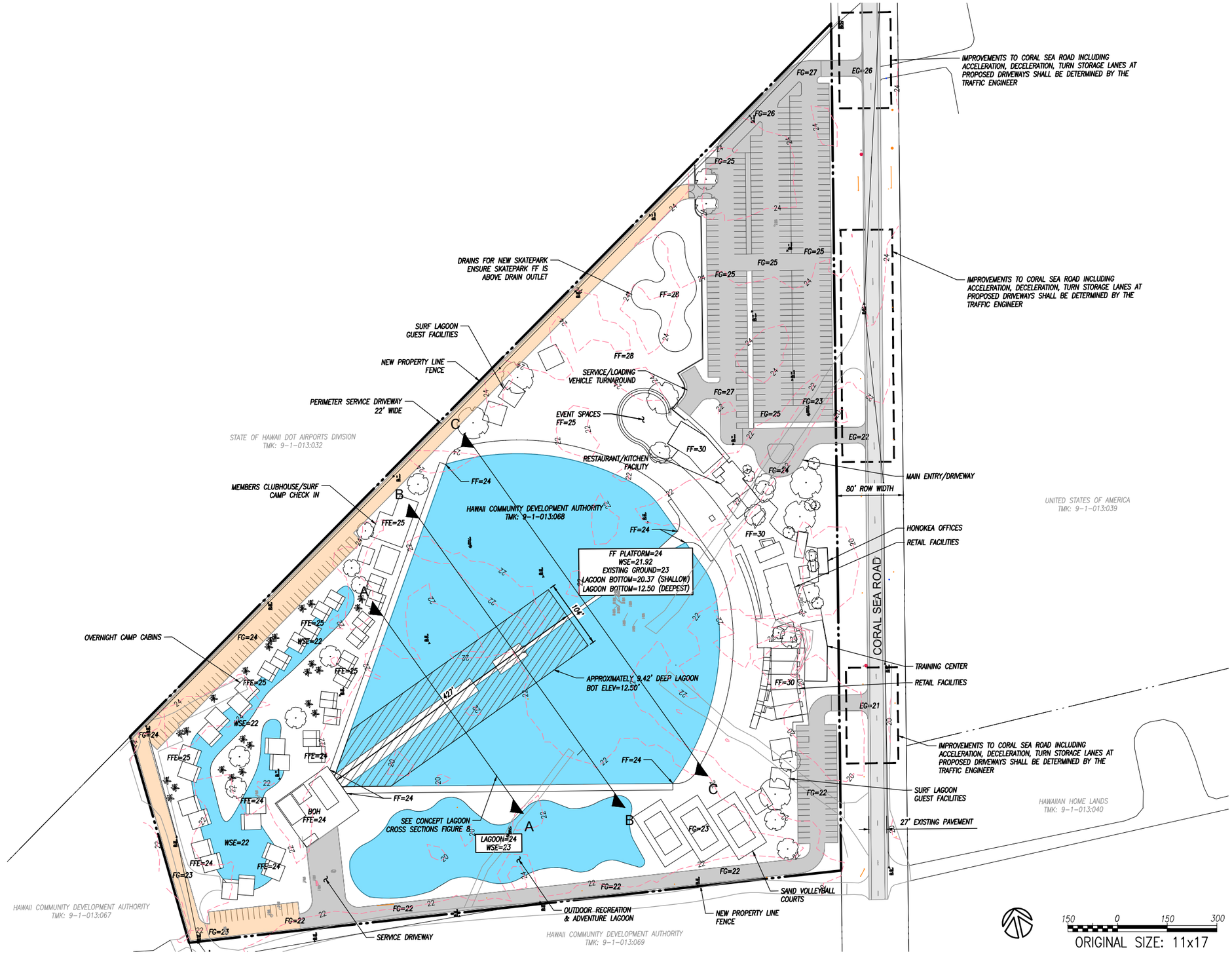
1. CORAL SEA ROAD IS UNDER JURISDICTION OF THE DEPARTMENT OF TRANSPORTATION, AND THE KALAELOA MASTER PLAN IDENTIFIES PLANNED ROADWAY IMPROVEMENTS. HCDA HAS DEFERRED THE ROADWAY IMPROVEMENTS HOWEVER THE TRAFFIC IMPACT ANALYSIS REPORT SUGGESTS THE PROJECT MAY CONSTRUCT IMPROVEMENTS TO SERVE EACH PLANNED DRIVEWAY.

2. THE NORTHEAST BORDER OF THE SITE ADJOINS KALAELOA AIRPORT AND THE FENCE ALONG THAT BORDER IS UNDER JURISDICTION OF THE DEPARTMENT OF TRANSPORTATION, AIRPORTS DIVISION. THAT FENCE SHALL NOT BE DISTURBED EXCEPT AT THE OWNER'S DIRECTION. THE REMAINING BORDERS OF THE SITE SHALL BE ENCLOSED BY A SECURITY FENCE WHOSE DETAILS AND HEIGHT ARE TO BE DETERMINED.

3. FOR ELECTRICAL, TELEPHONE, AND TELECOMMINCATIONS SEE APPENDIX 7.

LEGEND

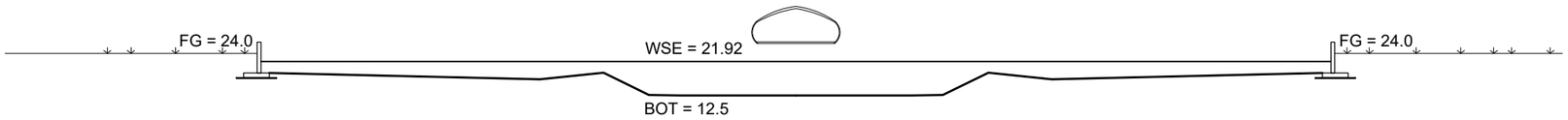
- PROPERTY LINE
- EXISTING ROAD
- PROPOSED PAVEMENT
- PROPOSED CRUSHED CORAL DRIVEWAY
- LAGOON WATER SURFACE
- —20— EXISTING CONTOUR



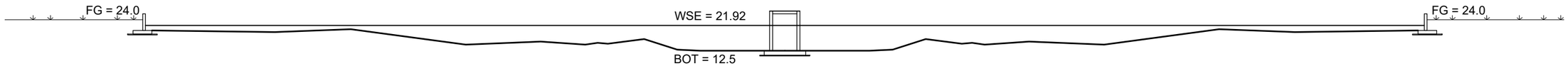

# CONCEPT SITE & GRADING PLAN

SCALE: 1" = 150'

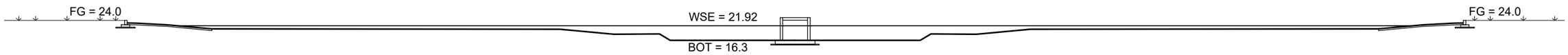
FIGURE 7




SECTION A
NTS




SECTION B
NTS




SECTION C
NTS

NOTE: SECTIONS ARE CONCEPTUAL BUT REPRESENTS THE DESIGN INTENT OF THE BOTTOM OF THE LAGOON ELEVATION. SUBJECT TO CHANGE AS FINAL DESIGN PROGRESSES BUT REPRESENTS DESIGN INTENT.

ORIGINAL SIZE: 11x17

G70 HONOKEA surf parks

# CONCEPT LAGOON SECTIONS

NOT TO SCALE

FIGURE 8

NOTES:

1. CLEAR AND GRUB SITE. REMOVE ALL EXISTING ONSITE IMPROVEMENTS.

2. DRYWELL INFILTRATION RATES AND DETAILS SHALL BE ASSESSED DURING DESIGN DEVELOPMENT AND DRYWELLS MAY BE LOCATED OTHER THAN AS SHOWN. DRYWELL INVERTS WILL BE MAINTAINED ABOVE GROUNDWATER ELEVATION AND IF LOCATED IN TRAFFIC AREAS WILL BE DESIGNED TO WITHSTAND TRAFFIC LOADING. UIC PERMITS WILL BE ACQUIRED AS NEEDED.

3. CITY AND COUNTY OF HONOLULU LOW IMPACT DEVELOPMENT REQUIREMENTS WILL BE INSTALLED TO THE MAXIMUM EXTENT PRACTICABLE. DRYWELLS WILL MEET THE CITY'S REQUIREMENTS FOR STORMWATER QUALITY AND THE INTENTION OF THE RULES RELATED TO STORMWATER QUALITY.

4. HAWAII WATER SERVICE (HWS) HAS INDICATED THAT POTABLE WATER SUFFICIENT TO MEET PROJECTED DEMANDS WILL BE MADE AVAILABLE. A WILL-SERVE AGREEMENT WILL BE CONCLUDED PRIOR TO CONSTRUCTION. WAVE POOL AND LAGOON MAKEUP WATER, AND IRRIGATION WATER WILL BE PROVIDED DURING OFF-PEAK HOURS. RECYCLED WATER AND RAINFALL WILL BE USED FOR IRRIGATION. SEE APPENDIX 5 & 6.

5. FIRE HYDRANTS SHALL BE SPACED AROUND THE SITE TO MEET HYDRANT SPACING REQUIREMENTS OF THE BOARD OF WATER SUPPLY AS WELL AS TO MEET HONOLULU FIRE DEPARTMENT AND NFPA 1, CHAPTER 18 REQUIREMENTS.

6. SEWER LINE SLOPES WILL BE NO LESS THAN 0.6% PER CITY AND COUNTY OF HONOLULU REQUIREMENTS. BUILDING SEWER WILL MEET APPLICABLE PLUMBING CODES. SEWER LIFT STATIONS WILL BE REQUIRED ON-SITE TO SERVE FACILITIES WHERE GRAVITY FLOW CANNOT BE USED. SANITARY WASTEWATER WILL BE PUMPED INTO THE EXISTING FORCE MAIN ON CORAL SEA ROAD FROM A NEW ONSITE LIFT STATION DESIGNED AND PROVIDED WITH EMERGENCY SHUTOFF MEASURES. DESIGN WILL BE COORDINATED WITH HWS.

7. A MINIMUM 20'-WIDE FIRE ACCESS ROADWAY WILL BE PROVIDED AROUND THE SITE THAT WILL ALSO FUNCTION AS UTILITY AND PARKING ACCESS. UTILITIES UNDER ROADWAYS WILL BE DESIGNED FOR TRAFFIC LOADING AND MAINTAIN HORIZONTAL AND VERTICAL DISTANCES REQUIRED BY APPROPRIATE AGENCIES.

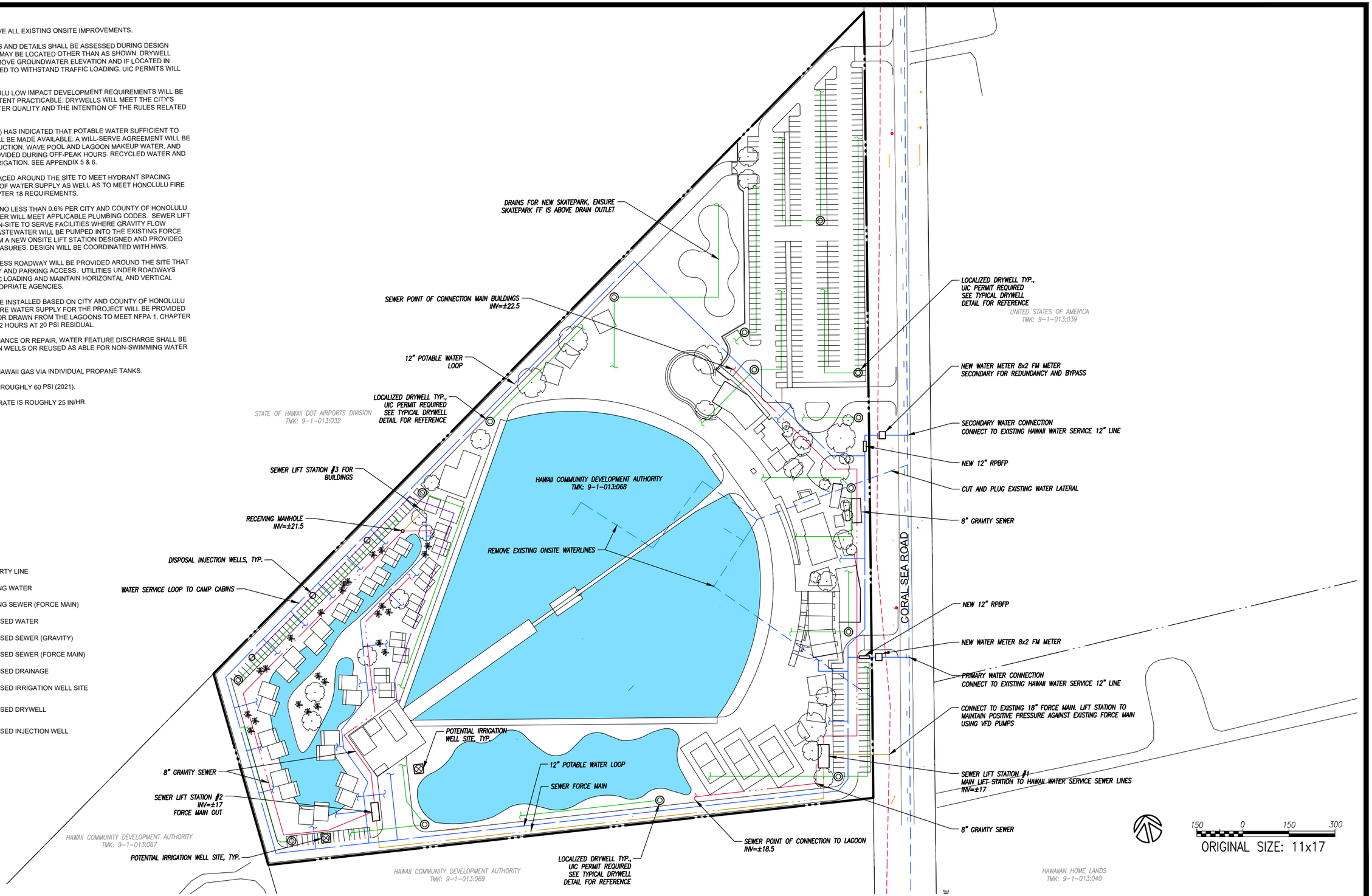
8. BUILDING SPRINKLERS WILL BE INSTALLED BASED ON CITY AND COUNTY OF HONOLULU BUILDING CODE AND NFPA 13. FIRE WATER SUPPLY FOR THE PROJECT WILL BE PROVIDED VIA THE WATER SYSTEM LOOP OR DRAWN FROM THE LAGOONS TO MEET NFPA 1, CHAPTER 18. FIRE FLOW = 2,000 GPM FOR 2 HOURS AT 20 PSI RESIDUAL.

9. WHEN DRAINED FOR MAINTENANCE OR REPAIR, WATER FEATURE DISCHARGE SHALL BE DISPOSED TO ONSITE INJECTION WELLS OR REUSED AS ABLE FOR NON-SWIMMING WATER FEATURES OR IRRIGATION.

10. GAS WILL BE PROVIDED BY HAWAII GAS VIA INDIVIDUAL PROPANE TANKS.

11. LOCAL STATIC PRESSURE IS ROUGHLY 60 PSI (2021).

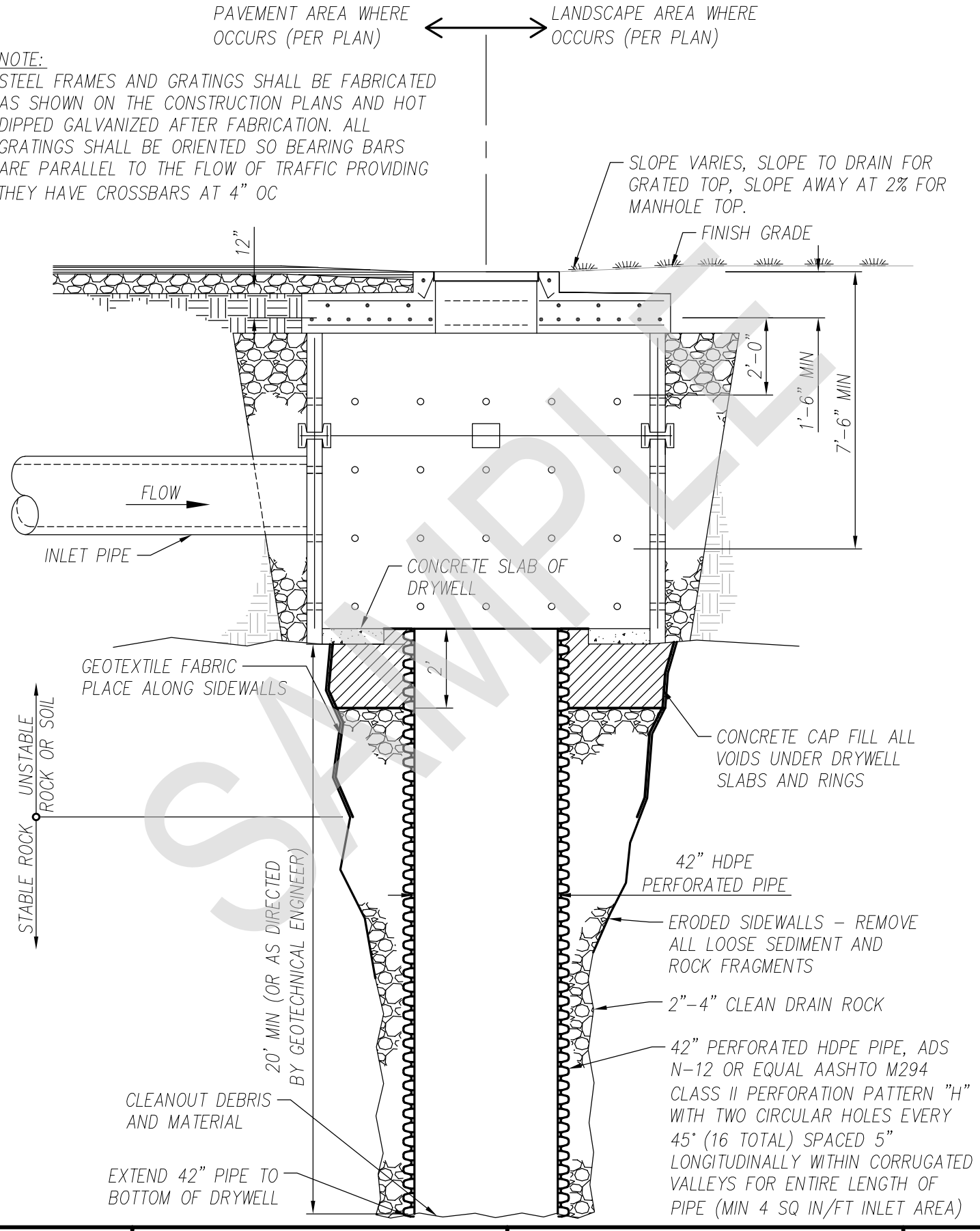
12. ANTICIPATED INFILTRATION RATE IS ROUGHLY 25 IN/HR.




# CONCEPT UTILITY PLAN

SCALE: 1" = 150'

FIGURE 9






| | | | |
|---|---|---|---|
| CAD DRAWING: | SAMPLE DRYWELL DETAIL | G70 111 S. KING STREET, SUITE 170 HONOLULU, HAWAII 96813 808.523.5866 WWW.G70.DESIGN | FIGURE 10 |
| DATE: | | | |
| SCALE: NOT TO SCALE | | | |
| PROJECT #: 221110-01 | | | |

# APPENDIX 3

# PRELIMINARY GEOTECHNICAL EXPLORATION AND RECOMMENDATIONS

**GEOLABS, INC.**

*Geotechnical Engineering and Drilling Services*

March 3, 2022
W.O. 8432-00

**Mr. Ryan Char**
**G70**
111 South King Street, Suite 170
Honolulu, HI 96813

**PRELIMINARY GEOTECHNICAL ENGINEERING EXPLORATION**
**HONOKEA KALAELOA**
**KALAELOA, OAHU, HAWAII**

Dear **Mr. Char:**

This letter report presents the results of our preliminary geotechnical engineering exploration performed for the feasibility study of the proposed Honokea Kalaeloa project in Kalaeloa on the Island of Oahu, Hawaii. The project location and general vicinity are shown on the Project Location Map, Plate 1.

This report summarizes the findings and preliminary geotechnical recommendations based on data from our borings and laboratory testing performed for the proposed project. The findings and recommendations presented herein are subject to the limitations noted at the end of this report.

## PROJECT CONSIDERATIONS

The project site is situated at the Barbers Point Airport in Kalaeloa on the Island of Oahu, Hawaii. The project site is located at Tax Map Key (TMK) No.: 9-1-013: Por. 68 and covers an area of 19.361 acres. We understand that a surf/wave park is planned with a central lagoon surrounded by a lazy river, adult pools, skate park, volleyball courts, surfing film studios, access road, and parking area. In addition, we understand the lagoon will be about 12 feet deep and have a center pier. Furthermore, we understand that drywells are planned for the disposal of lagoon water during required emptying for very infrequent maintenance events and stormwater.

Due to the preliminary nature of this report, limited field exploration consisting of drilling and sampling a total of three borings were performed. A design-level geotechnical engineering exploration should be conducted to confirm and/or modify the preliminary assessments provided herein.

## PURPOSE AND SCOPE

The purpose of our geotechnical engineering exploration and services was to obtain a general overview of the site conditions and provide a generalized evaluation of the site with respect to probable subsurface conditions and key geotechnical considerations for the site development. The work was performed in general accordance with our fee proposal dated December 29, 2021. In order to accomplish this, we conducted the following tasks and work efforts:

1. Mobilization and demobilization of trail clearing equipment and operator.

2. Perform trail clearing with mechanized equipment.

3. Coordination of boring stakeout and utility clearances by our geologist.

4. Mobilization and demobilization of a truck-mounted drill rig and operators to and from the project site.

5. Drilling and sampling a total of three boreholes extending to a depth of about 31.5 feet below the existing ground surface.

6. Coordination of the field exploration and logging of the borings by our geologist.

7. Laboratory testing of selected soil samples obtained during the field exploration as an aid in classifying the materials and evaluating their engineering properties.

8. Analyses of the field and laboratory data to formulate preliminary geotechnical design recommendations for the project.

9. Preparation of a preliminary formal report summarizing our work and presenting our findings and recommendations.

10. Coordination of our overall work on the project by our senior engineer.

11. Quality assurance and client/design team consultation by our principal engineer.

12. Miscellaneous work efforts such as drafting, word processing, and clerical support.

## REGIONAL GEOLOGY

The Island of Oahu was formed by the extrusion of basalt and basaltic lavas from the Waianae and Koolau shield volcanoes. The older Waianae Volcano is estimated to be middle to late Pliocene in age and forms the bulk of the western one-third of the island.

The younger Koolau Volcano is estimated to be late Pliocene to early Pleistocene (Ice Age) in age and forms the majority of the eastern two-thirds of the island. As volcanic activity in Waianae Volcano ceased, lava flows from Koolau Volcano banked against its eroded eastern slope forming a broad plateau known as Schofield Plateau.

Following the extrusion of lavas in the early Pleistocene Epoch, the island underwent a long cycle of erosion and weathering forming the prominent ridgelines and summits as we know today. During the erosion period, the Island of Oahu began to slowly subside, resulting in the drowning and sedimentation of the valleys and the formation of the steep Koolau Pali. Coral reefs continued to grow in the surrounding shallow waters of the island.

From the mid to late Pleistocene Epoch, the sea level rose and fell repeatedly in response to global glaciation and the availability of surface waters to sustain the oceans. The various sea level elevations and their representative deposits are known as “stands” and include from the oldest to the youngest: the Kahuku, Kahipa, Kaena, Laie, Waialae, Waipio, and Waimanalo stands. Geologic deposits associated with the various sea level stands, including marine sediments and coral reefs, were deposited and subsequently altered or removed by later sea level fluctuation. Therefore, depositional records reflecting the changes in sea level and the occurrence of emerged coral reef deposits are often incomplete.

The project site is situated on the ocean edge of the Ewa Plain southeast of the Waianae Mountains. The Ewa Plain is a gently sloping alluvial plain formed by the deposition of alluvial clays and silts derived from the weathering of basalt rock further upslope. The alluvial deposits accumulated and the materials interbedded with marine sediments and coral/algal reef formations to form a sedimentary wedge. The thickness of the sedimentary wedge ranges from zero in the area of the Interstate Route H-1 Freeway to over 1,000 feet at Ewa Beach. This wedge forms the Ewa Plain and serves as the confining formation, or “caprock,” over the artesian basal aquifers of Southern Oahu. Basalt rock formation resides below the alluvial and marine deposits.

## SITE DESCRIPTION

The project site is located on the eastern side of Kalaeloa Airport in Kalaeloa on the Island of Oahu, Hawaii. The approximate project limits are shown on the Site Plan, Plate 2. The project site is located at TMK No.: 9-1-013: Por. 68, approximately rhombus in shape and covers an area of 19.361 aces. The site is bounded by Coral Sea Road on the east, Long Island Street on the south, Prince Williams Road on the southwest and Kalaeloa Airport on the northwest.

At the time of our field exploration, the project site was vacant and covered with grass and trees. There were two old asphaltic paved roads traversing approximately the middle of the site. It is our understanding that there was an archaeological survey performed indicating several historic features, including railroad track, concrete slabs,

miscellaneous items and surface sinkholes filled with coralline cobbles were observed throughout the project site.

Based on the site visit, the existing ground surface was generally flat with anticipated elevations ranging from about +21 to +23 feet Mean Sea Level (MSL) based on Google Earth Pro software.

## SUBSURFACE CONDITIONS

The subsurface conditions at the project site were explored by drilling and sampling three borings, designated as Boring Nos. 1 through 3, extending to a depth of about 31.5 feet below the existing ground surface. The approximate boring locations are shown on the Site Plan, Plate 2.

In general, our drilled borings encountered a surface fill layer about 1 to 4.5 feet thick consisting of medium dense to very dense silty sand/gravel. The surface fill layer was underlain by medium hard coral and sandstone formation extending to the maximum depth drilled of about 31.5 feet below the existing ground surface.

It should be noted that the strength characteristics of the coralline deposits are highly variable due to the depositional nature of the coralline deposits may create localized areas of hard, crystalline coral, limestone, and/or sandstone formations intermixed with soft, severely fractured detritus. In addition, cavities or voids are commonly encountered in coralline deposits.

Groundwater was encountered in the borings drilled at a depth of about 21 feet below the existing ground surface in one of the drilled borings at the time of our field exploration. The groundwater level measured generally corresponds to about Elevation +2 feet MSL with the estimated existing ground at about Elevation +23 feet MSL based on Google Earth Pro software. Groundwater was not measured in the other two borings. It should be noted that the groundwater level can fluctuate depending on tidal fluctuations, storm surge condition, seasonal precipitation, groundwater withdrawal and/or injection, and other factors.

## DISCUSSION AND RECOMMENDATIONS

### Seismic Design Considerations

Based on the anticipated subsurface conditions at the project site and the geologic setting of the area, we believe that the project site may be classified from a seismic analysis standpoint as being a “Very Dense Soil and Soft Rock” site corresponding to a Site Class C soil profile based on the ASCE Standard ASCE/SEI 7-10 (Table No. 20.3-1), referenced by the IBC 2012.

Based on the anticipated subsurface conditions, the phenomenon of soil liquefaction is not a design consideration for this project site. The risk for potential liquefaction is

non-existent at this project site based on the anticipated subsurface conditions (Coral and sandstone formation).

**Building Foundation**

Based on the generally competent subsurface soil conditions anticipated at the project site, we believe that shallow spread and/or continuous footings may be used for support of the anticipated one-story and/or two-story structures planned at the site. A preliminary allowable bearing capacity of up to 4,000 pounds per square foot (psf) may be utilized for the preliminary design of the building foundations bearing on properly compacted fill or the underlying coral and sandstone formation.

Footing subgrades should be recompacted to at least 90 percent relative compaction to provide a relatively firm and unyielding surface prior to the placement of reinforcing steel or concrete. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same soil determined in accordance with ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density.

Soft and/or loose materials encountered at the bottom of footing excavations should be over-excavated to expose the underlying firm materials. The over-excavation should be backfilled with select granular fill materials compacted to a minimum of 90 percent relative compaction, or the footing may be deepened to bear on the underlying firm materials. For over-excavation backfilling below water, the footing trench should be backfilled with No. 2 Coarse Rock wrapped with Mirafi 180N, or equivalent, or tremie concrete.

In general, the bottom of the footings should be embedded a minimum of 18 inches below the lowest adjacent finished grade. Bottom of footings located adjacent to slopes or on slopes should be embedded to a sufficient depth to provide a minimum horizontal setback distance of at least 6 feet measured from the outside bottom edge of the footing to the face of the slope. Foundations located next to utility trenches or easements should be embedded below a 45-degree imaginary plane extending upward from the bottom edge of the utility trench, or the footings should be extended to a depth as deep as the inverts of the utility lines.

If foundations are designed and constructed in strict accordance with the recommendations presented herein, we estimate the total settlements of the foundation to be less than 1 inch. Differential settlements between adjacent footings supported on similar materials may be on the order of about 0.5 inches or less.

Lateral loads acting on the structures may be resisted by friction between the base of the foundation and the bearing materials and by passive earth pressure developed against the near-vertical faces of the embedded portion of foundations. A preliminary coefficient of friction of 0.45 may be used for footings bearing directly on new compacted fills or the recompacted on-site sandy soils. Resistance due to passive earth pressure may be estimated using a preliminary equivalent fluid pressure of 350 pounds per square foot

per foot of depth (pcf), assuming the soils around the footings are well-compacted. Unless covered by pavements or slabs, the passive pressure resistance in the upper 12 inches below the finished grade should be neglected. For footings adjacent to sloping ground, the passive resistance should be reduced or neglected.

A Geolabs representative should observe the footing excavations prior to the placement of reinforcing steel and concrete to confirm the foundation bearing conditions and the required embedment depths.

**Foundation Probing**

Our experience suggested that cavities and/or voids are commonly encountered in the coralline deposits below the surface fill layer in the project vicinity. To reduce the potential for loss of foundation support resulting from the collapse of cavities below foundations, consideration may be given to implementing a program of probing and grouting of the building foundations during construction.

Based on the relatively light structural loads anticipated for the one-story and/or two-story structures, we believe the risk of the potential collapse of cavities below the foundations would be low provided that the site grading recommendations are properly followed. Therefore, we believe probing and grouting may generally be omitted for these lightly-loaded structures. However, if a higher degree of assurance against the potential collapse of cavities below foundations is desired, a probing and grouting program below the foundations may be implemented. Probing and grouting program should be performed if heavily loaded structures are planned,

Where the probing and grouting program is implemented, we recommend drilling probe holes at 10-foot on centers for the continuous strip footings and/or thickened-edge slab footings. In addition, probe holes should be drilled at each isolated spread footing (or column) location. The probe holes should be at least 3 inches in diameter and should extend to a depth of at least 10 feet below the planned bottom of the foundation.

If cavities and/or voids are encountered or suspected during the probing operation, additional probe holes should be drilled at closer spacing to help delineate the vertical and lateral extent of the cavity and/or void. The probe holes and cavities discovered should be backfilled with Controlled Low Strength Material (CLSM) with a slump of about 6 to 9 inches. The CLSM should be injected at low to moderate pressures. As an alternate to CLSM, sand-cement grout with a slump of about 6 to 9 inches also may be used for the grouting operations.

The probing and grouting program, where implemented, should be conducted under the observation of a Geolabs representative. This would allow our firm to monitor the presence of cavities and to allow additional recommendations to be made if excess grout take and/or changed conditions are observed.

**Slabs-On-Grade**

Based on the subsurface conditions and anticipated grading, we envision new concrete slabs-on-grade for the structures likely will bear on the on-site granular soils, coralline deposits and/or select granular fill materials; therefore, a conventional slab-on-grade design may be utilized. We recommend that the coral formation, if encountered, be over-excavated a minimum of 12 inches and backfilled with select granular fill material to reduce the potential for differential settlement of slabs partially support on coral formation.

The exposed building pad subgrade should be proof-rolled utilizing a minimum 20-ton vibratory drum roller a minimum of eight passes to detect the presence of near-surface cavities and/or loose zones prior to placing fill or concrete slabs-on-grade. Proof-rolling operations should be conducted under the observation of a Geolabs representative.

Prior to placing fill material, the subgrade should be scarified to a depth of about 8 inches, moisture-conditioned to above the optimum moisture content, and recompacted to a minimum of 90 percent relative compaction. Slab subgrades should be kept moist until covered by concrete. Saturation and subsequent yielding of the exposed subgrade due to inclement weather and poor drainage may require over-excavation of the soft areas and replacement with well-compacted fill.

For interior building slabs (not subjected to vehicular traffic or machinery vibration), we recommend placing a minimum 4-inch thick layer of cushion fill consisting of open-graded gravel, such as No. 3 Fine gravel (ASTM C33, No. 67 gradation), below the slabs. The open-graded gravel cushion fill would provide uniform support of the slabs and would serve as a capillary moisture break. To reduce the potential for future moisture infiltration through the slab and subsequent damage to floor coverings, an impervious moisture barrier is recommended on top of the gravel cushion fill layer. Flexible floor coverings, such as carpet or sheet vinyl, should be considered because they can better mask minor slab cracking.

Where the slabs will be subjected to equipment vibration and/or vehicular traffic, we recommend placing the floor slab over 6 inches of aggregate subbase in lieu of the minimum 4-inch thick layer of open-graded gravel cushion fill. The aggregate subbase should consist of crushed basaltic aggregates compacted to a minimum of 95 percent relative compaction. The impervious moisture barrier may be omitted for these slabs.

Where slabs are intended to function as rigid pavements for vehicles, a minimum slab thickness of 6 inches underlain by 6 inches of aggregate subbase may be used for preliminary design purposes. In addition, provisions should be made for proper load transfer across the slab joints that will be subject to vehicular traffic. For the design of structural slabs supported on 6 inches of aggregate subbase, a modulus of subgrade reaction of about 200 pounds per square inch per inch of deflection (pci) may be used for the slab resting on

the compacted aggregate subbase. The thickened edges of slabs adjacent to unpaved areas should be embedded at least 12 inches below the lowest adjacent grade.

We understand that exterior concrete walkways will be required for the proposed project. The concrete walkways may be supported on the on-site granular materials or select granular fill materials compacted to at least 90 percent relative compaction. Control joints should be provided at intervals equal to the width of the walkways with expansion joints at right-angle intersections. The bottom of thickened edges of slabs adjacent to unpaved areas should be embedded at least 12 inches below the lowest adjacent grade.

It should be emphasized that the areas adjacent to the slab edges should be backfilled tightly against the edges of the slabs with relatively impervious soils. These areas should also be graded to divert water away from the slabs and to reduce the potential for water ponding around the slabs.

**Retaining Structures**

We anticipate that retaining walls may be required for grade separation at the project site and for the planned wave lagoon. Based on the subsurface conditions encountered, the following general guidelines may be used for the design of the retaining structures at the project site.

In general, we believe retaining wall foundations may be designed in accordance with the recommendations and parameters presented in the “Building Foundation” section herein. In addition, retaining wall foundations should be at least 18 inches wide and should be embedded a minimum of 24 inches below the lowest adjacent finished grades. For sloping ground conditions, the footing should extend deeper to obtain a minimum 6-foot setback distance measured horizontally from the outside bottom edge of the footing to the face of the slope. Wall footings oriented parallel to the direction of the slope should be constructed in stepped footings.

Retaining structures should be designed to resist lateral earth pressures due to the adjacent soils and surcharge effects caused by loads adjacent to the walls. The recommended preliminary lateral earth pressures for the design of the retaining structures, expressed in equivalent fluid pressures of pounds per square foot per foot of depth (pcf), are presented in the following table.

**PRELIMINARY LATERAL EARTH PRESSURES FOR DESIGN OF RETAINING STRUCTURES**

| Backfill Condition | Earth Pressure Component | Active (pcf) | At-Rest (pcf) |
|---|---|---|---|
| Level Backfill | Horizontal | 35 | 56 |

| PRELIMINARY LATERAL EARTH PRESSURES FOR DESIGN OF RETAINING STRUCTURES | | | |
|---|---|---|---|
| **Backfill Condition** | **Earth Pressure Component** | **Active** (pcf) | **At-Rest** (pcf) |
| Maximum 2H:1V Sloping Backfill | Horizontal | 44 | 62 |
| | Vertical | 22 | 31 |

The values provided in the table above assume that select granular fill materials will be used to backfill behind the retaining structures. It is assumed that the backfill behind the retaining structures will be compacted to between 90 and 95 percent relative compaction per ASTM D1557. Over-compaction of the retaining structure backfill should be avoided.

In general, an active condition may be used only for gravity walls or walls that are free to deflect by as much as 0.5 percent of the structure height. If the tops of structures are not free to deflect beyond this degree or are restrained such as swimming pool walls and basement walls, the structures should be designed for the at-rest condition. These lateral earth pressures do not include hydrostatic pressures that might be caused by groundwater trapped behind the structures.

Surcharge stresses due to areal surcharges, line loads, and point loads within a horizontal distance equal to the depth of the structure should be considered in the design. For uniform surcharge stresses imposed on the loaded side of the structure, a rectangular distribution with a uniform pressure equal to 26 percent of the vertical surcharge pressure acting over the entire height of the wall, which is free to deflect (cantilever), may be used in the design. For walls that are restrained, a rectangular distribution equal to 41 percent of the vertical surcharge pressure acting over the entire height of the structure may be used for the design. Additional analyses during design may be needed to evaluate the surcharge effects of point loads and line loads.

Dynamic lateral earth forces due to seismic loading will need to be considered in the design of retaining structures, such as the retaining walls, pool walls, and manhole walls. For design in accordance with the 2012 IBC, the force due to dynamic lateral earth pressures associated with seismic loading (PGA = 0.292g) may be estimated using $5.9H^2$ pounds per linear foot of wall length for level backfill conditions, where H is the height of the wall in feet. It should be noted that the dynamic lateral earth forces provided assume that the wall will be allowed to move laterally by up to about 1 to 2 inches in the event of an earthquake.

If the estimated amount of lateral movement is not attainable or the retaining structure is restrained (such as the swimming pool walls and basement walls), the retaining structure should be designed with higher dynamic lateral forces for a restrained

condition. For a restrained condition (less than 0.5 inches of lateral movement), dynamic lateral forces due to seismic loading may be estimated using $9.3H^2$ pounds per linear foot of wall (H measured in feet) for level backfill conditions.

The resultant force should be assumed to act through the mid-height of the wall. The above dynamic lateral earth forces are in addition to the static lateral earth pressures provided previously. An appropriately reduced factor of safety may be used when dynamic lateral earth pressures are accounted for in the design of the retaining structure.

The retaining walls should be well-drained to reduce the potential for build-up of hydrostatic pressures. A typical drainage system would consist of a 12-inch wide zone of permeable material, such as No. 3 Fine gravel (ASTM C33, No. 67 gradation), placed directly around a perforated pipe (perforations facing down) at the base of the wall discharging to an appropriate outlet or weepholes. As an alternative, a prefabricated drainage product, such as MiraDrain or EnkaDrain, may be used instead of the drainage material. The prefabricated drainage product also should be hydraulically connected to a perforated pipe at the base of the wall.

The backfill from the bottom of the wall to the bottom of the perforated pipe or weephole should consist of relatively impervious materials to reduce the potential for significant water infiltration into the subsurface. In addition, the upper 12 inches of the retaining structure backfill should consist of relatively impervious materials to reduce the potential for significant water infiltration behind the retaining structure unless covered by concrete slabs at the surface.

**Wave Lagoon**

We understand that a wave lagoon will be constructed as part of the project. In general, we believe the wave lagoon walls and foundations may be designed in accordance with the recommendations and parameters presented in the “Retaining Structures” and “Building Foundations” sections herein. However, we recommend providing a minimum 12-inch layer of non-expansive select granular fill material below the lagoon bottom slab to provide uniform support. The select granular fill material should be well-graded from coarse to fine with particles no larger than 3 inches in the largest dimension and should contain between 10 and 30 percent particles passing the No. 200 sieve. The material should have a laboratory California Bearing Ratio (CBR) value of 20 or more and should have a maximum swell of 1 percent or less when tested in accordance with ASTM D1883. Should the bottom of the wave lagoon be situated below water, the minimum 12-inch layer below the lagoon bottom slab should consist of open-graded gravel, such as No. 3 Fine gravel (ASTM C33, No. 67 gradation).

Prior to placing the 12-inch layer of select granular fill material, the pool bottom subgrade soils should be proof-rolled utilizing a minimum 20-ton vibratory drum roller a minimum of eight passes to detect the presence of near-surface cavities and/or loose zones.

**Site Preparation**

At the on-set of earthwork, areas within the contract grading limits should be cleared and grubbed. Vegetation, debris, deleterious materials, and other unsuitable materials should be removed and disposed of properly to reduce the potential for contaminating the excavated materials to be reused as fill materials.

After clearing and grubbing, areas designated to receive fills should be scarified to a minimum depth of about 8 inches and moisture-conditioned to at least 2 percent above the optimum moisture content, and recompacted to a minimum of 90 percent relative compaction.

Soft and yielding areas disclosed during site preparation operations should be over-excavated to expose firm ground, and the resulting excavation should be backfilled with select fill materials (well-graded 3-inch minus materials) compacted to a minimum of 90 percent relative compaction.

Prior to fill placement in areas where the cut subgrades expose coral formations, the subgrades should be proof-rolled with a minimum 20-ton vibratory roller for a minimum of eight passes to help detect and collapse near-surface cavities. The vibratory drum roller should be operated at a speed of about 300 feet per minute. Loose areas or cavities disclosed during clearing and proof-rolling operations should be opened, cleaned of debris, and backfilled with properly compacted fill or concrete.

In general, the on-site sandy and gravelly soils should be suitable for use as general fill materials provided that the maximum particle size is less than 3 inches in largest dimension. The on-site materials generated from the excavations may be used as a source of general fill or backfill materials, provided they are screened of the over-sized materials and/or processed to meet the above gradation requirements (less than 3 inches in largest dimension).

Imported fill materials should consist of select granular fill material, such as crushed coralline and/or basaltic materials. The materials should be well graded from coarse to fine with particles no larger than 3 inches in the largest dimension and should contain between 10 and 30 percent particles passing the No. 200 sieve. The material should have a laboratory California Bearing Ratio (CBR) value of 20 or more and should have a maximum swell of 1 percent or less when tested in accordance with ASTM D1883. Imported fill material should be tested by Geolabs for conformance with these recommendations prior to delivery to the project site for the intended use.

Where groundwater is encountered (within the excavations), backfill materials should consist of free-draining granular materials, such as No. 3B Fine gravel (ASTM C33, No. 67 gradation), wrapped on all sides with non-woven filter fabric. The free-draining granular fill materials should be used up to a level of about 12 inches above the groundwater level to facilitate compaction of the fill materials. The free-draining

granular fill materials should be used in a confined condition. Alternatively, lean concrete may be used as a backfill material.

General fills and backfills should be moisture-conditioned to above the optimum moisture, placed in level lifts not exceeding 8 inches in loose thickness, and compacted to at least 90 percent relative compaction. Select granular fill materials should be moisture-conditioned to above the optimum moisture, placed in level lifts not exceeding 8 inches in loose thickness, and compacted to a minimum of 90 percent relative compaction. Mechanical compaction equipment should be used to compact the backfill materials. Compaction efforts by water tamping, jetting, or ponding should not be allowed.

Dewatering of excavations will be necessary where the existing groundwater level is above the bottom of the proposed excavation. It should be noted that the underlying coral formation may be highly permeable.

It is anticipated that the surface fills and coral formation may be excavated readily with heavy excavation equipment near the ground surface, such as a large dozer or backhoe excavator. However, we anticipate that some difficult excavation conditions may arise in localized areas during construction. Deeper excavations may require the use of hoerams or chipping.

## Pavements

Based on the information provided, we understand that a new parking area and driveways will be constructed for the project. We envision both flexible and rigid pavements may be required to serve the new project. In general, we anticipate the vehicle loading for the project will primarily consist of passenger vehicles, pick-up trucks, and occasional light trucks. We have assumed that the pavement subgrade materials will consist of select granular fill materials (in fill areas) and the on-site near-surface fill soils and/or coral formation (in cut areas). Therefore, based on the anticipated subsurface conditions and the pavement support characteristics of the on-site near-surface soils, the following preliminary pavement design sections may be considered for the project.

Flexible Pavement

2.0-Inch Asphaltic Concrete
6.0-Inch Aggregate Base Course (95 Percent Relative Compaction)
8.0-Inch Total Pavement Thickness on Moist Compacted Subgrade

Rigid Pavement

6.0-Inch Portland Cement Concrete
6.0-Inch Aggregate Subbase (95 Percent Relative Compaction)
12.0-Inch Total Pavement Thickness on Moist Compacted Subgrade

The subgrade soils under the new pavement structural section should be scarified to a minimum depth of 8 inches, moisture-conditioned to above the optimum moisture, and

compacted to a minimum of 95 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same soil established in accordance with ASTM D1557. Optimum moisture is the water content (percentage by dry weight) corresponding to the maximum dry density.

If coralline deposit is exposed at the subgrade level, the subgrade should be proof-rolled with a large vibratory drum roller (minimum 20 tons static weight) a minimum of eight (8) passes to help detect and collapse near-surface cavities and/or voids. The vibratory drum roller or heavy equipment should be operated at a speed of about 300 feet per minute. Yielding areas, loose areas, or cavities disclosed during clearing and proof-rolling operations should be over-excavated and backfilled with compacted fill materials.

A Geolabs representative should monitor the pavement subgrade preparation to observe whether undesirable materials are encountered during the excavation and scarification process and to confirm whether the exposed soil conditions are similar to those encountered in the field exploration. Modification to the extent of the different areas may be required. California Bearing Ratio (CBR) tests and/or field observations should be performed on the actual subgrade soils during construction to confirm that the above design section is adequate.

Paved areas should be sloped, and drainage gradients should be maintained to carry surface water off the site. Surface water ponding should not be allowed on the site during or after construction. Where concrete curbs are used to isolate landscaping in or adjacent to the pavement areas, we recommend extending the curbs a minimum of 2 inches into the soils below the aggregate base course and aggregate subbase layers to reduce the potential for migration of landscape water into the pavement section. Alternatively, a subdrain system could be constructed to collect excess water from landscaping irrigation. For long-term performance, we recommend constructing a subdrain system adjacent to the paved/landscaped areas.

**Drywell System**

We understand that it is desired to construct a drywell system for the disposal of lagoon water and stormwater. To evaluate the permeability of the subsurface materials for drainage design, one constant head field permeability test was performed at a selected boring, Boring No. 2, during our geotechnical engineering exploration program. The test was performed at a depth of about 31.5 feet below the existing ground surface. Result of the field permeability test is summarized in the following table. Detailed information is provided in Appendix D.

| SUMMARY OF FIELD PERMEABILITY TEST RESULT | | |
|---|---|---|
| **Location** | **Boring No.** | **Calculated Hydraulic Conductivity (k)** |
| Honokea Kalaeloa | B-2 | 0.0176 cm/sec |

It is our opinion that the above permeability value should be used with caution due to the normally heterogeneous nature of the subsurface soils. The actual subsurface soil permeability may range broadly and may also vary locally in terms of the orders of magnitude. Due to the variability of the subsurface conditions, additional permeability tests should be performed during the design-level field exploration program.

**Additional Exploration**

A design-level field exploration program should be conducted for the design of the structure foundations, site grading, pavements, and infrastructure installation for the proposed development.

## LIMITATIONS

The findings and discussions submitted in this letter report are based, in part, upon information obtained from limited borings, site reconnaissance, literature research, and past experience in the vicinity of the proposed development. It should be noted that it is not possible to observe and/or anticipate all the site conditions based on a limited field exploration of the project site. Variations of the subsurface conditions from those described in this letter report may occur, and the nature and extent of these variations may not become evident until further design-level geotechnical engineering exploration is conducted at the project site or construction is underway.

A design-level geotechnical engineering exploration should be conducted to confirm and/or modify the preliminary assessments provided herein. Our services on this project were performed in accordance with generally accepted standards of geotechnical engineering practice; no warranty is expressed or implied.

This letter report has been prepared solely for the purpose of assisting our client in the evaluation and planning of the project only. Therefore, this report may not contain sufficient data, or the proper information, to serve as the basis for detailed design and preparation of construction drawings. A design-level geotechnical exploration will need to be conducted for a detailed project design.

## CLOSURE

We appreciate the opportunity to provide our services to you on this project. If you have questions or need additional information, please contact our office.

Respectfully submitted,

**GEOLABS, INC.**

By _____
**Gerald Y. Seki, P.E.**
Vice President

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
No. 5635-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

_____ 4-30-22
SIGNATURE EXPIRATION DATE
OF THE LICENSE

GS:HC:lf

Attachments: **PLATES**
Project Location Map, Plate 1
Site Plan, Plate 2

**APPENDIX A**
Field Exploration, Pages A-1 and A-2
Soil Log Legend, Plate A-0.1
Soil Classification Log Key, Plate A-0.2
Rock Log Legend, Plate A-0.3
Log of Borings, Plates A-1 thru A-3

**APPENDIX B**
Laboratory Tests, Page B-1
Laboratory Test Data, Plates B-1 thru B-7

**APPENDIX C**
Photographs of Core Samples, Plates C-1 thru C-3

**APPENDIX D**
Field Permeability Test, Page D-1
Percolation Test Calculation Sheet, Plate D-1

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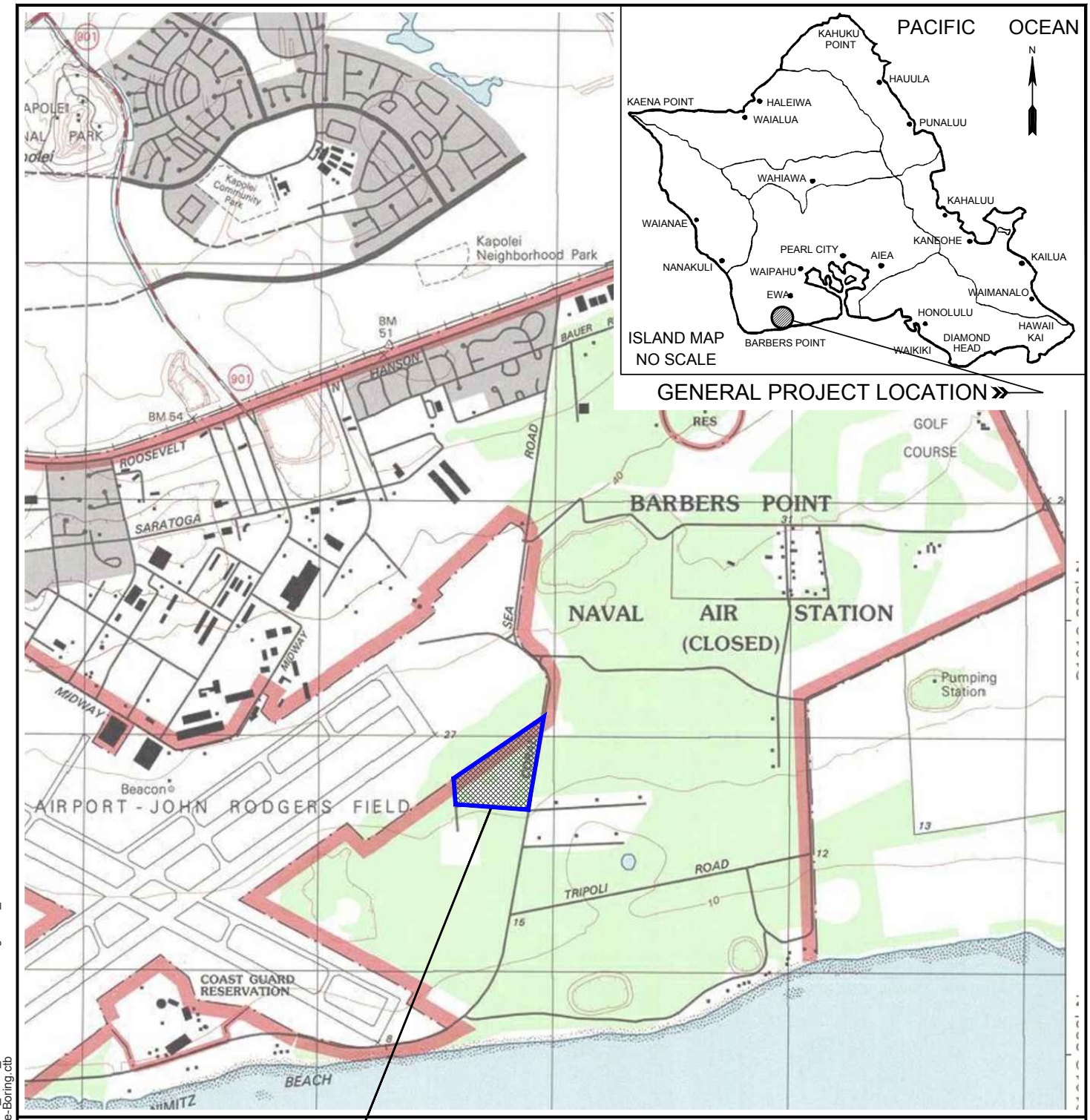
# PLATES




# PROJECT LOCATION MAP

HONOKEA KALAELOA
KALAELOA, OAHU, HAWAII

2000 1000 0 2000 FT.

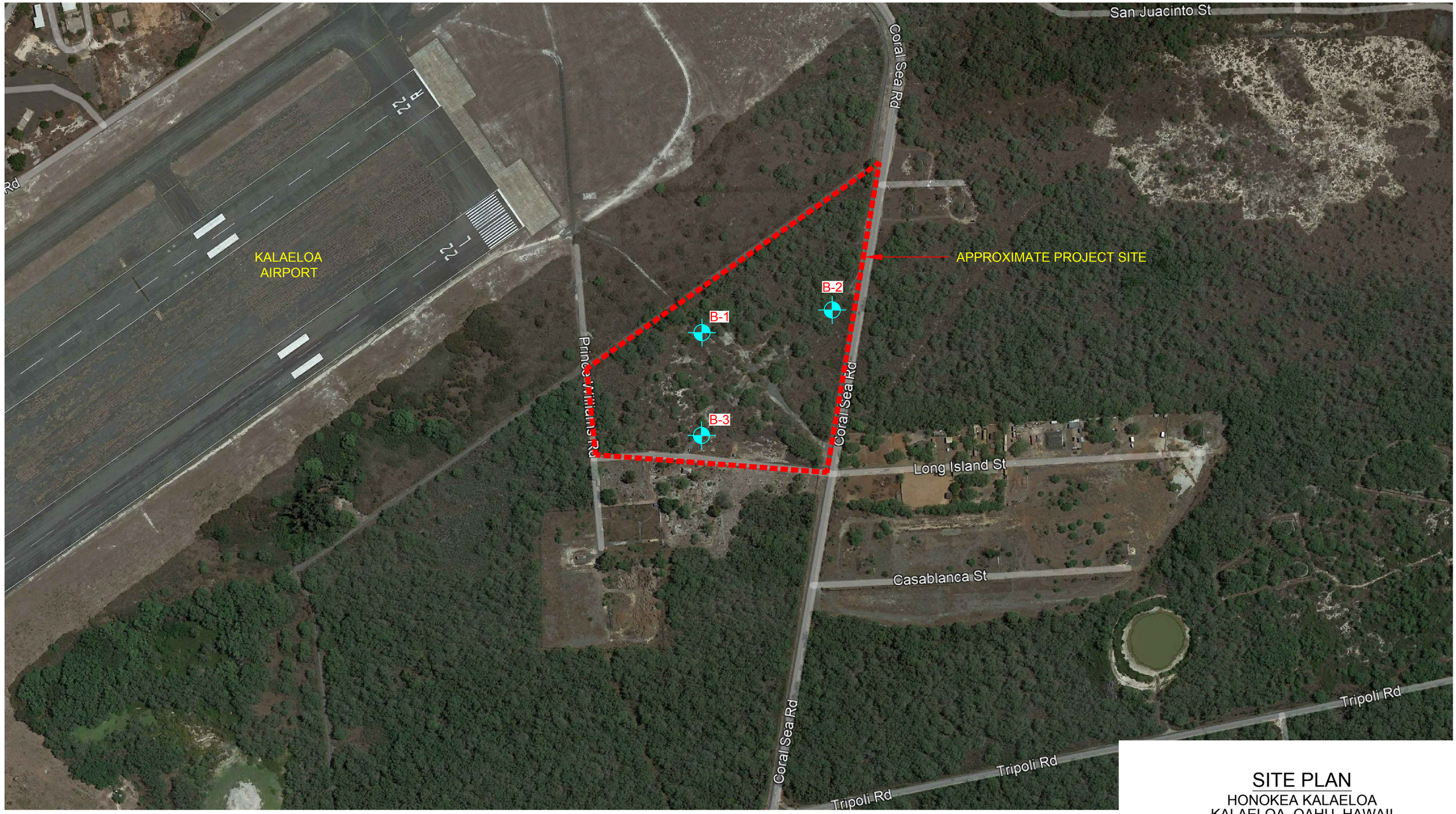
GRAPHIC SCALE

N

REFERENCE: MAP CREATED WITH TOPO!® ©2010 NATIONAL GEOGRAPHIC; ©2007 TELE ATLAS, REL. 1/2007.

GEOLABS, INC.
*Geotechnical Engineering*

| DATE | DRAWN BY | PLATE |
|---|---|---|
| FEBRUARY 2022 | HYC | 1 |
| SCALE | W.O. | |
| 1" = 2,000' | 8432-00 | |




LEGEND:

APPROXIMATE BORING LOCATION

REFERENCE: ©2022 GOOGLE EARTH PRO.
IMAGERY DATED JUNE 10, 2019.

0 200 400 800 1200 FT.

GRAPHIC SCALE

N

# SITE PLAN

HONOKEA KALAELOA
KALAELOA, OAHU, HAWAII

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*Geotechnical Engineering*

| DATE | DRAWN BY | PLATE |
|---|---|---|
| FEBRUARY 2022 | HYC | 2 |
| SCALE | W.O. | |
| 1" = 400' | 8432-00 | |

# APPENDIX A

# APPENDIX A

Field Exploration

Our field exploration program consisted of drilling and sampling three borings, designated as Boring Nos. 1 through 3, extending to a maximum depth of about 31.5 feet below the existing ground surface. The borings were drilled using a truck-mounted drill rig equipped with continuous flight augers and coring tools.

Our geologist classified the materials encountered in the borings by visual and textural examination in the field in general accordance with ASTM D2488, Standard Practice for Description and Identification of Soils, and monitored the drilling operations on a near-continuous (full-time) basis. These classifications were further reviewed visually and by testing in the laboratory. Soils were classified in general accordance with ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), as shown on the Soil Log Legend, Plate A-0.1. Deviations made to the soil classification in accordance with ASTM D2487 are described on the Soil Classification Log Key, Plate A-0.2. Graphic representations of the materials encountered are presented on the Logs of Borings, Plates A-1 through A-3.

Relatively "undisturbed" soil samples were obtained from the borings drilled in general accordance with ASTM D3550, Ring-Lined Barrel Sampling of Soils, by driving a 3-inch OD Modified California sampler with a 140-pound hammer falling 30 inches. In addition, some samples were obtained from the boring drilled in general accordance with ASTM D1586, Penetration Test and Split-Barrel Sampling of Soils, by driving a 2-inch OD standard penetration sampler using the same hammer and drop. The blow counts needed to drive the sampler the second and third 6 inches of an 18-inch drive are shown as the "Penetration Resistance" on the Logs of Borings at the appropriate sample depths. The penetration resistance shown on the Logs of Borings indicates the number of blows required for the specific sampler type used. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.

Core samples of the rock materials encountered at the project site were obtained by using diamond core drilling techniques in general accordance with ASTM D2113, Diamond Core Drilling for Site Investigation. Core drilling is a rotary drilling method that uses a hollow bit to cut into the rock formation. The rock material left in the hollow core of the bit is mechanically recovered for examination and description. Rock cores were described in general accordance with the Rock Description System, as shown on the Rock Log Legend, Plate A-0.3. The Rock Description System is based on the publication "Suggested Methods for the Quantitative Description of Discontinuities in Rock Masses" by the International Society for Rock Mechanics (March 1977).

Recovery (REC) may be used as a subjective guide to the interpretation of the relative quality of rock masses, where appropriate. Recovery is defined as the actual length of material recovered from a coring attempt versus the length of the core attempt.

For example, if 3.7 feet of material is recovered from a 5.0-foot core run, the recovery would be 74 percent and would be shown on the Logs of Borings as REC = 74%.

The Rock Quality Designation (RQD) is also a subjective guide to the relative quality of rock masses. RQD is defined as the percentage of the core run in rock that is sound material in excess of 4 inches in length without any discontinuities, discounting any drilling, mechanical, and handling induced fractures or breaks. If 2.5 feet of sound material is recovered from a 5.0-foot core run in rock, the RQD would be 50 percent and would be shown on the Logs of Borings as RQD = 50%. It should be noted that RQD does not apply to coral material. However, the RQD values of the coral material are included in the boring logs for rough characterization of the coral material. Generally, the following is used to describe the relative quality of the rock based on the "Practical Handbook of Physical Properties of Rocks and Minerals" by Robert S. Carmichael (1989).

| **Rock Quality** | **RQD** (%) |
|---|---|
| Very Poor | 0 – 25 |
| Poor | 25 – 50 |
| Fair | 50 – 75 |
| Good | 75 – 90 |
| Excellent | 90 – 100 |

The excavation characteristic of a rock mass is a function of the relative hardness of the rock, its relative quality, brittleness, and fissile characteristics. A dense rock formation with a high RQD value would be very difficult to excavate and probably would require more arduous methods of excavation.

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# Soil Log Legend

## UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

| MAJOR DIVISIONS | | | USCS | TYPICAL DESCRIPTIONS |
|---|---|---|---|---|
| COARSE-GRAINED SOILS | GRAVELS | CLEAN GRAVELS | GW | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | | LESS THAN 5% FINES | GP | POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE | GRAVELS WITH FINES | GM | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES |
| | | MORE THAN 12% FINES | GC | CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES |
| MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE | SANDS | CLEAN SANDS | SW | WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | | LESS THAN 5% FINES | SP | POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | 50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE | SANDS WITH FINES | SM | SILTY SANDS, SAND-SILT MIXTURES |
| | | MORE THAN 12% FINES | SC | CLAYEY SANDS, SAND-CLAY MIXTURES |
| FINE-GRAINED SOILS | SILTS AND CLAYS | LIQUID LIMIT LESS THAN 50 | ML | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY |
| | | | CL | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS |
| | | | OL | ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY |
| 50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE | SILTS AND CLAYS | LIQUID LIMIT 50 OR MORE | MH | INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS |
| | | | CH | INORGANIC CLAYS OF HIGH PLASTICITY |
| | | | OH | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS |
| HIGHLY ORGANIC SOILS | | | PT | PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS |

*NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS*

LEGEND

- (2-INCH) O.D. STANDARD PENETRATION TEST
- (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE
- SHELBY TUBE SAMPLE
- GRAB SAMPLE
- CORE SAMPLE
- WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING
- WATER LEVEL OBSERVED IN BORING AFTER DRILLING
- WATER LEVEL OBSERVED IN BORING OVERNIGHT

| | |
|---|---|
| LL | LIQUID LIMIT (NP=NON-PLASTIC) |
| PI | PLASTICITY INDEX (NP=NON-PLASTIC) |
| TV | TORVANE SHEAR (tsf) |
| UC | UNCONFINED COMPRESSION OR UNIAXIAL COMPRESSIVE STRENGTH |
| TXUU | UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf) |

Plate

A-0.1

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# Soil Classification Log Key

(with deviations from ASTM D2488)

## GEOLABS, INC. CLASSIFICATION*

### GRANULAR SOIL (- #200 <50%)

- **PRIMARY** constituents are composed of the largest percent of the soil mass. Primary constituents are capitalized and bold (i.e., **GRAVEL, SAND**)
- **SECONDARY** constituents are composed of a percentage less than the primary constituent. If the soil mass consists of 12 percent or more fines content, a cohesive constituent is used (**SILTY** or **CLAYEY**); otherwise, a granular constituent is used (**GRAVELLY** or **SANDY**) provided that the secondary constituent consists of 20 percent or more of the soil mass. Secondary constituents are capitalized and bold (i.e., **SANDY** GRAVEL, **CLAYEY** SAND) and precede the primary constituent.
- **accessory descriptions** compose of the following:
  with some: >12%
  with a little: 5 - 12%
  with traces of: <5%
  accessory descriptions are lower cased and follow the Primary and Secondary Constituents
  (i.e., SILTY GRAVEL **with a little sand**)

### COHESIVE SOIL (- #200 ≥50%)

- **PRIMARY** constituents are based on plasticity. Primary constituents are capitalized and bold (i.e., **CLAY, SILT**)
- **SECONDARY** constituents are composed of a percentage less than the primary constituent, but more than 20 percent of the soil mass. Secondary constituents are capitalized and bold (i.e., **SANDY** CLAY, **SILTY** CLAY, **CLAYEY** SILT) and precede the primary constituent.
- **accessory descriptions** compose of the following:
  with some: >12%
  with a little: 5 - 12%
  with traces of: <5%
  accessory descriptions are lower cased and follow the Primary and Secondary Constituents
  (i.e., SILTY CLAY **with some sand**)

**EXAMPLE:** Soil Containing 60% Gravel, 25% Sand, 15% Fines. Described as: **SILTY GRAVEL** with some sand

## RELATIVE DENSITY / CONSISTENCY

| Granular Soils | | | Cohesive Soils | | | |
|---|---|---|---|---|---|---|
| N-Value (Blows/Foot) | | Relative Density | N-Value (Blows/Foot) | | PP Readings (tsf) | Consistency |
| SPT | MCS | | SPT | MCS | | |
| 0 - 4 | 0 - 7 | Very Loose | 0 - 2 | 0 - 4 | | Very Soft |
| 4 - 10 | 7 - 18 | Loose | 2 - 4 | 4 - 7 | < 0.5 | Soft |
| 10 - 30 | 18 - 55 | Medium Dense | 4 - 8 | 7 - 15 | 0.5 - 1.0 | Medium Stiff |
| 30 - 50 | 55 - 91 | Dense | 8 - 15 | 15 - 27 | 1.0 - 2.0 | Stiff |
| > 50 | > 91 | Very Dense | 15 - 30 | 27 - 55 | 2.0 - 4.0 | Very Stiff |
| | | | > 30 | > 55 | > 4.0 | Hard |

## MOISTURE CONTENT DEFINITIONS

Dry: Absence of moisture, dry to the touch

Moist: Damp but no visible water

Wet: Visible free water

## ABBREVIATIONS

WOH: Weight of Hammer

WOR: Weight of Drill Rods

SPT: Standard Penetration Test Split-Spoon Sampler

MCS: Modified California Sampler

PP: Pocket Penetrometer

## GRAIN SIZE DEFINITION

| Description | Sieve Number and / or Size |
|---|---|
| Boulders | > 12 inches (305-mm) |
| Cobbles | 3 to 12 inches (75-mm to 305-mm) |
| Gravel | 3-inch to #4 (75-mm to 4.75-mm) |
| Coarse Gravel | 3-inch to 3/4-inch (75-mm to 19-mm) |
| Fine Gravel | 3/4-inch to #4 (19-mm to 4.75-mm) |
| Sand | #4 to #200 (4.75-mm to 0.075-mm) |
| Coarse Sand | #4 to #10 (4.75-mm to 2-mm) |
| Medium Sand | #10 to #40 (2-mm to 0.425-mm) |
| Fine Sand | #40 to #200 (0.425-mm to 0.075-mm) |

*Soil descriptions are based on ASTM D2488-09a, Visual-Manual Procedure, with the above modifications by Geolabs, Inc. to the Unified Soil Classification System (USCS).*

Plate

A-0.2

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# Rock Log Legend

## ROCK DESCRIPTIONS

| | | | |
|---|---|---|---|
| | **BASALT** | | **CONGLOMERATE** |
| | **BOULDERS** | | **LIMESTONE** |
| | **BRECCIA** | | **SANDSTONE** |
| | **CLINKER** | | **SILTSTONE** |
| | **COBBLES** | | **TUFF** |
| | **CORAL** | | **VOID/CAVITY** |

## ROCK DESCRIPTION SYSTEM

### ROCK FRACTURE CHARACTERISTICS

*The following terms describe general fracture spacing of a rock:*

**Massive:** Greater than 24 inches apart

**Slightly Fractured:** 12 to 24 inches apart

**Moderately Fractured:** 6 to 12 inches apart

**Closely Fractured:** 3 to 6 inches apart

**Severely Fractured:** Less than 3 inches apart

### DEGREE OF WEATHERING

*The following terms describe the chemical weathering of a rock:*

**Unweathered:** Rock shows no sign of discoloration or loss of strength.

**Slightly Weathered:** Slight discoloration inwards from open fractures.

**Moderately Weathered:** Discoloration throughout and noticeably weakened though not able to break by hand.

**Highly Weathered:** Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.

**Extremely Weathered:** Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.

### HARDNESS

*The following terms describe the resistance of a rock to indentation or scratching:*

**Very Hard:** Specimen breaks with difficulty after several "pinging" hammer blows.
Example: Dense, fine grain volcanic rock

**Hard:** Specimen breaks with some difficulty after several hammer blows.
Example: Vesicular, vugular, coarse-grained rock

**Medium Hard:** Specimen can be broked by one hammer blow. Cannot be scraped by knife. SPT may penetrate by ~25 blows per inch with bounce.
Example: Porous rock such as clinker, cinder, and coral reef

**Soft:** Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by ~100 blows per foot.
Example: Weathered rock, chalk-like coral reef

**Very Soft:** Crumbles under hammer blow. Can be peeled and carved by knife. Can be indented by finger pressure.
Example: Saprolite

Plate

A-0.3

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**Log of Boring** 1

| Laboratory | | | Field | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Other Tests | Moisture Content (%) | Dry Density (pcf) | Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS | Description |
| | | | | | | | | | | | Approximate Ground Surface Elevation (feet MSL): 23 * |
| | | | | | | | | | | SM | Brown **SILTY SAND**, medium dense, dry (fill) |
| Sieve - #200 = 20.6% | 12 | 93 | | | 75 | | | | | GM | Light tannish brown **SILTY GRAVEL** with some sand and traces of shells, dense, dry (fill) |
| | 8 | | | | 31 | | | | | | |
| Sieve - #200 = 12.4% UC= 1170 psi | 3 | | 43 | 11 | 81 | | 5 | | | | Tannish white **CORAL**, severely to closely fractured, moderately weathered, medium hard (coral formation) breaks down to silty gravel with some sand |
| | 14 | | 59 | 0 | 50/3" Ref. | | 10 | | | | |
| Sieve - #200 = 7.6% | 15 | 119 | 57 | 0 | 43/6" +46/5" Ref. | | 15 | | | | Tan **SANDSTONE**, severely fractured, moderately weathered, medium hard (calcareous sandstone) breaks down to sand with a little silt and gravel |
| | 16 | | 43 | 0 | 13 | | 20 | | | | |
| | 14 | 107 | 0 | 0 | 36 | | 25 | | | | |
| | 14 | | | | 16 | | 30 | | | | |
| | | | | | | | 35 | | | | Boring terminated at 31.5 feet |
| | | | | | | | 40 | | | | * Elevations estimated from ©2021 GOOGLE EARTH PRO. Imagery dated December 19, 2015. |

| | | | |
|---|---|---|---|
| Date Started: | February 7, 2022 | Water Level: ▽ 21.0 ft. 02/07/2022 1107 HRS | Plate |
| Date Completed: | February 7, 2022 | | |
| Logged By: | G. Castle | Drill Rig: CME-45 | A - 1 |
| Total Depth: | 31.5 feet | Drilling Method: 4" Solid-Stem Auger & PQ Coring | |
| Work Order: | 8432-00 | Driving Energy: 140 lb. wt., 30 in. drop | |

BORING_LOG 8432-00.GPJ GEOLABS.GDT 3/3/22

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**Log of Boring**

**2**

Approximate Ground Surface Elevation (feet MSL): 23 *

| Laboratory | | | Field | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Other Tests | Moisture Content (%) | Dry Density (pcf) | Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS | Description |
| | | | | | | | 0 | | | SM | 3-inch **ASPHALTIC CONCRETE** |
| Direct Shear | 7 | 104 | | | 38 | | | | | | Tan **SILTY SAND** with some gravel, medium dense to very dense, dry (fill) |
| Sieve - #200 = 13.3% | 13 | | | | 54 | | | | | | |
| UC= 530 psi | 12 | 50 | 60 | 23 | 25/4" Ref. | | 5 | | | | White **CORAL**, closely fractured, moderately weathered, medium hard (coral formation) |
| | 20 | | 83 | 0 | 20/0" Ref. | | 10 | | | | Whitish tan **SANDSTONE**, closely fractured, moderately weathered, medium hard (calcareous sandstone) |
| | | | 33 | 8 | | | 15 | | | | |
| | 18 | | 98 | 44 | 23/6" +35/4" Ref. | | 20 | | | | Tan **CORAL**, closely to moderately fractured, moderately weathered, medium hard (coral formation) |
| Sieve - #200 = 7.9% | 16 | 87 | 0 | 0 | 19 | 0.7 | 25 | | | | **VOID** |
| | | | | | | | | | | | Tan **CORAL**, severely fractured, moderately weathered, medium hard (coral formation) breaks down to sandy gravel with a little silt |
| TXUU $S_u$=4.4 ksf | 19 | 93 | | | 53 | 4.0 | 30 | | | | |
| | | | | | | | | | | | Boring terminated at 31.5 feet |
| | | | | | | | 35 | | | | |
| | | | | | | | 40 | | | | |

| | | | | |
|---|---|---|---|---|
| Date Started: | February 8, 2022 | Water Level: ▽ | N/A | Plate |
| Date Completed: | February 8, 2022 | | | |
| Logged By: | G. Castle | Drill Rig: | CME-45 | |
| Total Depth: | 31.5 feet | Drilling Method: | 4" Solid-Stem Auger & PQ Coring | A - 2 |
| Work Order: | 8432-00 | Driving Energy: | 140 lb. wt., 30 in. drop | |

BORING_LOG 8432-00.GPJ GEOLABS.GDT 3/3/22

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**Log of Boring**

**3**

Approximate Ground Surface Elevation (feet MSL): 20 *

| Laboratory | | | Field | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Other Tests | Moisture Content (%) | Dry Density (pcf) | Core Recovery (%) | RQD (%) | Penetration Resistance (blows/foot) | Pocket Pen. (tsf) | Depth (feet) | Sample | Graphic | USCS | Description |
| | | | | | | | | | | SM | Tannish brown **SILTY SAND**, medium dense, dry (fill) |
| Direct Shear<br>Sieve - #200 = 23.7%<br>LL=NP<br>PI=NP | 9<br>8<br>15 | 77<br>103 | 57 | 0 | 20/6" Ref.<br>56<br>65 | | 5 | | | | Light tan **CORAL**, severely fractured, moderately weathered, medium hard (coral formation)<br>breaks down to silty sand with some gravel |
| Sieve - #200 = 15.3% | 12 | | 80 | 0 | 39/6" +25/3" Ref. | | 10 | | | | |
| | 19 | | 100 | 15 | 10/0" Ref. | | 15 | | | | Tan **SANDSTONE**, closely fractured, moderately weathered, medium hard (calcareous sandstone) |
| | 20 | | 48 | 0 | 40 | | 20 | | | | grades with less cementation |
| Sieve - #200 = 4.9%<br>UC= 1820 psi | 25 | | 93 | 57 | 31 | 4.2 | 25 | | | | Tannish white **CORAL**, closely to moderately fractured, moderately weathered, medium hard to soft (coral formation)<br>breaks down to sandy gravel with traces of silt |
| | 19 | | | | 35 | | 30 | | | | |
| | | | | | | | | | | | Boring terminated at 31.5 feet |
| | | | | | | | 35 | | | | |
| | | | | | | | 40 | | | | |

| | | | | |
|---|---|---|---|---|
| Date Started: | February 7, 2022 | Water Level: ▽ | N/A | Plate |
| Date Completed: | February 7, 2022 | | | |
| Logged By: | G. Castle | Drill Rig: | CME-45 | |
| Total Depth: | 31.5 feet | Drilling Method: | 4" Solid-Stem Auger & PQ Coring | A - 3 |
| Work Order: | 8432-00 | Driving Energy: | 140 lb. wt., 30 in. drop | |

BORING_LOG 8432-00.GPJ GEOLABS.GDT 3/3/22

# APPENDIX B

# APPENDIX B

Laboratory Tests

Moisture Content (ASTM D2216) and Unit Weight (ASTM D2937) determinations were performed on selected samples as an aid in the classification and evaluation of soil properties. The test results are presented on the Logs of Borings at the appropriate sample depths.

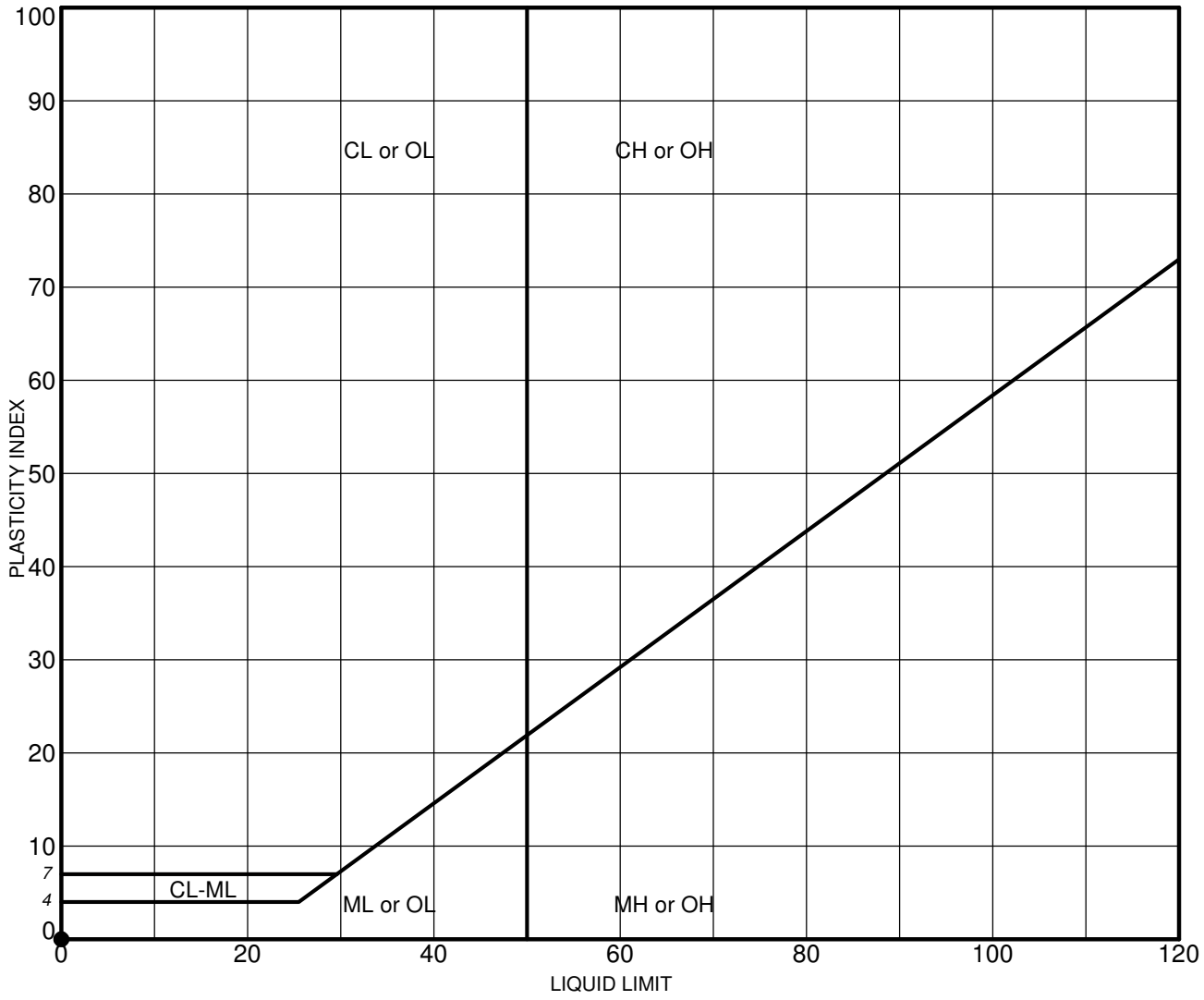
One Atterberg Limits test (ASTM D4318) was performed on a selected soil sample to evaluate the liquid and plastic limits. The test results are summarized on the Logs of Borings at the appropriate sample depth. Graphic presentation of the test results is provided on Plate B-1.

Eight Sieve Analysis tests (ASTM D6913) were performed on selected soil samples to evaluate the gradation characteristics of the soils and to aid in soil classification. Graphic presentation of the grain size distributions are provided on Plates B-2 and B-3.

Three Uniaxial Compressive Strength tests (ASTM D7012, Method C) were performed on selected intact core runs to evaluate the unconfined compressive strength of the coralline formation encountered. The test results are presented on Plate B-4.

One Unconsolidated-Undrained Triaxial Compression (TXUU) test (ASTM D2850) was performed on a selected soil sample to evaluate the undrained shear strength of the in-situ soils encountered. The approximate in-situ effective overburden pressure was used as the applied confining pressure for the relatively “undisturbed” soil sample. The test results and the stress-strain curves are presented on Plate B-5.

Two Direct Shear tests (ASTM D 3080) were performed on selected soil samples to evaluate the shear strength characteristics of the in-situ soils. The test results are presented on Plates B-6 and B-7.




| | Sample | Depth (ft) | LL | PL | PI | Description |
|---|---|---|---|---|---|---|
| ● | B-3 | 2.5-4.0 | NP | NP | NP | Light brownish tan silty sand (NP) with some gravel |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

NP = NON-PLASTIC

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**ATTERBERG LIMITS TEST RESULTS - ASTM D4318**

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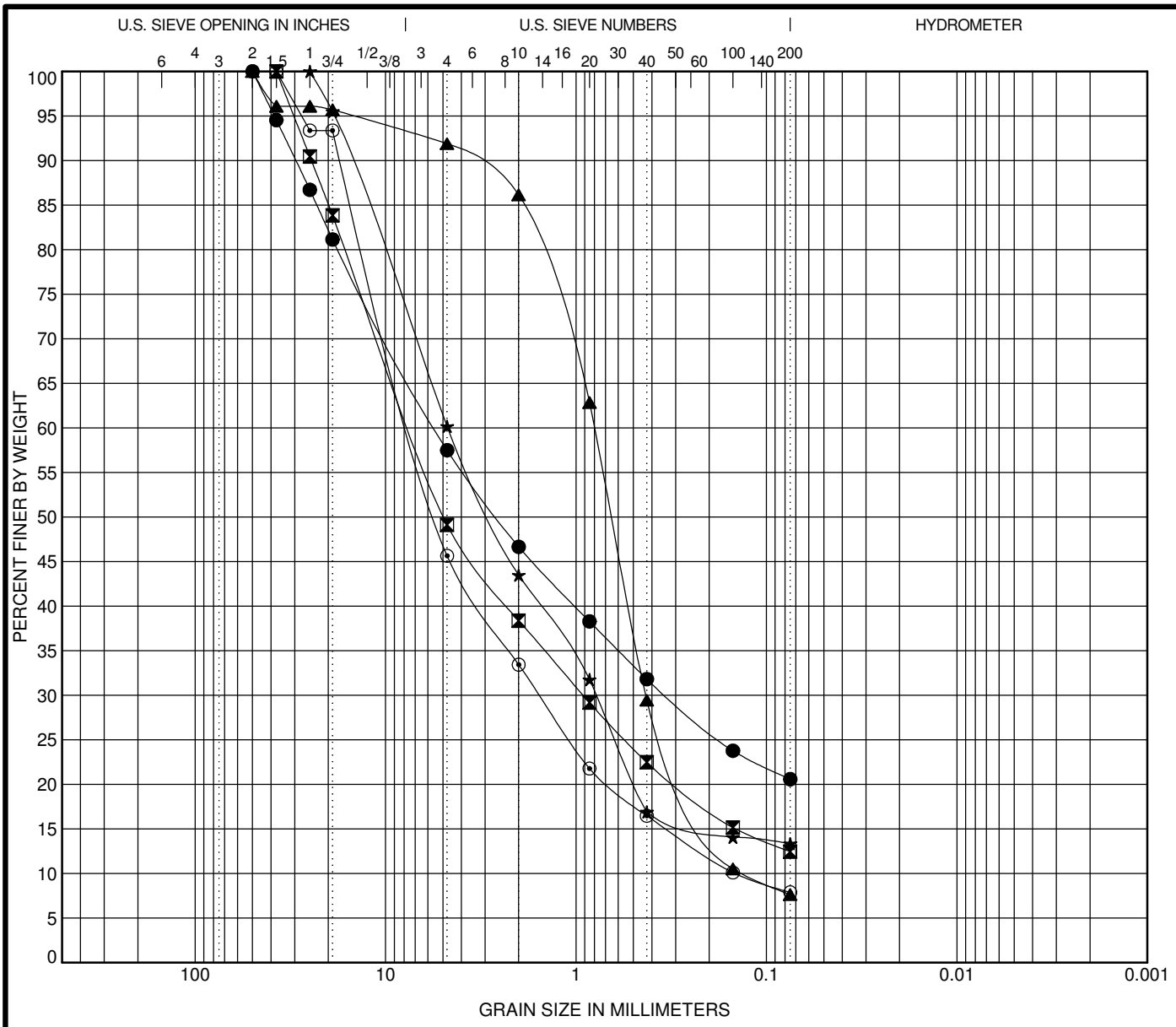
Plate
B - 1

G ATTERBERG PI-100 LL-120 8432-00.GPJ GEOLABS.GDT 3/2/22




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Sample | Depth (ft) | Description | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | B-1 | 1.0-2.5 | Light tannish brown silty gravel (GM) with some sand | | | | | |
| ⊠ | B-1 | 5.0-6.5 | Tannish white silty gravel (GM) with some sand | | | | 2.9 | 183.0 |
| ▲ | B-1 | 15.6-16.5 | Tan sand (SW-SM) with a little silt and gravel | | | | 1.7 | 6.0 |
| ★ | B-2 | 1.0-2.5 | Tan silty sand (SM) with some gravel | | | | | |
| ⊙ | B-2 | 25.0-26.5 | Tan sandy gravel (GW-GM) with a little silt | | | | 2.3 | 49.7 |

| | Sample | Depth (ft) | D100 (mm) | D60 (mm) | D30 (mm) | D10 (mm) | %Gravel | %Sand | %Fine |
|---|---|---|---|---|---|---|---|---|---|
| ● | B-1 | 1.0-2.5 | 50 | 5.504 | 0.336 | | 42.5 | 36.9 | 20.6 |
| ⊠ | B-1 | 5.0-6.5 | 37.5 | 7.334 | 0.918 | | 50.9 | 36.7 | 12.4 |
| ▲ | B-1 | 15.6-16.5 | 50 | 0.801 | 0.43 | 0.133 | 8.1 | 84.3 | 7.6 |
| ★ | B-2 | 1.0-2.5 | 25 | 4.708 | 0.783 | | 39.8 | 46.8 | 13.3 |
| ⊙ | B-2 | 25.0-26.5 | 37.5 | 7.209 | 1.555 | 0.145 | 54.4 | 37.8 | 7.9 |

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**GRAIN SIZE DISTRIBUTION - ASTM D6913**

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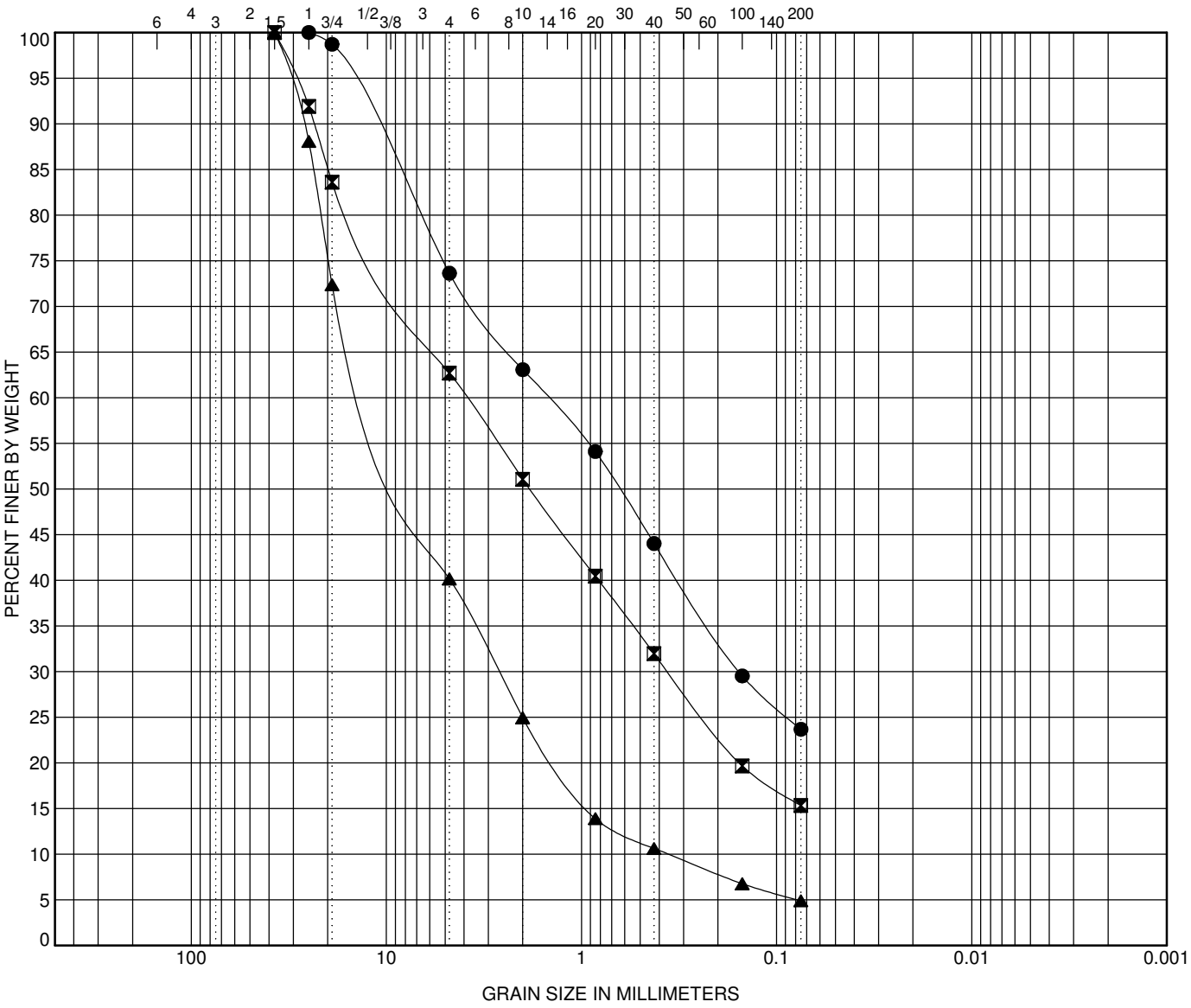
Plate
B - 2

G_GRAIN_SIZE_MOD_8432-00.GPJ GEOLABS.GDT 3/3/22




| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---|---|---|---|---|---|---|
| | coarse | fine | coarse | medium | fine | |

| | Sample | Depth (ft) | Description | LL | PL | PI | Cc | Cu |
|---|---|---|---|---|---|---|---|---|
| ● | B-3 | 2.5-4.0 | Light tan silty sand (SM) with some gravel | | | | | |
| ⊠ | B-3 | 10.0-11.3 | Light tan silty sand (SM) with some gravel | | | | | |
| ▲ | B-3 | 25.0-26.5 | Tannish white sandy gravel (GW) with traces of silt | | | | 1.8 | 31.0 |
| | | | | | | | | |
| | | | | | | | | |

| | Sample | Depth (ft) | D100 (mm) | D60 (mm) | D30 (mm) | D10 (mm) | %Gravel | %Sand | %Fine |
|---|---|---|---|---|---|---|---|---|---|
| ● | B-3 | 2.5-4.0 | 25 | 1.493 | 0.155 | | 26.4 | 50.0 | 23.7 |
| ⊠ | B-3 | 10.0-11.3 | 37.5 | 3.89 | 0.36 | | 37.3 | 47.3 | 15.3 |
| ▲ | B-3 | 25.0-26.5 | 37.5 | 11.158 | 2.668 | 0.36 | 59.9 | 35.3 | 4.9 |
| | | | | | | | | | |
| | | | | | | | | | |

**GEOLABS, INC.**
GEOTECHNICAL ENGINEERING

W.O. 8432-00

**GRAIN SIZE DISTRIBUTION - ASTM D6913**

HONOKEA KALAELOA
KALAELOA, OAHU, HAWAII

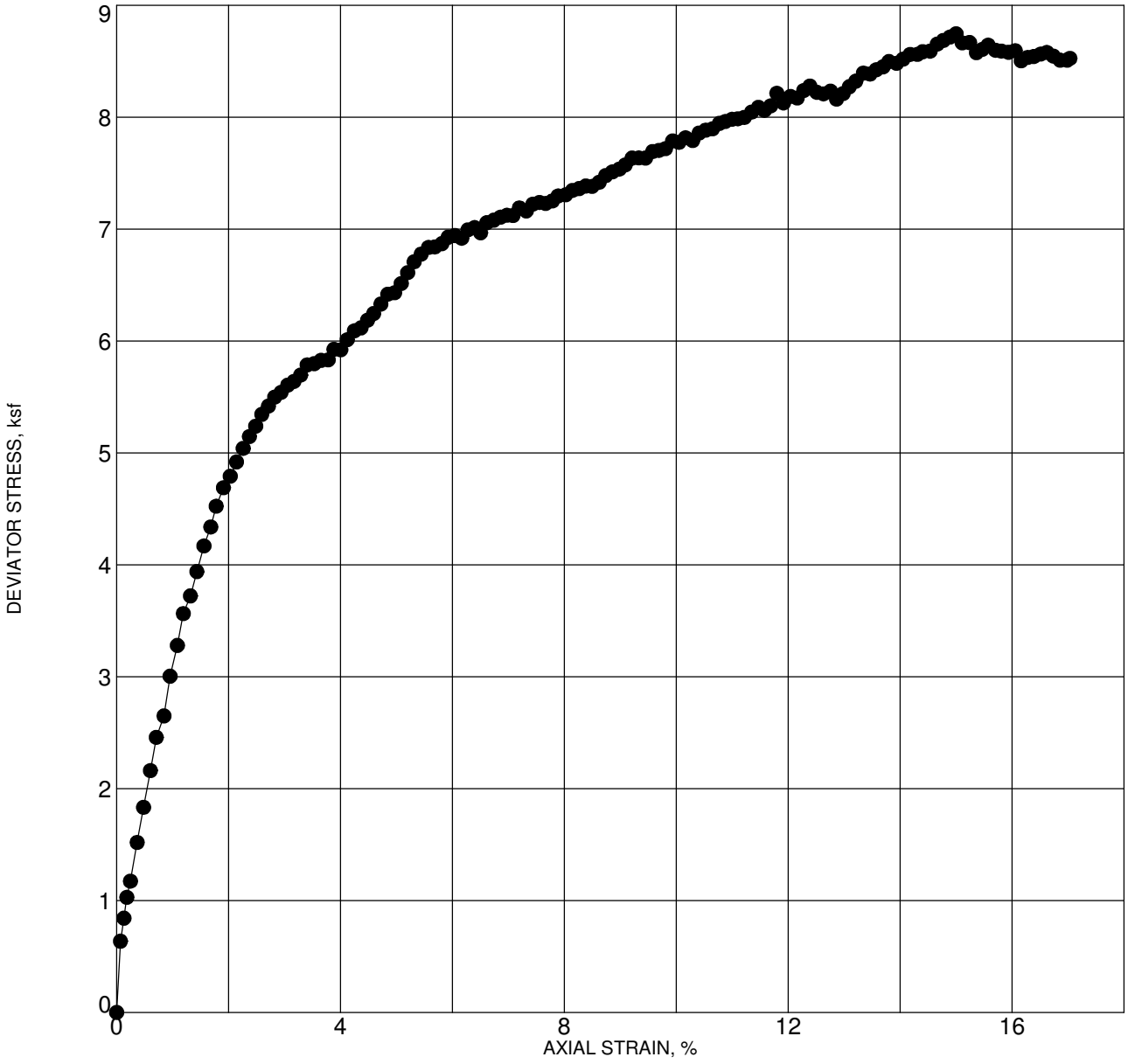
Plate
B - 3

G_GRAIN_SIZE_MOD_8432-00.GPJ GEOLABS.GDT 3/3/22

| Location | Depth | Length | Diameter | Length/ Diameter Ratio | Density | Load | Compressive Strength |
|---|---|---|---|---|---|---|---|
| | (feet) | (inches) | (inches) | | (pcf) | (lbs) | (psi) |
| B-1 | 6.5 - 10 | 6.705 | 3.267 | 2.05 | 96.2 | 9,820 | 1,170 |
| B-2 | 5.5 - 10 | 6.715 | 3.258 | 2.06 | 96.0 | 4,420 | 530 |
| B-3 | 26.5 - 30 | 6.776 | 3.240 | 2.09 | 116.7 | 15,000 | 1,820 |

ASTM D7012 (METHOD C)

Note: Samples were not prepared in accordance with ASTM D4543. Therefore, results reported may differ from results obtained from a test speciment that meets the requirements of Practice D4543




| | |
|---|---|
| Max. Deviator Stress (ksf): | 8.7 |
| Confining Stress (ksf): | 3.0 |

Location: B-2
Depth: 30.0 - 31.5 feet
Description: Tan coral
Test Date: 2/15/2022

| | | | |
|---|---|---|---|
| Dry Density (pcf) | 103.3 | Sample Diameter (inches) | 2.413 |
| Moisture (%) | 16.9 | Sample Height (inches) | 5.100 |
| Axial Strain at Failure (%) | 15.0 | Strain Rate (% / minute) | 0.71 |

**GEOLABS, INC.**
GEOTECHNICAL ENGINEERING

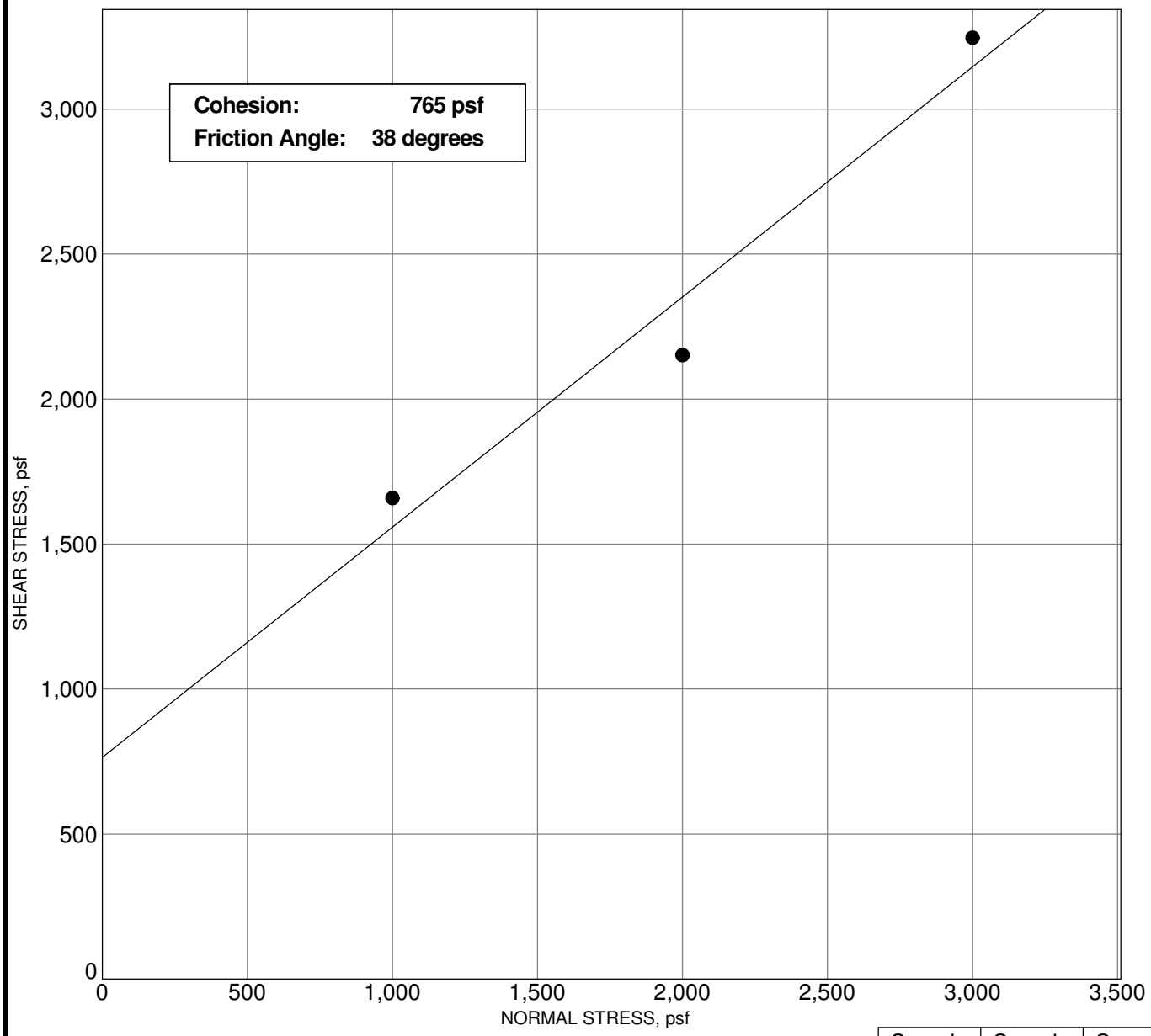
W.O. 8432-00

**TRIAXIAL UU COMPRESSION TEST - ASTM D2850**

HONOKEA KALAELOA
KALAELOA, OAHU, HAWAII

Plate
B - 5

G_TXUU 8432-00.GPJ GEOLABS.GDT 3/3/22




| | | Sample #1 | Sample #2 | Sample #3 |
|---|---|---|---|---|
| INITIAL | Moisture Content, % | 16.7 | 17.0 | 18.8 |
| | Dry Density, pcf | 97.0 | 100.3 | 102.0 |
| | Height, inches | 1.00 | 1.00 | 1.00 |
| FINAL | Moisture Content, % | 20.7 | 19.5 | 18.9 |
| | Dry Density, pcf | 94.0 | 99.3 | 99.6 |
| | Height, inches | 1.032 | 1.010 | 1.024 |
| | Diameter, inches | 2.42 | 2.42 | 2.42 |
| | Deformation Rate, inch/minute | 0.0025 | 0.0023 | 0.0024 |
| | Normal Stress, psf | **1000** | **2000** | **3000** |
| | Peak Shear Stress, psf | **1659** | **2152** | **3247** |
| | Shear Displacement, inches | 0.43 | 0.40 | 0.41 |

Sample: B-2
Depth: 1.0 - 2.5 feet
Description: Tan silty sand (SM) with some gravel

**GEOLABS, INC.**
GEOTECHNICAL ENGINEERING

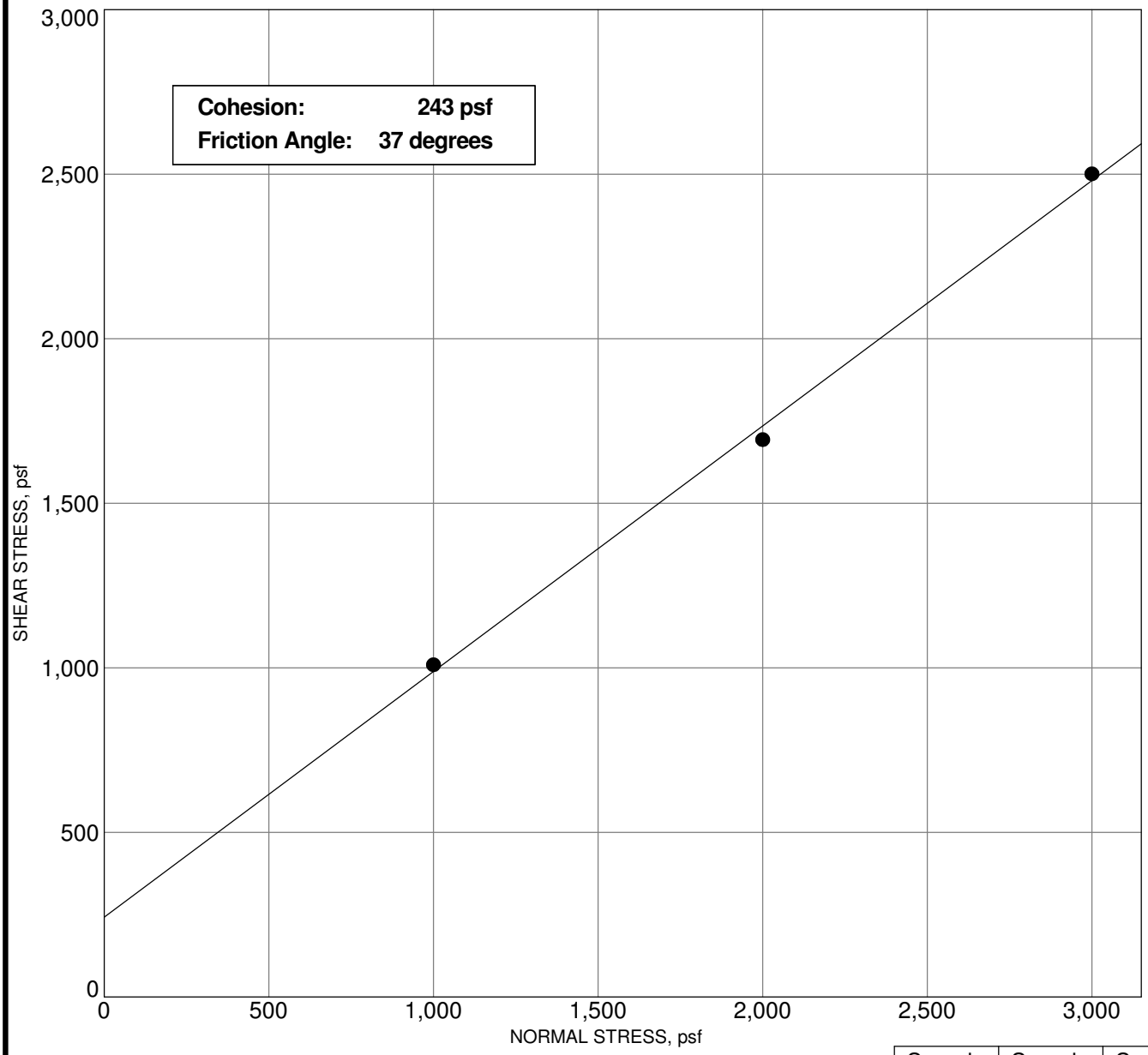
W.O. 8432-00

# DIRECT SHEAR TEST - ASTM D3080

HONOKEA KALAELOA
KALAELOA, OAHU, HAWAII

Plate
B - 6

G_DIRECT_SHEAR_8432-00.GPJ GEOLABS.GDT 3/2/22




| | | Sample #1 | Sample #2 | Sample #3 |
|---|---|---|---|---|
| INITIAL | Moisture Content, % | 11.6 | 11.2 | 12.8 |
| | Dry Density, pcf | 81.5 | 82.9 | 84.7 |
| | Height, inches | 1.00 | 1.00 | 1.00 |
| FINAL | Moisture Content, % | 26.9 | 25.5 | 24.6 |
| | Dry Density, pcf | 81.0 | 83.7 | 85.1 |
| | Height, inches | 1.006 | 0.990 | 0.995 |
| | Diameter, inches | 2.42 | 2.42 | 2.42 |
| | Deformation Rate, inch/minute | 0.0024 | 0.0023 | 0.0023 |
| | Normal Stress, psf | **1000** | **2000** | **3000** |
| | Peak Shear Stress, psf | **1009** | **1693** | **2501** |
| | Shear Displacement, inches | 0.43 | 0.41 | 0.40 |

Sample: B-3
Depth: 1.0 - 2.5 feet
Description: Light tan silty sand with some gravel

**GEOLABS, INC.**
GEOTECHNICAL ENGINEERING

W.O. 8432-00

# DIRECT SHEAR TEST - ASTM D3080

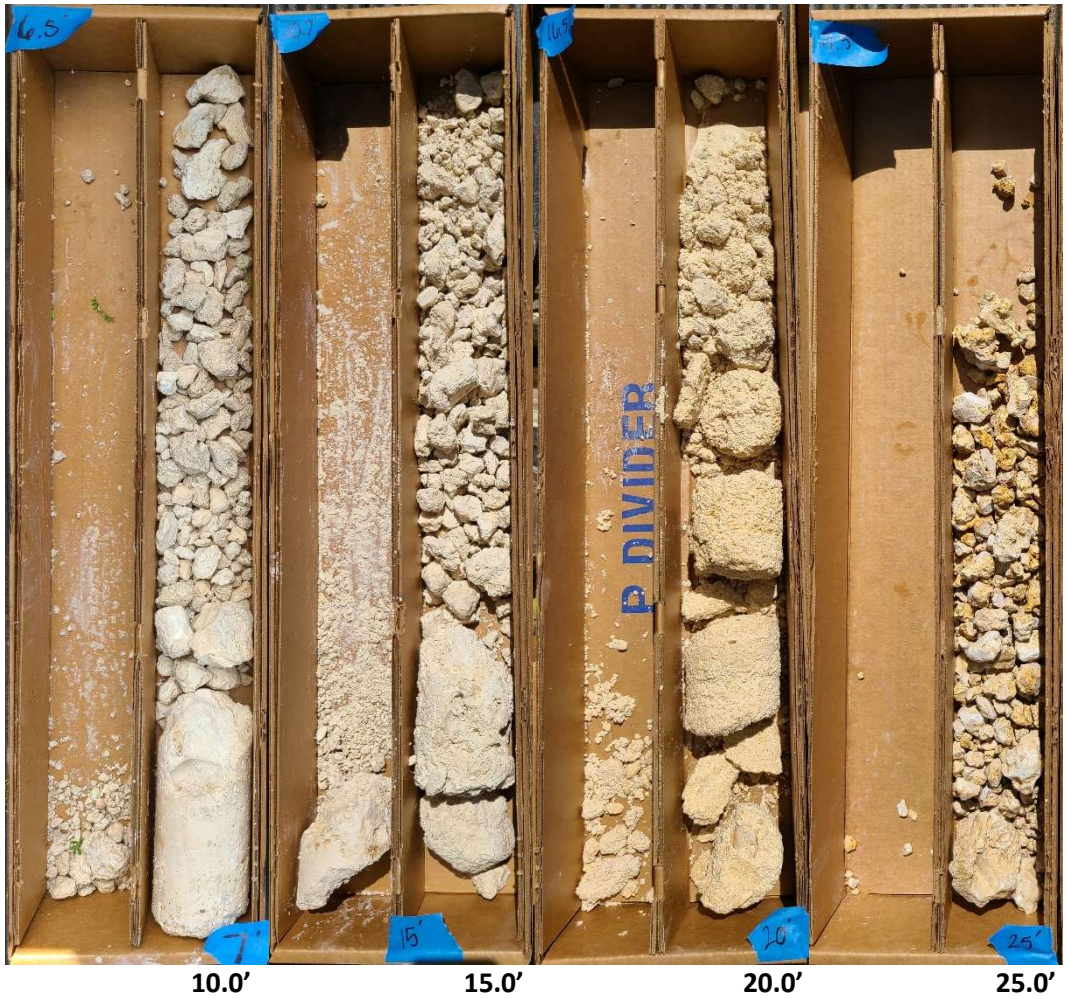
HONOKEA KALAELOA
KALAELOA, OAHU, HAWAII

Plate
B - 7

G_DIRECT_SHEAR_8432-00.GPJ GEOLABS.GDT 3/3/22

# APPENDIX C

**B-1 6.5’ TO 25.0’**



**B-2 5.0’ TO 25.0’**

**5.0’** **10.5’** **15.0’** **21.4’**


**10.0’** **15.0’** **20.0’** **25.0’**

**B-3 6.5’ TO 30.0’**

# APPENDIX D

# APPENDIX D

Field Permeability Test

The permeability of the subsurface materials at the project site was evaluated by performing one constant head permeability test in Boring No. 2, at the approximate location shown on the Site Plan, Plates 2. The test was performed at a depth of about 31.5 feet below the existing ground surface.

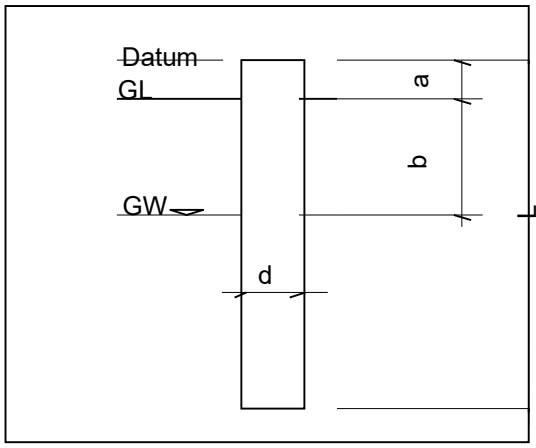
During the constant head test, a water pump was used to pump water into the boring. The flow rate was recorded by timing and calculating the volume as a relatively constant flow rate was achieved. The results of the constant head permeability test are presented on Plate D-1.

# PERCOLATION TEST CALCULATION SHEET

(CONSTANT HEAD METHOD: WELL POINT-OPEN HOLE)

Honokea Kalaeloa

Kalaeloa, Oahu, Hawaii




| | | |
|---|---|---|
| Boring: | **B-2** | |
| GW table, b (from ground): | **21** | feet |
| Datum, a (above ground): | **3** | feet |
| Depth of boring: | **31.5** | feet |
| Length, L (from datum): | **33.5** | feet |
| Open hole Length, l: | **1.5** | feet |
| Diameter of open hole (D): | **4.5** | inches |
| Diameter of casing (d): | **4** | inches |
| Constant flow rate, Q: | **28** | gpm |
| Constant water level (from datum): | **0** | feet |

Constant flow rate, Q = **28** gpm

= **3.74** feet³/min

Piezometer head, $H_c$= **24** feet

Factor of m ( $\sqrt{\frac{k_h}{k_v}}$ 1.00

Permeability, k

$$k = \frac{q \times \ln[\frac{mI}{D} + \sqrt{1+(\frac{mI}{D})^2}]}{2 \times \pi \times I \times H_c}$$

=

| | |
|---|---|
| **0.0347** | feet/min |
| **0.0176** | cm/s |

# APPENDIX 4

# WATER BUDGET

| Parameter | Daily Units | Unit | Monthly units | Yearly units | Notes: |
|---|---|---|---|---|---|
| Daily Visitors | 1,250 | capita | 38,125 | 456,250 | HK Initial Program |
| Overnight Visitors | 200 | capita | 6,100 | 73,000 | Max Capacity 4 per 50 units |
| Staff | 150 | capita | 4,575 | 54,750 | Program Description |
| Special Event Patrons | 84 | capita | 2,562 | 30,660 | 1 patron per 20 SF of 70% Gross SF |
| Restaurant | 280 | seats | 8,540 | 102,200 | 1 seat per 20 SF of 70% Gross SF |
| Grab n' Go Meals | 1,450 | each | 44,225 | 529,250 | 1 per visitor on average |
| Adventure Lagoon Bar | 53 | seats | 1,601 | 19,163 | 1 seat per 20 SF of 70% Gross SF |
| Clubhouse Bar | 18 | seats | 534 | 6,388 | 1 seat per 20 SF of 70% Gross SF |
| Arrival Pavilion Bar | 49 | seats | 1,495 | 17,885 | 1 seat per 20 SF of 70% Gross SF |
| Family Zone Juice Bar | 18 | seats | 534 | 6,388 | 1 seat per 20 SF of 70% Gross SF |
| | | | | | |
| Total Property Area | 19.4 | acres | | | Property Description |
| Wave Pool Area | 5.4 | acres | | | Program Description |
| Adventure Lagoon Area | 0.9 | acres | | | Quantity takeoff |
| Bungalow Pool Area | 0.7 | acres | | | Quantity takeoff |
| Dipping Pools Area | 0.10 | acres | | | Program Description |
| Clubhouse Pools | 0.03 | acres | | | Program Description |
| | | | | | |
| Irrigation Area | 4 | acres | | | |
| | | | | | |
| Pan Evaporation Rate | 86 | inches/year | | | State DLNR 1983 Report |
| Wave Motion Loss Factor | 1.45 | | | | From WG Report |
| Operational Loss | 5 | gpcd | | | 5 gallons per person per day |
| WG Operational Loss | 530 | gpd | | | From WG Report, Usually Negligible |
| Lagoon Filter Backwash + Water Treatment | 464 | gpd | | | From WG Report |
| Adventure Pool Filter Backwash | 200 | gpd | | | Assumed |
| Bungalow Pool Filter Backwash | 500 | gpd | | | Assumed |
| Splash Pad Fitler Backwash | 200 | gpd | | | |
| Wave Lagoon Fill Volume | 6,870,000 | gal | | | From WG Report |
| Rainfall | 20.9 | inch/year | | | Rainfall Atlas of Hawaii Mapper |
| Splash Pad Makeup Water (Medium) | 2,500 | gpd | | | Medium-small size |
| Irrigation Rate | 5,000 | gad | | | Average irrigation turf grass |

| Area | Size | Unit | Daily (gpd) | Monthly (gpd) | Yearly (gpd) | Notes: |
|---|---|---|---|---|---|---|
| **Domestic** | | | | | | |
| Daily Visitors | 1,250 | capita | 15,000 | 457,500 | 5,475,000 | Water Use Factor Applied to WW Rates |
| Overnight Visitors | 200 | capita | 12,000 | 366,000 | 4,380,000 | Water Use Factor Applied to WW Rates |
| Staff | 150 | capita | 3,600 | 109,800 | 1,314,000 | Water Use Factor Applied to WW Rates |
| Special Event Patrons | 84 | capita | 1,512 | 46,116 | 551,880 | Water Use Factor Applied to WW Rates |
| Restaurant | 280 | seats | 16,800 | 512,400 | 6,132,000 | Water Use Factor Applied to WW Rates |
| Grab n' Go Meals | 1,450 | each | 8,700 | 265,350 | 3,175,500 | Water Use Factor Applied to WW Rates |
| Adventure Lagoon Bar | 53 | seats | 945 | 28,823 | 344,925 | Water Use Factor Applied to WW Rates |
| Clubhouse Bar | 18 | seats | 315 | 9,608 | 114,975 | Water Use Factor Applied to WW Rates |
| Arrival Pavilion Bar | 49 | seats | 882 | 26,901 | 321,930 | Water Use Factor Applied to WW Rates |
| Family Zone Juice Bar | 18 | seats | 315 | 9,608 | 114,975 | Water Use Factor Applied to WW Rates |
| **Domestic Total** | | | **60,069** | **1,832,105** | **21,925,185** | |
| **Pools** | | | | | | |
| Wave Pool Area | 5.4 | acres | 42,710 | 1,302,640 | 15,588,969 | Per WG Water Cove Management Doc |
| Adventure Lagoon Area | 0.9 | acres | 5,477 | 167,037 | 1,998,964 | Evaporation + Losses - Rainfall = Makeup |
| Bungalow Pool Area | 0.7 | acres | 4,604 | 140,423 | 1,680,472 | Evaporation + Losses - Rainfall = Makeup |
| Dipping Pools Area | 0.1 | acres | 665 | 20,291 | 242,832 | Evaporation + Losses - Rainfall = Makeup |
| Splash Pad Makeup Water (Medium) | | | 2,500 | 76,250 | 912,500 | Splash Pad Recirculated = Lower Makeup |
| Other Pools | 0.0 | - | 302 | 9,208 | 110,190 | Evaporation + Losses - Rainfall = Makeup |
| Salinity Control | | | - | - | - | Salinity managed every maintenance empty |
| **Total** | | | **56,257** | **1,715,849** | **20,533,928** | |
| **Wastewater** | | | | | | |
| Daily Visitors | 1,250 | capita | 12,500 | 381,250 | 4,562,500 | DOH App. D, Table I, Swimming Pool |
| Overnight Visitors | 200 | capita | 10,000 | 305,000 | 3,650,000 | DOH App. D, Table I, Resort Camp (Lmtd) |
| Staff | 150 | capita | 3,000 | 91,500 | 1,095,000 | DOH App. D, Table I, Workers (day) |
| Special Event Patrons | 84 | capita | 1,260 | 38,430 | 459,900 | DOH Special Event Rate from Other Proj. |
| Restaurant | 280 | seats | 14,000 | 427,000 | 5,110,000 | DOH App. D, Table I, Restaurant |
| Grab n' Go Meals | 1,450 | each | 7,250 | 221,125 | 2,646,250 | DOH App. D, Table I, Take Out Meal |
| Adventure Lagoon Bar | 53 | seats | 788 | 24,019 | 287,438 | DOH App. D, Table I, Bars and Lounge |
| Clubhouse Bar | 18 | seats | 263 | 8,006 | 95,813 | DOH App. D, Table I, Bars and Lounge |
| Arrival Pavilion Bar | 49 | seats | 735 | 22,418 | 268,275 | DOH App. D, Table I, Bars and Lounge |
| Family Zone Juice Bar | 18 | seats | 263 | 8,006 | 95,813 | DOH App. D, Table I, Bars and Lounge |
| **Wastewater Total** | | | **50,058** | **1,526,754** | **18,270,988** | |
| **Irrigation** | | | | | | |
| Irrigation Area | 4 | acres | 20,000 | 610,000 | 7,300,000 | GAD based on arid turf grass-type irrigation |
| **Irrigation Total** | | | **20,000** | **610,000** | **7,300,000** | |

| Area | Capita | Seat | Bar | Average WW Flow (gpd) | Water Use Factor | Average Water Demand (gpd) | Peak Factor | Design Peak (gpd) | Design Peak (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| Daily Visitors | 1,250 | | | 12,500 | 1.2 | 15,000 | 2.5 | 37,500 | 78 |
| Overnight Visitors | 200 | | | 10,000 | 1.2 | 12,000 | 2.5 | 30,000 | 63 |
| Staff | 150 | | | 3,000 | 1.2 | 3,600 | 2.5 | 9,000 | 19 |
| Special Event Patrons | 84 | | | 1,260 | 1.2 | 1,512 | 2.5 | 3,780 | 8 |
| Restaurant | | 280 | | 14,000 | 1.2 | 16,800 | 2.5 | 42,000 | 88 |
| Grab n' Go Meals | | 1,450 | | 7,250 | 1.2 | 8,700 | 2.5 | 21,750 | 45 |
| Adventure Lagoon Bar | | | 53 | 788 | 1.2 | 945 | 2.5 | 2,363 | 5 |
| Clubhouse Bar | | | 18 | 263 | 1.2 | 315 | 2.5 | 788 | 2 |
| Arrival Pavilion Bar | | | 49 | 735 | 1.2 | 882 | 2.5 | 2,205 | 5 |
| Family Zone Juice Bar | | | 18 | 263 | 1.2 | 315 | 2.5 | 788 | 2 |
| **Domestic Total** | | | | **50,058** | | **60,069** | | **150,173** | **313** |

| Area | Size (acres) | Pan Evap (gpd) | Wave Factor | Total Evap (gpd) | Filter Backwash + Water Treatment (gpd) | Operating Loss (gpd) | Rainfall Credit (gpd) | Total Water Demand (gpd) | Off Peak Fill Time (Hrs) | Design Peak (gpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| Wave Pool Area | 5.4 | 34,547 | 1.45 | 50,093 | 464 | 530 | (8,377) | 42,710 | 8 | 89.0 |
| Adventure Lagoon Area | 0.9 | 5,758 | 1.00 | 5,758 | 200 | 915 | (1,396) | 5,477 | 2 | 45.6 |
| Bungalow Pool Area | 0.7 | 4,478 | 1.00 | 4,478 | 500 | 712 | (1,086) | 4,604 | 2 | 38.4 |
| Dipping Pools Area | 0.10 | 617 | 1.00 | 617 | 100 | 98 | (150) | 665 | 0.5 | 22.2 |
| Splash Pad Makeup Water (Medium) | | | | | | | | 2,500 | 8 | 5.2 |
| Other Pools | 0.03 | 220 | 1.00 | 220 | 100 | 35 | (53) | 302 | 8 | 0.6 |
| Salinity Control | 5.4 | | | | | | | - | | |
| **Total** | | | | | | | | **56,257** | | **201.0** |

| WG Pool Fill Analysis | | | | | | | Days To Fill | Total Water (gal) | Fill Time (min) | Continuous Flow Rate (gpm) |
|---|---|---|---|---|---|---|---|---|---|---|
| Wave Pool Area | 5.4 | | | | | | 10 | 6,870,000 | 14,400 | 477 |

| Area | Capita | Seat | Bar | Flow per Capita (gpcd) | Flow per Seat/Meal (gpd) | Flow per Bar (gpd) | Average Flow (gpd) | Babbit Factor | Dry I/I (gpd) | Max Flow (gpd) | Wet Weather I/I (gpd) | Design Peak (gpd) | Design Peak (gpm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily Visitors | 1,250 | | | 10 | | | 12,500 | 2.5 | - | 31,250 | 5,335 | 36,585 | 76 |
| Overnight Visitors | 200 | | | 50 | | | 10,000 | 2.5 | - | 25,000 | 5,335 | 30,335 | 63 |
| Staff | 150 | | | 20 | | | 3,000 | 2.5 | - | 7,500 | 5,335 | 12,835 | 27 |
| Special Event Patrons | 84 | | | 15 | | | 1,260 | 2.5 | - | 3,150 | 5,335 | 8,485 | 18 |
| Restaurant | | 280 | | | 50 | | 14,000 | 2.5 | - | 35,000 | 5,335 | 40,335 | 84 |
| Grab n' Go Meals | | 1,450 | | | 5 | | 7,250 | 2.5 | - | 18,125 | 5,335 | 23,460 | 49 |
| Adventure Lagoon Bar | | | 53 | | | 15 | 788 | 2.5 | - | 1,969 | 5,335 | 7,304 | 15 |
| Clubhouse Bar | | | 18 | | | 15 | 263 | 2.5 | - | 656 | 5,335 | 5,991 | 12 |
| Arrival Pavilion Bar | | | 49 | | | 15 | 735 | 2.5 | - | 1,838 | 5,335 | 7,173 | 15 |
| Family Zone Juice Bar | | | 18 | | | 15 | 263 | 2.5 | - | 656 | 5,335 | 5,991 | 12 |
| **Wastewater Total** | | | | | | | **50,058** | | | **125,144** | | **178,494** | **372** |
| | | | | | | | | | | | | | |
| Splash Pad Makeup Water (Medium) | | | | | | | - | 2.5 | - | - | - | - | - |
| **Pool Total** | | | | | | | **-** | | | **-** | | **-** | **-** |
| | | | | | | | | | | | | | |
| Lagoon Filter Backwash + Water Treatment | | | | | | | 464 | 2.5 | - | 1,160 | - | 1,160 | 2 |
| Adventure Pool Filter Backwash | | | | | | | 200 | 2.5 | - | 500 | - | 500 | 1 |
| Bungalow Pool Filter Backwash | | | | | | | 500 | 2.5 | - | 1,250 | - | 1,250 | 3 |
| Splash Pad Fitler Backwash | | | | | | | 200 | 2.5 | - | 500 | - | 500 | 1 |
| **Pool Filters Total** | | | | | | | **1,164** | | | **2,910** | | **2,910** | **6** |

# APPENDIX 5

# TECHNICAL MEMORANDUM
# DRAFT HYDROGEOLOGY AND SALT BUDGET

INTERA Incorporated
74 Kihapai Street
Kailua, Hawaii 96734
808.382.6853

TECHNICAL MEMORANDUM

**To:** **Ryan M.K. Char, PE; G70**

**From:** **Kevin Gooding, CPG; INTERA Incorporated**

**Date:** **February 28, 2022**

**Subject:** **Honokea Surf Village and Resort, Draft Hydrogeology and Salt Budget**

# 1.0 INTRODUCTION

Honokea Surf Village and Resort plans to develop an artificial surf lagoon and related facilities on an HCDA parcel in Kalaeloa (TMK 9-1-013-068). The wave making machinery will be supplied by WaveGarden. The project will receive drinking water and surf lagoon filling and make up water from Hawaii Water Services. While water will be reused as much as possible, Honokea is considering, among other options, to dispose of the maintenance water from the surf lagoon and other water features in injection wells and the wells must have the capacity to accommodate periodic emptying. In addition, Honokea proposes to develop irrigation wells(s) to help minimize potable water use. Other water reuse/disposal options may also be considered by the conceptual design team.

It became apparent during the conceptual design that the salinity of the lagoon will gradually increase due to evaporation. INTERA developed a spreadsheet to calculate this increase based on various scenarios.

# 2.0 WELL CONSTRUCTION

## 2.1 Injection wells

Injection wells will be required for water disposal, even though disposal will be minimized to the maximum extent practicable. Discharge into surface water is not feasible because of the distance to the ocean, complex permitting requirements and, most importantly, the overall project requirement for environmental stewardship. Other excess water use options such as offsite irrigation or aquaculture will be considered as opportunities arise. In lieu of other option, injection wells will be used for excess water disposal during biennial lagoon maintenance draining.

The biennial draining will entail draining the roughly 7-million-gallon lagoon in 7 days which equates to 1 MGD. Over the two-year maintenance draining cycle this equates to an average discharge of 9,600 gpd. Therefore, the injection wells must be designed to accommodate 1 MGD. The salinity of lagoon water is projected to be approximately 1,200 mg/L chloride which is similar to the water in the receiving aquifer. While this exceeds drinking water limits, disposal will be occurring within a non-potable aquifer and is within the concentrations suitable for irrigation. The injection of relatively low salinity water will also provide recharge to the upper caprock aquifer, possibly providing water for other purposes.

The lagoon drainage water will be treated before disposal. The water treatment system for the pool lagoon is also designed on a "no failure" basis, that guarantees the disinfection of the water and elimination of pathogen microorganisms using a combination of fine filtration, ozone and ultra-violate disinfection. The water will also be dechlorinated before injection.

We recommend the permitting and construction of two Class V, Subclass B injection wells. The injectate fluid is projected to be non-polluting surf lagoon drainage water. The Hawaii Department of Health, Safe Drinking Water Branch, Underground Injection Control Program administers injection wells in Hawaii. The injection wells must be compliant with Department of Health policy, permit conditions and rules in HAR §11-23. In addition, the wells should be relatively shallow to recharge the Upper Caprock Aquifer. This has two project benefits: 1) Potentially provide relatively low salinity recharge water for the proposed irrigation wells; and 2) Recharge the aquifer to provide potential benefits (in the long term) to groundwater dependent ecosystems along the coast and traditional and customary uses.

Table 1 and Figure 1 show the conceptual injection well design for the two injection wells. Either one of the wells would have the capacity to dispose of 1 MGD and one well would serve as standby.

Table 1: Conceptual Design of the Injection Wells

| Interval (ft bgs) | Borehole Diameter (in.) | Casing Diameter (in.) | Screen Slot Size (in.) | Material Type |
|---|---|---|---|---|
| 0 - 5 | 20 | - | - | Pea Gravel |
| 5 - 15 | 20 | - | - | Neat Cement Grout |
| 15 - 20 | 20 | - | - | Fine Transition Sand |
| 20 - 90 | 20 | - | - | 4 x 16 Custom Blend Filter Pack |
| +2 - 25 | 20 | 12.75 OD | - | Blank Casing (Flush-Threaded Schedule 80 PVC) |
| 25 - 80 | 20 | 12.75 OD | 0.070 | Horizontal Mill Slot with Flush-Threaded Bottom Cap (Flush-Threaded Schedule 80 PVC) |
| 80 - 90 | 20 | - | - | Filter Pack Beneath Casing |

## 2.2 Irrigation supply wells

The projected irrigation water demand is 20,000 gallons per day (gpd). Some of this demand will be provided by other sources such as greywater and stormwater. We are planning for two scenarios, 1) irrigation wells will supply 100% of the irrigation demand and 2) irrigation wells will supply 50% of the irrigation demand, with the rest supplied by alternative sources. Assuming that irrigation will take place during the night, one well with a 21-gpm pump will be required for the 50% scenario and two wells each

with 21 gpm pumps will be required for the 100% scenario. The wells should be sited downgradient from the injection wells in the Upper Caprock Aquifer. Table 3 and Figure 2 show the conceptual injection well design for the irrigation supply well(s).

Table 2. Demand and estimated pump capacity for the irrigation wells

| Scenario | Irrigation demand (gpd) | Irrigation demand (gpm) | Required pump capacity (assuming 8-hour nighttime irrigation (gpm) | Req. no. of wells |
|---|---|---|---|---|
| 50% | 10000 | 7 | 21 | 1 |
| 100% | 20000 | 14 | 42 | 2 |

Table 3. Conceptual irrigation well design

| Interval (ft bgs) | Borehole Diameter (in.) | Casing Diameter (in.) | Wall Thickness (in.) | Screen Slot Size (in.) | Material Type |
|---|---|---|---|---|---|
| 0 - 15 | 20 | - | - | - | Neat Cement Grout |
| 15 - 19 | 20 | - | - | - | Fine Transition Sand |
| 19 - 35 | 20 | - | - | - | 4 x 16 Custom Blend Filter Pack |
| +2 - 24 | 20 | 12 ID | 3/8 | - | Blank Casing (Flush-Threaded Schedule 80 PVC) |
| 24 - 34 | 20 | 12 ID | 3/8 | 0.070 | 0.070 in. Horizontal Mill Slot with Flush-Threaded Bottom Cap (Flush-Threaded Schedule 80 PVC) |
| 34 - 35 | 20 | - | - | - | Filter Pack Beneath Casing |

The site overlies the Kapolei Aquifer System of the ‘Ewa Caprock. The caprock is a sedimentary sequence of reef limestones and marine/lagoonal muds that reflect historic changes in sea level and the resulting variations in depositional environments along the coastline. The proposed irrigation wells will be installed in the upper caprock which is a karstic reef limestone. The Commission on Water Resource Management (CWRM) has regulatory authority over groundwater use. Kapolei is a Ground Water Management Area so, along with a Well Construction and Pump Installation Permit, a Water Use Permit will be required. Water use in the ‘Ewa Caprock is regulated by salinity. Irrigation water users are required to keep their well salinity below 1000 mg/L chloride.

There are no existing wells or historical groundwater development in the Kalaeloa Airport area, so the existing groundwater quality and documented water levels are unknown, but it is likely that small quantities of adequate quality water will be available. CWRM (1986) estimated the sustainable yield of the Kapolei Aquifer System is less than 5 mgd with chlorides between 500 and 1000 mg/L. The regional

groundwater flow is adequate to supply the irrigation well(s) and the Honokea site will also recharge the aquifer through stormwater recharge, irrigation return water and through injection of surf lagoon and water feature maintenance water.

A possible concern with developing irrigation water from the caprock is that it will affect coastal groundwater discharge and the associated groundwater dependent ecosystem (GDE). The ‘Ewa nearshore aquatic ecosystems are partially sustained by the brackish groundwater discharge along the coast and associated nutrient flux. Reducing the groundwater flow may affect nearshore aquatic life.

Groundwater in the Kalaeloa area (Kapolei Aquifer System of the ‘Ewa Caprock) is largely undeveloped so groundwater discharge into the ocean is not currently affected by caprock pumpage, although the caprock aquifer in the Kalaeloa area has been affected by land use changes and pumpage from the mauka potable basalt aquifer. CWRM (1986) estimated the caprock discharge along the Pu‘uloa and Kalaeloa coast was 2.3 mgd/mile of coast. The irrigation wells will withdraw between 10,000 and 20,000 gpd. The proposed withdrawal is less than one percent of this flux. Honokea will also be injecting an average of 9,600 gpd of high-quality surf lagoon maintenance draining water and this mitigate the caprock pumpage. No underground drainage impacts to the Upper Caprock karst system are anticipated. A Well Construction Permit, Pump Installation Permit and Water Use Permit will be required to develop groundwater. One of the conditions of the Water Use Permit will be that water quality must be below 1000 mg/L chloride. This will also help to ensure that coastal discharge is unaffected.

## 3.0 LAGOON SALT BUDGET

The surf lagoon will be filled with potable water from Hawaii Water Service. Losses from evaporation will also be from the water company. The salinity from the Hawaii Water Service supply well varies from about 180 to 230 mg/L chloride. Evaporation will concentrate the dissolved solids over the two-year cycle. Salinity control may be contemplated in the future with the removal of low volumes of water and replacement with freshwater, but Honokea is committed to minimizing these volumes. These salinity results are presented for planning and design purposes. The WaveGarden machinery has been approved for use in waters up to 1000 mg/L chloride and they are testing the machinery at higher concentrations to determine if additional corrosion protection is needed (raising machinery costs).

Table 4 shows the input assumption for the salt balance and Table 5 shows salinity at various bleed off rates. The calculated 2-year salinity is sensitive to input and replacement water chloride levels so for the purposes of these calculations it is safe to say that the 2-year salinity will be about 1200 mg/L chloride.

Table 4. Assumptions used for the surf lagoon salt balance

| variable description | Input variables | | converted | |
|---|---|---|---|---|
| Potential evaporation with 1.45 wave factor | 124.7 | in/yr | 193,112 | liters/day |
| Rainfall | 20.3 | in/yr | 31,437 | liters/day |
| Rainfal Chloride Concentration | 10 | mg/L | | |
| Lagoon Volume | 6,870,000 | gal | 26,002,950 | liters |
| Total Area | 239,580 | sq ft | | |
| Input Chloride Concentration | 230 | mg/L | | |
| Additional Volume removed | - | gpd | - | liters/day |
| Replacement Water Concentration | 230 | mg/L | | |
| Evaporation Replacement Concentration | 230 | mg/L | | |

Table 5. Two-year projected chloride levels at various remove and replace rates.

| Remove and replace Rate (gal/day) | Replacement Cl (mg/L) | 2-yr Cl (mg/L) |
|---|---|---|
| 0 | | 1283 |
| 5000 | 230 | 1053 |
| 10000 | 230 | 887 |
| 20000 | 230 | 672 |

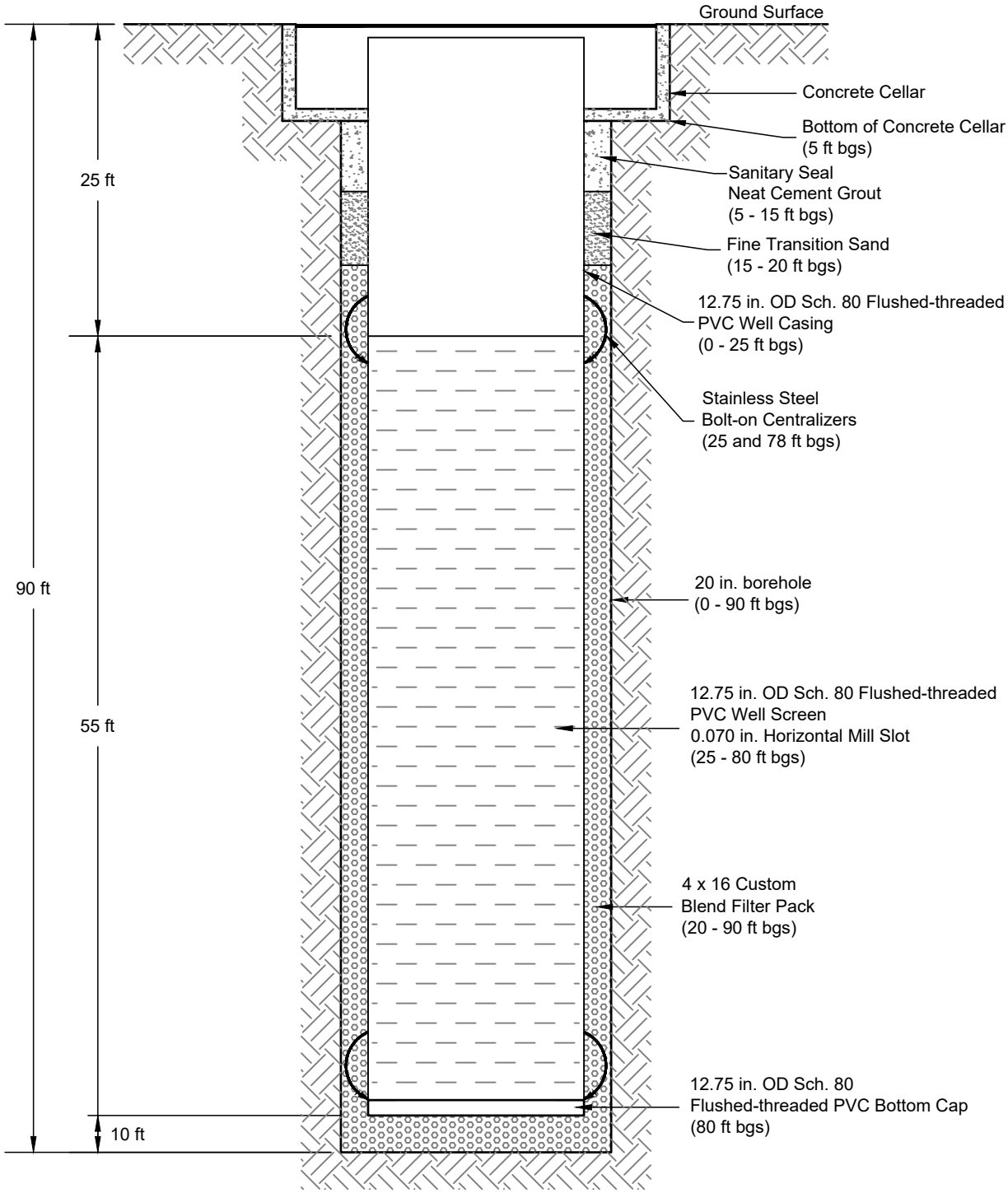
# 4.0 BIBLIOGRAPHY

Commission on Water Resource Management, CWRM, 1996. Reevaluation of the Ground-Water Resources and Sustainable Yield of the ʻEwa Caprock Aquifer, written by Glenn Bauer.

Commission on Water Resource Management, CWRM, 1989. Groundwater Resources and Sustainable Yield ʻEwa Plain Caprock Aquifer: Oahu, Hawaii Report R-79, prepared by Yuen and Associates.

Oki, D.S., Souza, W. R., Bolke, E.R., Bauer, G.R., 1996. Numerical Analysis of Ground-water flow in the ʻEwa Area, Oahu, Hawaii. U. S. Geological Survey Open-File Report 96-442.

# 5.0 FIGURES

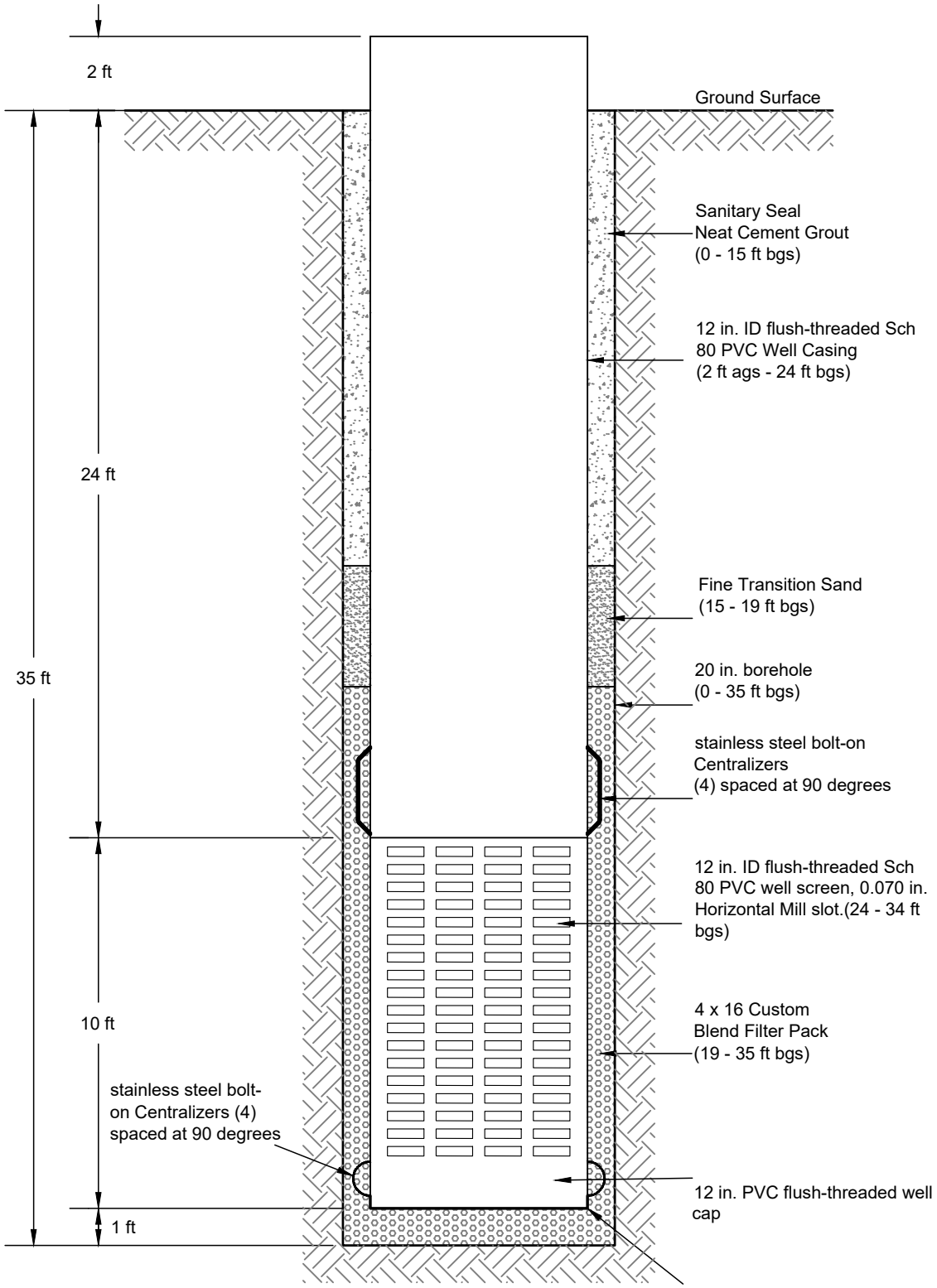



NOT TO SCALE

Figure 1
Honokea Surf Village and Resort
Honokea Injection Wells IW-1 and IW-2
Well Design Section
Kalaeloa, Oahu, Hawaii

INTERA
GEOSCIENCE & ENGINEERING SOLUTIONS

S:\CAD\Intera\Hawaii\GRP70.M001.Honokea\GRP70.M001_001 Fig 1 Injection Wells IW-1 through IW-3 Well Design Section_V2.dwg




NOT TO SCALE

Figure 2
Honokea Surf Village and Resort
Honokea Irrigation Wells IR-1 and IR-2
Well Design Section
Kalaeloa, Oahu, Hawaii

INTERA
GEOSCIENCE & ENGINEERING SOLUTIONS

S:\CAD\Intera\Hawaii\GRP70.M001.Honokea\GRP70.M001_002 Fig 2 Irrigation Wells IR-1 and IR-2 Well Design Section_V2.dwg

# APPENDIX 6

# WATER CONSERVATION STRATEGIES AND NONPOTABLE REUSE FOR HONOKEA

# WATER CONSERVATION STRATEGIES & NONPOTABLE REUSE FOR HONOKEA

**PROJECT TITLE**: Honokea

**LOCATION**: Kalaeloa, Oahu, HI

**REQUESTED BY**: G70

**DATE:** March 3, 2022

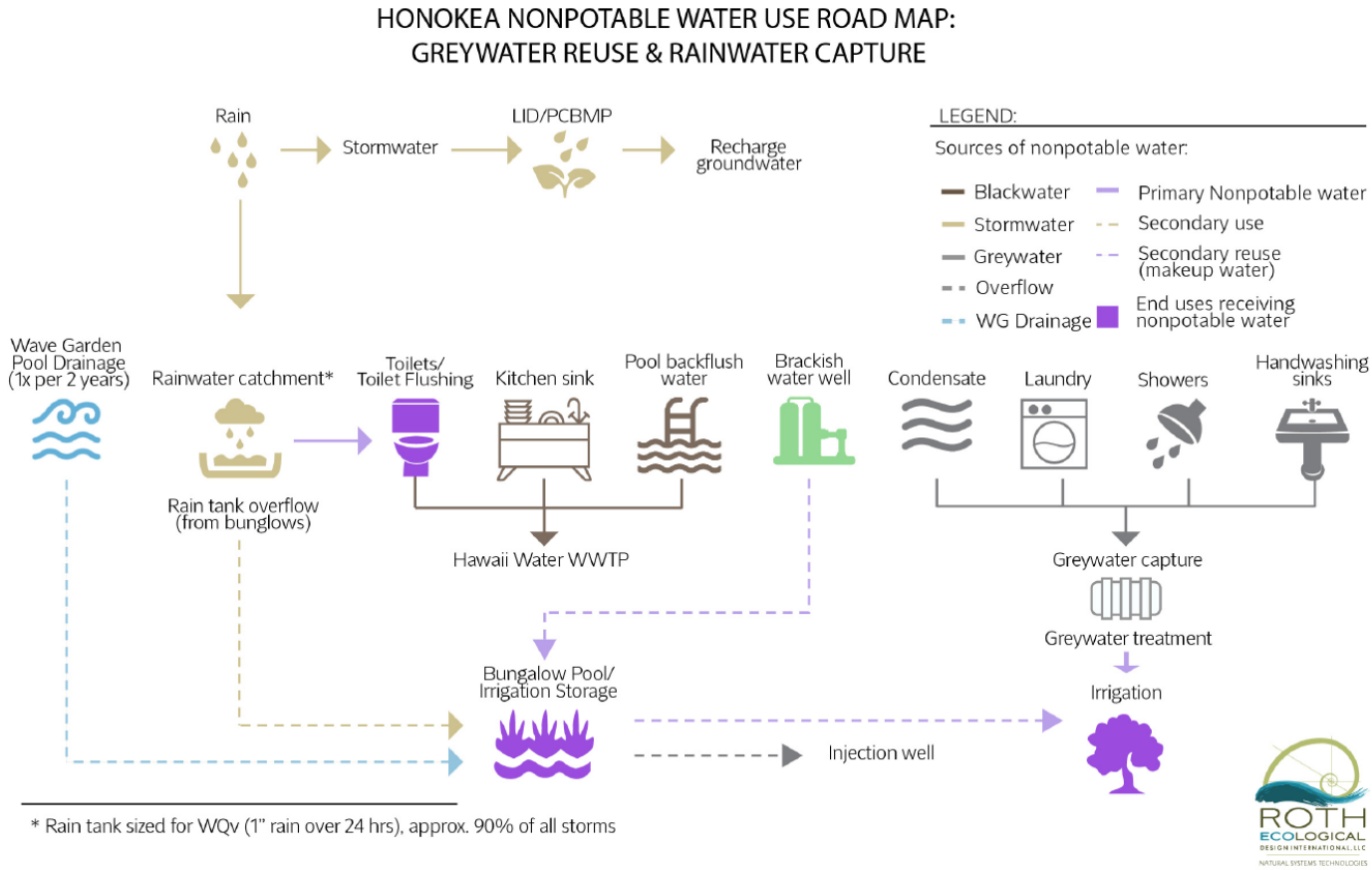
## SUMMARY

Roth Ecological Design Int. was tasked by G70 and Honokea (Owner) to identify water management schemes that would improve water conservation and meet sustainability goals for the proposed Honokea Surf Park that will be located in Kalaeloa, Oahu. Water conservation practices include incorporating water use efficiency as well as utilizing onsite nonpotable resources. Water efficiency recommendations include: high-efficiency low-flow fixtures; recirculation treatment for the wave garden, pools and other water features; and climate-appropriate landscaping to reduce irrigation demand. Another proposed strategy to achieve water conservation is nonpotable reuse. This means capturing and reusing water supplies that would otherwise be disposed offsite and instead treat and (re)use these water sources on site for nonpotable end uses. After investigation of various options, one management strategy was determined to be optimal given the goals and constraints of the project.

## NONPOTABLE WATER MANAGEMENT

The diagram below provides a conceptual water management scheme. To achieve water-use efficiency, it is proposed that the pools have recirculation capability to limit potable water makeup to evaporative losses and occasional pool draining (estimated at 1 time per 2 years). Irrigation demands would be limited to 16,000 gallons per day by implementing a mix of native/climate appropriate landscapes with limited grass areas.

Onsite supplies were evaluated for the feasibility of them to be captured, treated and reused onsite for nonpotable end uses (e.g. irrigation, toilet flushing and replenishing the pond) following the city and county of Honolulu's Plumbing Code and State of Hawaii Department of Health 11-62 rules. The onsite supplies identified for reuse include: wave garden/pool water (to be partially or wholly captured during occasional draining); rainwater from the building roofs and/or solar array; and greywater from the hand washing sinks, showers, condensate and laundry. It is proposed to minimally match nonpotable supplies to irrigation demands, however the project has a goal for nonpotable water to be used for toilet flushing as well.




*Pool Draining*

Currently there is a nonpotable pond onsite that could be used also for irrigation storage of nonpotable resources. By creating a dynamic head, the pond level would move up and down to allow for more storage of onsite nonpotable water supplies. During pool draining times, it is proposed that the pool water enter into the pond where some or all of it could be stored for irrigation before going into the onsite injection well. This could, for example, occur during the drier months when irrigation demands are higher in order to maximize this reuse.

*Rainwater Catchment*

Another proposed strategy is to install above ground storage tanks to capture rain that falls on building roofs during storm events. The rainwater would be treated and reused for toilet flushing. Overflow from

the tanks (near the irrigation storage pond) could be stored for secondary reuse for irrigation. Rainwater is not currently regulated by the State of Hawaii Department of Health Wastewater Branch for indoor reuse; however, design would need to follow the City and County of Honolulu Plumbing Code for indoor nonpotable reuse.

*Greywater*
Greywater capture from one or more of the building clusters is proposed to be treated onsite and stored in separate nonpotable water containers to be used for drip irrigation. This application of greywater meets the State of Hawaii Department of Health Greywater Guidelines and must adhere to the City and County of Honolulu Plumbing Code.

*Brackish Water Well*
As a backup nonpotable water supply, it is proposed to have a brackish water well to provide makeup water for irrigation should there not be ample supply from the greywater or pool draining water.

*Stormwater*
The remaining stormwater generated from parking and other impervious areas not being captured in the catchment tanks would be managed in Post-construction Best Management Practices, otherwise known as green stormwater infrastructure. Examples of these practices include bioretention, drywells, bioswales and permeable pavement, which capture, treat and recharge the water back into the ground.

# APPENDIX 7

# ELECTRICAL AND TELECOMMUNICATIONS SITE UTILITY ASSESSMENT

Ronald N. S. Ho & Associates, Inc. electrical engineers

Sean K. Sugai, P.E. • Steven H. Sakai, P.E. • Dennis I. Toba, P.E. • Ronald N. S. Ho, P.E. • Billy J. Ornellas, P.E.

**HONOKEA SURF VILLAGE**
**Electrical and Telecommunications Site Utility Assessment**

## Existing Conditions

Kalaeloa District (fka Barbers Point NAS) was previously under the ownership and jurisdiction of the U.S. Department of Defense and was de-activated as a military installation under the Base Re-alignment and Closure (BRAC) program. As a consequence, many of the roadways contain NAVFAC-HI electric distribution lines, NCTAMS communication lines as well as lines owned and maintained by Hawaiian Telcom and Spectrum. The latter utility companies were allowed to utilize the NAVFAC-HI poles to provide service to the military housing. Such a pole line exists along Coral Sea Avenue. This existing pole line was placed underground along Coral Sea Ave. where extension of the airfield runways intersection with the roadway. It should be noted that under the BRAC program, Coral Sea Ave. was conveyed to the State Department of Transportation (HDOT). For underground utility improvements constructed by private developers, HDOT will normally require a Use-and-Occupancy Agreement to cover the ductline construction and will require that an assessment be remitted for the grant-of-easement.

In 2017, Aloha Solar Energy Fund (ASEF), in conjunction with Hawaiian Electric (HE), built a hybrid overhead and underground 12 kV distribution line along Coral Sea Ave. to interconnect ASEF's photovoltaic (PV) energy generating facility located on TMK No. 9-1-013:010 with HE's distribution system along Renton Road (parallel and adjacent to Roosevelt Ave.). This 12 kV distribution line would be a possible point of service connection for the Honokea Surf Village. Provisions for Hawaiian Telcom and Spectrum service were constructed by ASEF along Coral Sea Ave.

Currently under planning and permitting, is a larger, combined PV energy generating and battery energy storage system (BESS) facility along Coral Sea Ave. Because of the larger generating capability, the interconnection of this facility with HE's system will be at 46 kV. Based on the project's environmental documents, the 46 kV line will be built by reconstructing the 12 kV overhead line and placing a new 46 kV underground duct system along Coral Sea Ave. Once constructed the 46 kV sub-transmission line would also be a possible point of service connection for the Honokea Surf Village. The final determination on the service voltage will be made by HE once the service request and engineering drawings including the wave pool single line diagram are submitted to HE. In part, HE will be evaluating their 12 kV and 46 kV circuit capacities, the overall load of the Village and the starting currents of the wave generation equipment to make their determination on the service voltage connection. It should be noted that if HE determines that a 46 kV service connection is required, a dedicated substation site on the Village parcel will be required.

## Proposed Off-site Improvements

For a 12 kV service connection, HE would likely require an underground duct system in Coral Sea Ave. to connect to a riser on two different distribution utility poles. This would provide redundancy in case a vehicle hits one of the utility poles.

For a 46 kV service connection, HE would require an underground extension from one of the 46 kV manholes being placed by the PV/BESS facility developer within Coral Sea Ave right-of-way. It should be noted that the environmental documents currently indicate that the underground 46 kV line in Coral Sea Ave., is to be privately owned and maintained. Although a UOA with HDOT will be secured for this ductline and the 46 kV cables within, written permission from the Owner of the combined PV/BESS facility must be secured to take electric service from this line. This would also necessitate further discussion with HE because of the use of the privately owned 46 kV line to supply power for a HE service connection.

For both HT and Spectrum service, an underground duct system would be constructed within Coral Sea Ave. to one or more of the existing utility poles to enable extension of service to the Village. The anticipated space required for an on-site dedicated substation would be a minimum of 5,000 square feet and would be dependent upon accessibility and proximity to Village structures. HE would make the final determination of the substation area requirement.

It should be noted that, currently, HDOT does not have a highway lighting system along Coral Sea Ave. As a condition of allowing driveways from the Village access to HDOT's right-of-way, HDOT may require that highway lights be installed, at least along the Village parcel frontage. HDOT should be consulted to determine if a highway lighting system will be required.

**Proposed On-site Improvements**

A minimum of two HE distribution transformers will likely be needed to provide service to the Village. One would be located along the Coral Sea Ave. frontage and would service the front of house loads. The second would be located near the wave pool equipment building at the southwestern corner of the site. This latter transformer would also serve the camp cabins and the Member's Clubhouse loads. An underground electric and communications distribution system would extend the off-site service conduits to the distribution transformers, electrical service and metering equipment at each of the two service points. Depending upon the design of the Village telecommunications system, the underground distribution system would connect to the Village head-end communications room(s) with a private, underground communications duct system extending communications facilities to the individual campus buildings.

The anticipated demand load for the "front of house" facilities is approximately 600 kVA and include building loads, area and parking lot lighting loads, and ancillary mechanical equipment loads for the irrigation system and sewerage system. The anticipated demand load for the "back of house" facilities which include the wave pool equipment is 2,500 kVA (this load is being verified with the wave pool equipment manufacturer). The "back of house" loads include building loads, area and parking lot lighting loads, and ancillary mechanical equipment loads for the irrigation system and sewerage system.

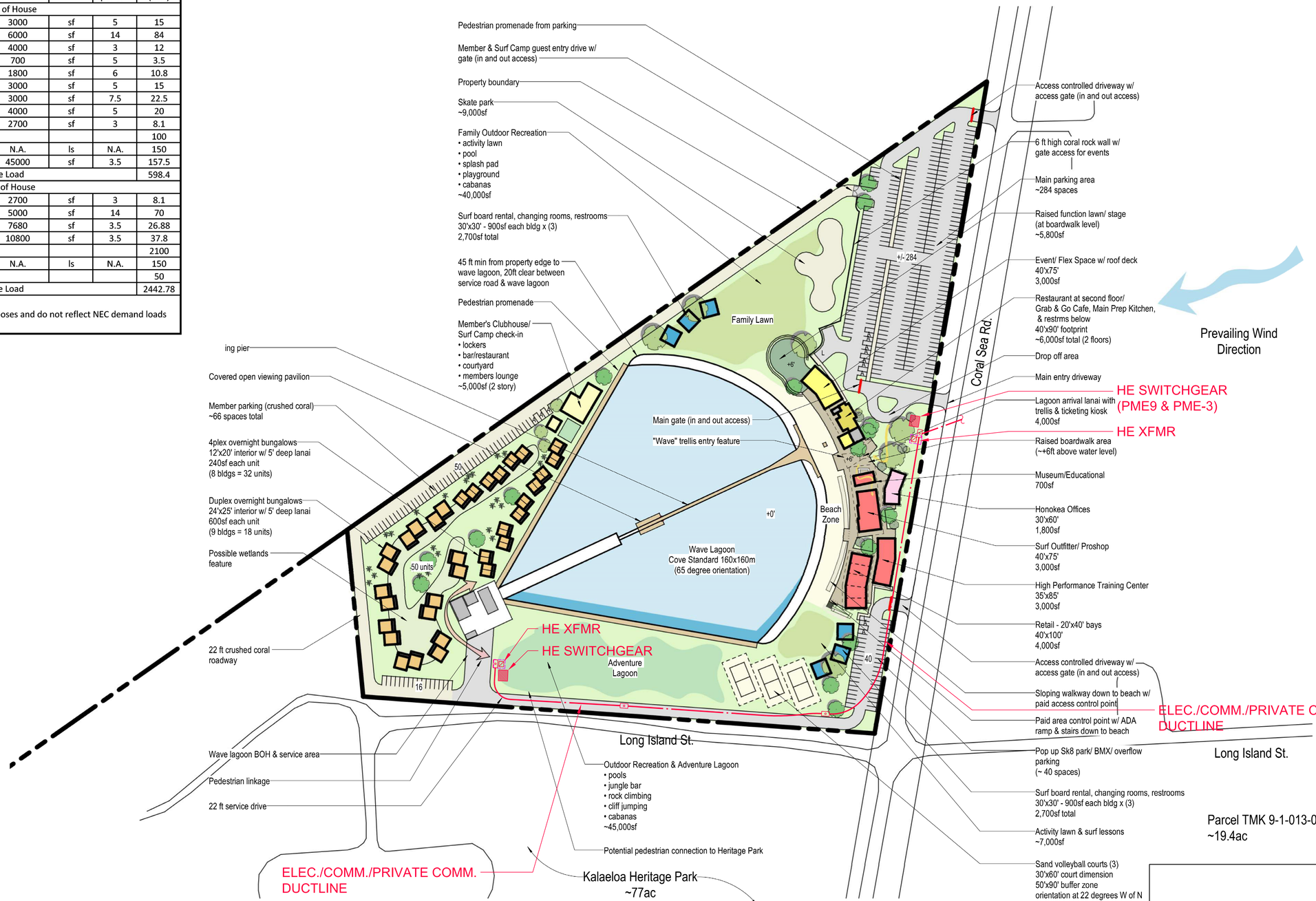
In addition to the distribution transformers, HE will likely require easements and equipment pads for two switchgears along the Coral Sea Ave frontage and a second switchgear pad, but no easement, near the back of hour distribution transformer. This latter switchgear may be an S&C Vista type that has a larger footprint than the switchgears that will be placed along the Coral Sea Ave frontage.

## HONOKEA SURF VILLAGE

For G70 Int. Date:3/1/22

| Load Description | Building Area | Unit | Load (VA) per SF* | Extension (kVA) |
|---|---|---|---|---|
| Front of House | | | | |
| Event/Flex Space | 3000 | sf | 5 | 15 |
| Restaurant/Grab&Go/Prep Kitchen | 6000 | sf | 14 | 84 |
| Lagoon Arrival and Ticketing | 4000 | sf | 3 | 12 |
| Museum/Educational | 700 | sf | 5 | 3.5 |
| Honokea Offices | 1800 | sf | 6 | 10.8 |
| Surf Outfitter/Pro Shop | 3000 | sf | 5 | 15 |
| High Performance Training Center | 3000 | sf | 7.5 | 22.5 |
| Retail | 4000 | sf | 5 | 20 |
| Surf Bd. Rental/Restrooms | 2700 | sf | 3 | 8.1 |
| Parking Lot/Area Lighting | | | | 100 |
| Ancillary Mechanical Equipment | N.A. | ls | N.A. | 150 |
| Adventure Lagoon | 45000 | sf | 3.5 | 157.5 |
| Front of House Load | | | | 598.4 |
| Back of House | | | | |
| Surf Bd. Rental/Restrooms | 2700 | sf | 3 | 8.1 |
| Member's Clubhouse | 5000 | sf | 14 | 70 |
| 4-Plex Bungalows | 7680 | sf | 3.5 | 26.88 |
| 2-Plex Bungalows | 10800 | sf | 3.5 | 37.8 |
| Wave Pool Equipment | | | | 2100 |
| Ancillary Mechanical Equipment | N.A. | ls | N.A. | 150 |
| Parking /Area Lighting | | | | 50 |
| Back of House Load | | | | 2442.78 |

* - Load calculations are for planning purposes and do not reflect NEC demand loads




ELECTRICAL CONCEPTUAL SITE PLAN
CONCEPT DESIGN
HONOKEA SURF VILLAGE

E01
2/14/2022

G70 | HONOKEA surf parks

Appendix B

# Topographic Survey Map

# TOPOGRAPHIC SURVEY MAP

HCDA -
KALAELOA SURVEY (19 ACRES)

AT BARBER'S POINT AIRPORT, HONOULIULI, EWA, OAHU, HAWAII

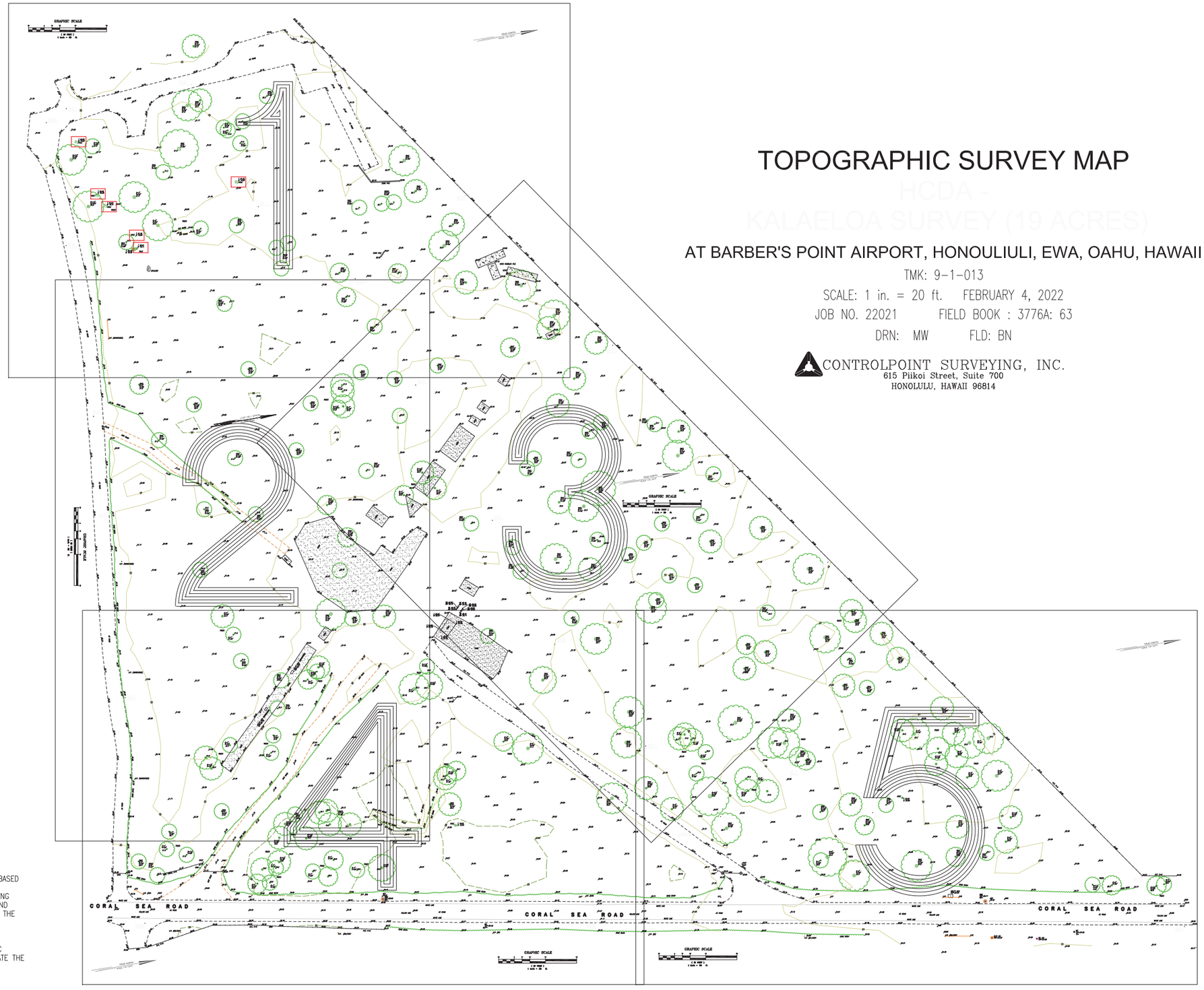
TMK: 9-1-013

SCALE: 1 in. = 20 ft. FEBRUARY 4, 2022

JOB NO. 22021 FIELD BOOK : 3776A: 63

DRN: MW FLD: BN

CONTROLPOINT SURVEYING, INC.
615 Piikoi Street, Suite 700
HONOLULU, HAWAII 96814




BENCHMARK

ELEVATIONS ORIGINATED FROM USC&GS
BRASS DISK "J-14" (DESTROYED)
ELEV.=54.21 U.S. FEET, MSL (2019 DATUM)
REFERRED TO NGS DATA PID# TU0627
(SEE TRANSFERRED BENCHMARK STA. 12 "Y" CUT)

ABBREVIATIONS:

| | | | |
|---|---|---|---|
| AC | ASPHALT CONCRETE | H | HEIGHT |
| BW | BOTTOM WALL | MH | MANHOLE |
| CLF | CHAIN LINK FENCE | PBX | PANEL BOX / PULL BOX |
| CONC | CONCRETE | SMH | SEWER MANHOLE |
| D | DIAMETER OR DRAIN | TEL | TELEPHONE |
| DI | DRAIN INLET | THV | TOP HAND VALVE |
| DS | DOWN SPOUT | TP | TOP PIPE |
| DSP | DRY STAND PIPE | TS | TOP STEM |
| DWY | DRIVEWAY | TW | TOP WALL |
| ELEC | ELECTRIC | WV | WATER VALVE BOX |

NOTE:

CAUTION!!
THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE BASED UPON ABOVEGROUND EVIDENCE (INCLUDING BUT NOT LIMITED TO MANHOLES AND INLETS, VALVES AND MARKS MADE UPON THE GROUND BY OTHERS) AND ARE SPECULATIVE IN NATURE. THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH THERE IS NO ABOVEGROUND EVIDENCE [OR] FOR WHICH NO ABOVEGROUND EVIDENCE WAS OBSERVED. EXACT LOCATIONS OF SAID EXISTING UNDERGROUND UTILITY SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY AND ALL CONSTRUCTION.

METHOD USED TO LOCATE UNDERGROUND UTILITIES INCLUDED GROUND PENETRATION RADAR, ELECTROMAGNETIC SYSTEMS, AND/OR SONDE EQUIPMENT. IN ADDITION TO THESE METHODS POTHOLING HAS BEEN USED TO LOCATE THE TARGET UTILITIES.

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

TRUE NORTH
SCALE: 1 IN = 20 FT

1

STA 123
MAG. NAIL
ELEV=21.86

STA PT35
MAG. NAIL
ELEV=22.63

STA 123
MAG. NAIL
ELEV=22.64

STA 121
MAG. NAIL
ELEV=24.01

STA 122
MAG. NAIL
ELEV=22.98

STA 125
HUB
ELEV=21.95

STA 128
MAG. NAIL
ELEV=22.53

STA 134
MAG. NAIL
ELEV=22.44

AC ROAD

EDGE BUSH

TOP BURM

BOT BURM

TREES

BOULDER

CONC PILE

CONC RUBBLES PILE

G.W.

U.P. (ABANDONED)

HOLE

GATE

CLF, Ht=6

TRUE NORTH
SCALE: 1 IN = 20 FT

BORING-1
ELEV=21.16

U.P. (ABANDONED)

EDGE BUSH

DIRT ROAD

AC ROAD

CONC.

TREES

HDPE 30ø

BOT BURM

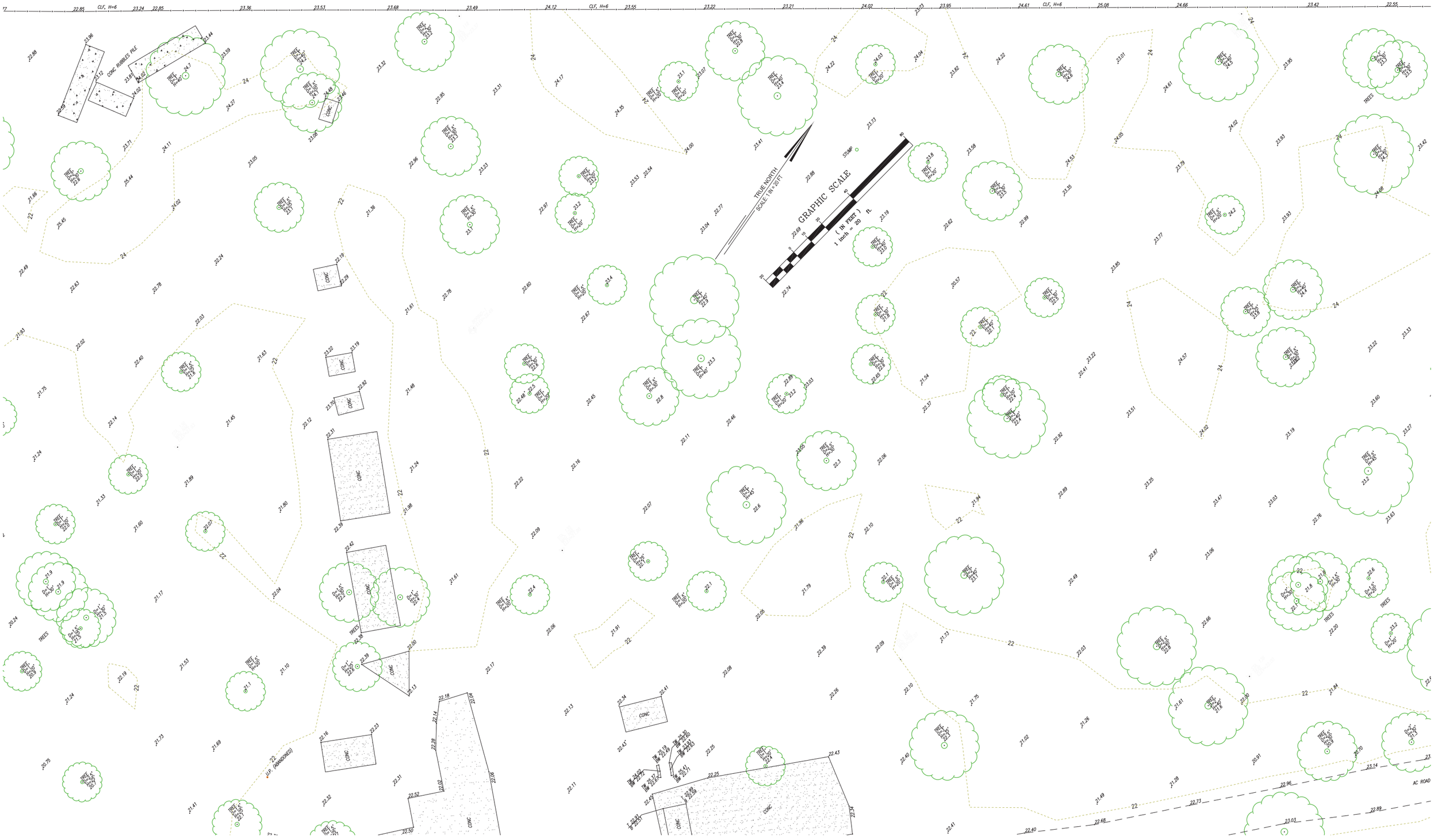
TOP BURM

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

2


CONC. RUBBLES PILE
CONC
TREES
TRUE NORTH
SCALE 1 IN 20 FT.
GRAPHIC SCALE
( IN FEET )
1 inch = 20 ft.
STUMP
U.P. (ABANDONED)
AC ROAD

4

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

TRUE NORTH
SCALE: 1 IN = 20 FT

TRUE NORTH
SCALE: 1 IN = 20 FT

5

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

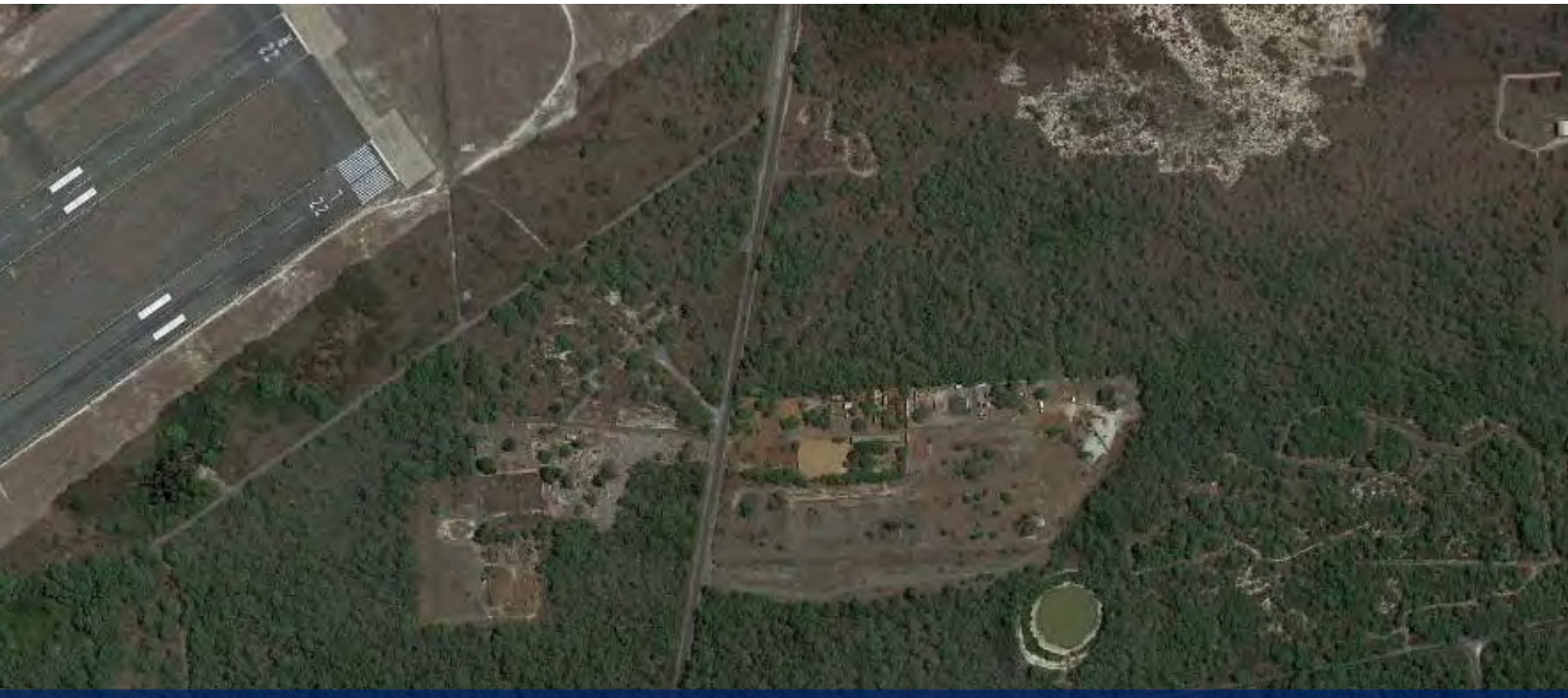
Appendix C

# Phase I Environmental Site Assessment

## Final Report

# Phase I Environmental Site Assessment

19.36-Acre Undeveloped Parcel
Kapolei, Oahu, Hawaii
Tax Map Key: (1) 9-1-013: Parcel 068



## May 9, 2022

PREPARED FOR:
Group 70 International, Inc.
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

PREPARED BY:
Element Environmental, LLC
98-030 Hekaha Street, Unit 9
Aiea, Hawaii 96701

element environmental llc
environmental · engineering · water resources

element environmental llc
environmental · engineering · water resources

May 9, 2022

Mr. Kawika McKeague, AICP
Group 70 International, Inc.
111 S. King Street, Suite 170
Honolulu, Hawaii 96813

Subject: **Phase I Environmental Site Assessment**
**19.36-Acre Undeveloped Parcel**
**Kapolei, Oahu, Hawaii**
**Tax Map Key: (1) 9-1-013: Parcel 068**

Dear Mr. McKeague,

Element Environmental, LLC (E2) has performed a Phase I Environmental Site Assessment (ESA) for the subject property referenced above. The purpose of the Phase I ESA was to identify environmental issues (if any) as part of due diligence prior to the proposed lease and development as a recreational village.

The accompanying report summarizes E2's findings and relates E2's opinions with respect to the property and potential sources of contamination at the property. E2's findings and opinions are based on information that was obtained on given dates through a records review, visual site inspection, interviews, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions observed to have changed after the initial observations. For these and associated reasons, E2 and many of its peers routinely advise clients for ESA services that it would be a mistake to place unmerited faith in findings and opinions conveyed via ESA reports. E2 cannot under any circumstances warrant or guarantee that not finding indicators of hazardous substances, or petroleum products means that hazardous substances or petroleum products and/or associated contamination do not exist on the property.

It has been a pleasure conducting this assessment for you. If you have questions regarding this report, please contact me on my mobile phone at (808) 551-3742.

Respectfully submitted,

Element Environmental, LLC

*Angela Peltier*
Angela Peltier
Geologist

98-030 Hekaha Street Unit 9 Aiea Hawaii 96701 **tel:** (808) 488-1200 **fax:** (808) 488-1300
www.e2hi.com

# ELEMENT ENVIRONMENTAL, LLC

# ENVIRONMENTAL CERTIFICATION

| | |
|---|---|
| E2 Project No.: | 210103 |
| Report: | Phase I Environmental Site Assessment, ASTM International E1527-13 |
| Inspection Date: | February 3, 2022 |
| Report Date: | May 9, 2022 |
| Site: | 19.36-Acre Undeveloped Parcel, Kapolei, Oahu, Hawaii<br>Tax Map Key: (1) 9-1-013: Parcel 068 |
| Client: | Group 70 International, Inc. |

***ENVIRONMENTAL PROFESSIONAL CERTIFICATION***

*We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 Code of Federal Regulations (CFR) 312.*

*We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all-appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.*

*Appropriate Inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.*

John Ellis

John Ellis, Environmental Technician Date: May 9, 2022

Angela Peltier

Angela Peltier, Geologist Date: May 9, 2022

Arlene Campbell

Arlene H. Campbell, L.G., Senior Geologist Date: May 9, 2022

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# Table of Contents (Continued)

# Table of Contents (Continued)



**APPENDICES**

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# List of Acronyms and Abbreviations

| | |
|---|---|
| § | Section |
| AAI | All Appropriate Inquiry |
| ACM | asbestos-containing material |
| AHERA | Asbestos Hazard Emergency Response Act |
| AIR | Airports Division |
| AST | aboveground storage tank |
| ASTM | ASTM International |
| AUL | activity and use limitation |
| AVGAS | aviation gasoline |
| BCT | BRAC Cleanup Team |
| bgs | below ground surface |
| Bldg. | Building |
| BRAC | Base Realignment and Closure |
| C&D | construction and demolition |
| CCH | City and County of Honolulu |
| CERCLA | Comprehensive Environmental Response Compensation and Liability Act |
| CERCLIS | Comprehensive Environmental Response Compensation and Liability Information System |
| CESQG | conditionally exempt small quantity generator |
| CFR | Code of Federal Regulations |
| CLEAN | Comprehensive Long-Term Environmental Action Navy |
| COPC | contaminant of potential concern |
| CORRACTS | Corrective Action Sites under RCRA |
| CREC | controlled recognized environmental condition |
| CWB | Clean Water Branch |
| CWRM | Commission on Water Resources Management |
| DAGS | Department of Accounting and General Services |
| DHHL | State of Hawaii Department of Hawaiian Home Lands |
| DLNR | Department of Land and Natural Resources |
| DMC | Dioxin Management Category |
| DoD | Department of Defense |
| DRO | diesel range organics |
| DU | decision unit |
| E2 | Element Environmental, LLC |
| EAL | Environmental Action Level |
| EMCAS | Ewa Marine Corps Air Station |
| EPA | United States Environmental Protection Agency |
| ERNS | Emergency Response Notification System |
| ESA | Environmental Site Assessment |

| | |
|---|---|
| FEIS | Final Environmental Impact Statement |
| FID | Facility Identification |
| FOST | Finding of Suitability to Transfer |
| ft | foot |
| G70 | Group 70 International, Inc. |
| GRO | gasoline range organics |
| HCDA | Hawaii Community Development Authority |
| HDOH | State of Hawaii Department of Health |
| HDOT | State of Hawaii Department of Transportation |
| HEER | Hazard Evaluation and Emergency Response |
| HFD | Honolulu Fire Department |
| HREC | historical recognized environmental condition |
| IBC | intermediate bulk container |
| IEC | institutional/engineering control |
| IRHB | Indoor & Radiological Health Branch |
| KHLFP | Kalaeloa Heritage and Legacy Foundation Park |
| KRP | Kalaeloa Raceway Park |
| LBP | lead-based paint |
| LLP | landowner liability protections |
| LQG | large quantity generator |
| LUO | Land Use Ordinance |
| LUST | leaking underground storage tank |
| mg/kg | milligrams per kilogram |
| NAS | Naval Air Station |
| NAVFAC | Naval Facilities Engineering Systems Command |
| NFA | no further action |
| NOVO | Notice of Violation and Order |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priorities List |
| NRCS | Natural Resources Conservation Service |
| ORO | oil range organics |
| PCB | polychlorinated biphenyl |
| PEC | potential environmental concern |
| PFAS | per- and polyfluoroalkyl substances |
| PID | photoionization detector |
| POI | Point of Interest |
| ppm | parts per million |
| PVT | PVT Landfill Company, Ltd. |
| RCRA | Resource Conservation and Recovery Act |
| REC | recognized environmental condition |
| RI | Remedial Investigation |

| | |
|---|---|
| RID | Release Identification |
| RI | remedial investigation |
| ROD | Record of Decision |
| SDWB | Safe Drinking Water Branch |
| SEMS | Superfund Enterprise Management System |
| SHWB | Solid and Hazardous Waste Branch |
| SHWS | solid and hazardous waste site |
| SI | Site Investigation |
| SORT | Save Oahu's Race Tracks |
| SQG | small quantity generator |
| SVOC | semi-volatile organic compound |
| TEQ | toxicity equivalence |
| TMK | Tax Map Key |
| TPH | total petroleum hydrocarbons |
| TSD | Treatment, Storage, and Disposal |
| U.S. | United States of America |
| U.S.C. | United States Code |
| UIC | Underground Injection Control |
| USDA | United States Department of Agriculture |
| USGS | United States Geological Survey |
| UST | underground storage tank |
| VEC | vapor encroachment condition |
| VES | vapor encroachment screening |
| VESQG | very small quantity generator |
| VRP | Voluntary Response Program |
| VSI | visual site inspection |
| WP | Work Plan |

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# Executive Summary

Group 70 International, Inc. (G70) retained Element Environmental, LLC (E2) to conduct a Phase I Environmental Site Assessment (ESA) in general conformance with ASTM International (ASTM) Practice E1527-13, *Standard Practice for Environmental Site Assessments* and *All Appropriate Inquiries* (AAI), which includes 40 Code of Federal Regulations Part 312, Sections 312.21 and 312.31*,* for one 19.361-acre parcel of residential land located in Honouliuli, Oahu, Hawaii, and designated as Tax Map Key: (1) 9-1-013: Parcel 068; hereinafter "*the site, the subject property and/or the property*." Any exceptions, additions to, or deletions from the ASTM E1527-13 or AAI practice, details of the work performed, sources of information, and findings are presented in the report. The property is owned by Hawaii Community Development Authority (HCDA).

The purpose of the Phase I ESA was to identify environmental issues (if any) as part of due diligence prior to the proposed lease and development as a recreational village. E2 conducted the visual site inspection (VSI) of the subject property on February 3, 2021. At the time of the VSI, moderate to heavy vegetation covered greater than 90 percent of the subject property while asphalt paved roadways and concrete foundations associated with former Naval Air Station (NAS) Barbers Point engine test cells were trending northwest to southeast across the center of the property. Multiple concrete, metal, and rebar stockpiles and green waste stockpiles are located within the southwest portion of the subject property. Sinkholes of various sizes, some of which were concrete filled, were observed throughout the subject property. Coral bedrock was observed in areas clear of vegetation. A marked buried sewer force main was identified along the east boundary of the subject property.

The purpose of a Phase I ESA is to identify recognized environmental conditions (RECs). ASTM guidance defines a REC as the presence or likely presence of any hazardous substances or petroleum products, in, on, or at the subject property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. RECs are listed in Table ES-1.

A controlled REC (CREC) is defined as a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (e.g., as evidenced by the issuance of a no further action [NFA] letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (e.g., property use restrictions, activity and use limitations, institutional/engineering controls). CRECs are listed in Table ES-2.

A historical REC (HREC) is defined as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (e.g., property use restrictions, AULs, IECs). No HRECs were identified during this investigation.

Potential environmental concerns (PECs), which cannot be definitively categorized as RECs due to insufficient available information required to make a determination, are identifiedin Table ES-3.

## Table ES-1: Recognized Environmental Conditions

| Recognized Environmental Conditions (RECs) | REC Categories | | |
|---|---|---|---|
| | **Release** | **Conditions Indicative of a Release** | **Conditions Posing a Material Threat of a Future Release to the Environment** |
| Solid and Hazardous Waste:<br>• During the VSI, Several stockpiles with concrete, metal, and rebar were identified within the southwest portion of the subject property. The sources of the stockpiles are unknown. It is likely that that the concrete, metal, and rebar stockpiles are associated with former Navy structures, and it is possible that additional materials that may be considered hazardous (e.g., waste containers such as drums and tanks, petroleum from old piping, etc.) are present within the stockpiles. | | | ✓ |
| Drain:<br>• During the VSI, a floor drain was observed in a concrete foundation within the center portion of the subject property. The use of the drain in unknown. It is possible that hazardous materials may have been released to the ground via this drain. | | | ✓ |

## Table ES-2: Controlled Recognized Environmental Conditions

| Category | Controlled Recognized Environmental Conditions (CRECs) |
|---|---|
| Subject and Adjacent Properties | The subject property and surrounding properties are located on the former NAS Barbers Point, a Department of Defense Base Realignment and Closure (BRAC) Site that has been cleaned up to the regulatory agency acceptance, in this case the BRAC Cleanup Team consisting of the State of Hawaii Department of Health, United States Environmental Protection Agency, and the Navy. Although this site has been closed, regulatory closure does not preclude that a site may be reopened in the future should new data become available. Deed restrictions on the subject property includes the following:<br>• Grantee is notified that arsenic, atrazine, bis(2-ethylhexyl) phthalate, 4,4-DDE, 4,4-DDT, lead, lindane, and thallium were released in the Regional Groundwater System (Point of Interest [POI]-49, which lies beneath the property). The chemicals detected were at concentrations that did not require a response action.<br>• Grantee is notified that petroleum hydrocarbons are present in the groundwater beneath the subject property. Grantee covenants and agrees for itself, its successors and assigns that any soil removed from the subject property during excavation into the water table shall be tested and disposed of in accordance with applicable laws and regulations.<br>• Grantee covenants and agrees for itself, its successors and assigns, to apply with the State of Hawaii Department of Health (HDOH) within 90 days of the conveyance of the property for underground injection control permits for the existing dry wells located on the subject property.<br>• In the event that any sediment is removed from the dry wells on the subject property, transferee shall dispose of the sediment off-site in an appropriate facility in accordance with applicable laws and regulations. |

## Table ES-3: Potential Environmental Concerns

| Category | Potential Environmental Concerns (PECs) |
|---|---|
| Residual Lead in Soil Attributable to LBP | LBP may have been used in the construction and/or maintenance and upkeep of former structures built prior to the early to mid-1980s. |
| Asbestos-cement Piping | Asbestos-cement piping may have been used in the potable water distribution systems, sanitary sewer, and storm drains built prior to the 1980s. Over time the gradual degradation of the piping in the form of corrosion (i.e., internal calcium leaching due to conveyed water and/or external leaching due to groundwater) can occur. The crushing of asbestos-cement pipe with mechanical equipment causes this material to become a regulated asbestos-containing material. |
| Residual Pesticides Attributable to Termite Treatment | It is possible that residual levels of pesticides, herbicides, and/or termiticides are present in the soil beneath and in the vicinity of the former structures at the site. |
| Green Waste | Several green waste stockpiles are present along the southern boundary of the subject property. The sources of the stockpiles are unknown; however, it is likely that they are associated with land clearing activities on the adjacent property and are considered to be a solid waste. While the material is not likely to be hazardous in nature, the dried material does pose a fire risk. |
| Adjacent Property Concern | **State of Hawaii Department of Hawaiian Home Lands (DHHL) located at TMK: (1) 9-1-013: Parcel 040, hydraulically crossgradient**<br>Save Oahu's Race Tracks (SORT) occupation of the subject property from 2002 until August 2014 resulted in several complaints regarding stockpiling of contaminated soil, tires, and concrete rubble as well as stockpiling and crushing concrete without a permit, burying of construction and demolition waste, and storage of aboveground storage tanks, intermediate bulk containers, and drums. On April 2018, DHHL submitted a Corrective Action Letter Report in Response to the Notice of Violation and Order (NOVO) Docket No. 15-HW-EA-01. Violations listed in the NOVO have been addressed with the completion of various corrective actions and it was concluded that soil from the site does not pose a hazard and additional Site Investigation actions are not required. DHHL terminated the lease and evicted SORT based on non-compliance with environmental and land use regulatory requirements. It is not known if the land use violations listed in the NOVO have negatively impacted the subject property. |
| | **HCDA, Kalaeloa Heritage and Legacy Foundation Park (KHLFP), located at TMK: (1) 9-1-013: Parcels 069 and 067, hydraulically downgradient**<br>Prior to September 2013, KHLFP accepted the import of soil from multiple off-site sources located in Pearl City and Honolulu areas of Oahu. The soil was observed by HDOH Solid and Hazardous Waste Branch to be mixed with large pieces of concrete, as well as small amounts of auto parts and other scrap metal. An NOVO was issued from the City and County of Honolulu on September 23, 2013. During the stockpile removal suspect building materials (gray transite pipe) was observed and confirmed to be asbestos-containing material. All materials were taken to disposed of and on March 3, 2020, the HDOH and HCDA conducted an inspection of the site and NFA is required. This is considered a PEC as it is not known or suspected to be impacting the subject property due to the distance from and location hydraulically downgradient from the subject property as well as the removal of the waste from the adjacent property. |

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# Section 1 Introduction

## 1.1 Overview

Group 70 International, Inc. (G70) retained Element Environmental, LLC (E2) to conduct a Phase I Environmental Site Assessment (ESA) for one 19.361-acre parcel of residential land located in Honouliuli, Oahu, Hawaii, and designated as Tax Map Key (TMK): (1) 9-1-013: Parcel 068; hereinafter "*the site, the subject property, and/or the property*." The property is owned by Hawaii Community Development Authority (HCDA) (City and County of Honolulu [CCH] 2022a).

This Phase I ESA was conducted in general conformance with ASTM International (ASTM) Practice E 1527-13, *Standard Practice for Environmental Site Assessments* and *All Appropriate Inquiries* (AAI), which includes 40 CFR Part 312, Section (§) 312.21 and §312.31. The purpose of the Phase I ESA was to identify environmental issues (if any) as part of due diligence prior to the proposed lease and development as a recreational village.

## 1.2 Purpose

The purpose of the ASTM Practice is to define good commercial and customary practice in the United States of America (U.S.) for conducting an ESA of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (42 U.S. Code [U.S.C.] §9601) and petroleum products. As such, this practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability (hereinafter, the "landowner liability protections," or "LLPs"): that is, the practice that constitutes AAI into the previous ownership and uses of the property consistent with good commercial and customary practice, as defined in 42 U.S.C. §9601(35)(B).

For the purposes of this practice:

- The definition of a release includes contamination in the soil vapor phase, as well as in soil or groundwater.
- "Migrate" and "migration" refer to the movement of hazardous substances or petroleum products in any form, including solid and liquid, at the surface or subsurface, and vapor in the subsurface.
- Vapor migration/intrusion (excluding impacts to indoor air from releases of hazardous substances into the environment) *does not fall under the category of an Indoor Air Quality concern* and is not included in the ASTM E1527-13 scope of work.

ASTM guidance defines a recognized environmental condition (REC) as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment (ASTM 2013).

A controlled REC (CREC) is defined as a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (e.g., as evidenced by the issuance of a no further action [NFA] letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (e.g., property use restrictions, activity and use limitations [AULs], institutional/engineering controls [IECs]) (ASTM 2013).

A historical REC (HREC) is defined as a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (e.g., property use restrictions, AULs, IECs) (ASTM 2013).

RECs do not include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies (ASTM 2013).

Potential environmental concerns (PECs), a non-ASTM scope definition, are not considered RECs as insufficient data or evidence is present to make a definitive determination that the release is impacting the subject property.

## 1.3 Detailed Scope-of-Services

This Phase I ESA was performed under the conditions of, and in general accordance with an executed agreement dated November 15, 2021, and the ASTM *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM Designation E1527-13) (E2 2021). Adherence to the ASTM standard is intended to limit the liability of property owners from inherited environmental contamination.

The Phase I ESA included the following tasks:

- **Review of regulatory records.** E2 reviewed standard environmental record sources including the U.S. Environmental Protection Agency (EPA) Superfund Enterprise Management System (SEMS) database (formerly Comprehensive Environmental Response Compensation and Liability Information System [CERCLIS]), EPA's Resource Conservation and Recovery Act (RCRA) database, U.S. IEC database, EPA's Emergency Response Notification System (ERNS) database, State of Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office site list, HDOH Underground Storage Tank (UST) list, HDOH Leaking UST (LUST) list, HDOH list of landfills and other solid and hazardous waste sites (SHWS), HDOH Voluntary Response Program (VRP) sites list, and the HDOH Brownfield sites list.
- **Review of site history.** E2 reviewed reasonably ascertainable standard historical sources including historical maps; aerial photographs; building permits, zoning records, and property tax records available online; various printed publications as well as publications posted on the internet; and documents and/or records provided by the owner/user and/or their representatives.

- **Review of site geology and hydrogeology.** E2 reviewed reasonably ascertainable published information on surface and subsurface conditions at the site and surrounding area. E2 used this information to assess topography, drainage, surface water bodies, anticipated subsurface geology, and groundwater occurrence and usage in the area.
- **Visual Site Inspection (VSI).** E2 performed a VSI of the property to note visual signs of contamination and conducted a limited assessment of portions of the neighboring properties visible from the subject property boundaries. During the VSI, E2 specifically looked for hazardous substances; petroleum products; aboveground storage tanks (AST) and USTs; odors; pools of liquid; drums; electrical and hydraulic equipment; means for heating and cooling structures; stains or corrosion; drains and sumps; pits, ponds, or lagoons; stained soil or pavement; stressed vegetation; solid waste; wastewater; wells; and septic systems. The VSI focused on commercial/industrial areas and practices at the property (i.e., elevators, mechanical/electrical rooms, emergency generators).
- **Interviews.** E2 interviewed available individuals familiar with the site conditions and/or history of site use.
- **Data evaluation and report preparation.** E2 evaluated the information collected and prepared this report that documents the assessment and presents the findings, opinions, and conclusions.

## 1.4 Significant Assumptions

In preparing this report, E2 assumes the following:

- Certain verbal information and representations provided by Phase I ESA owner/users; landowners, tenants, occupants, and/or their representatives; government employees; and others, are complete and accurate to the best of their knowledge.
- Government agency responses to public requests for information are complete and accurate.
- Reports provided by the private database search company (detailing a computer search of government databases) are complete and accurate.
- Written information and documents provided by the Phase I ESA owners/users, tenants, occupants, and/or their representatives are complete and accurate to the best of their knowledge.

Except as discussed, E2 has relied on that information and did not attempt to verify its accuracy or completeness independently but did not detect any inconsistency or omission of a nature that might call into question the validity of the data. To the extent that the conclusions in this report are based in whole or in part on such information, they are contingent on its validity. E2 assumes no responsibility for any consequence arising from any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to E2.

## 1.5 Limitations and Exceptions

Phase I ESAs, by their very nature, are limited. E2 has endeavored to meet what it believes is the applicable standard of care and, in so doing, is obliged to advise its client, G70, of the Phase I ESA limitations. This

Phase I ESA did not assess environmental issues or conditions at the property that are outside the scope of ASTM Practice E1527-13, including, but not limited to, asbestos-containing material (ACM), biological agents, cultural and historical resources, ecological resources, endangered species, health and safety, indoor air quality unrelated to releases of hazardous substances or petroleum products into the environment, industrial hygiene, lead-based paint (LBP), lead in drinking water, mold, radon, regulatory compliance, and wetlands, nor did it include any sampling or testing for biological agents and mold, radon, methane, ACM, LBP, or other environmental contaminants. The E2 investigation was limited to procedures described in the Phase I ESA Standard Practice (ASTM 2013).

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity and E2's interpretation of the available historical and regulatory information and documents reviewed. They are intended exclusively for the purpose outlined herein and apply only to the site location and project indicated.

The findings and opinions are based on information that E2 obtained on given dates through a records review, site reconnaissance, interviews, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions E2 observed to have changed after the initial observations. For these and associated reasons, E2 and many of its peers routinely advise clients for ESA services that it would be a mistake to place unmerited faith in findings and opinions conveyed via ESA reports. E2 cannot under any circumstances warrant or guarantee that not finding indicators of hazardous substances or petroleum products means that hazardous substances or petroleum products and/or associated contamination do not exist on the site.

## 1.6 Special Terms and Conditions

E2's services are performed, within limits prescribed by the client, with the usual thoroughness and competence of the consulting profession in accordance with the standard for professional services at the time those services are rendered. No warranty or representation, either expressed or implied, is included or intended in the proposals, contracts, or reports.

Findings and opinions presented herein apply to site conditions existing at the time of E2's investigation and those reasonably foreseeable; they cannot necessarily apply to site changes of which E2 is not aware and has not had the opportunity to evaluate.

## 1.7 Data Gaps

Based on the information obtained during this ESA, it is E2's professional opinion that a historical data gap, as defined in the ASTM guidelines, has occurred in attempting to document the history of the subject property back to the earlier part of 1940 or the first developed usage of the property in five-year increments, as follows:

- Historical information regarding the subject property from 1882 to 1898, 1903 to 1919, 1921 to 1927, 1929 to 1936, 1954 to 1962, and 1986 to 1991.

Based on the information obtained, the lack of documentation is not deemed critical and did not affect the ability to identify potential RECs associated with the subject property.

# 1.8 User Reliance

This report is intended for the use of G70 and their assignees. The scope-of-services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or reuse of this document or the findings, conclusions, or recommendations presented herein is at the sole risk of the said user.

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# Section 2 Site Description

## 2.1 Location and Legal Description

General site and environmental setting information is summarized in Table 2-1. Figure 1, included in Appendix A, shows a location map and configuration of the area in relation to adjacent properties. The site layout is shown in Figure 2, included in Appendix A.

**Table 2-1: Subject Property General Information**

| | |
|---|---|
| **TMK:** | (1) 9-1-013: Parcel 068 |
| **Subject Property Address:** | 19.36-Acre Undeveloped Parcel, Kapolei, Oahu, Hawaii |
| **Property Owner:** | HCDA |
| **Topographic Map:** | Topographic map coverage of the site is included on the U.S. Geological Survey (USGS) 7.5-minute Ewa quadrangle map, as shown in Figure 1. The property is located at 21° 18’ 39.02” north latitude and 158° 3’ 26.42’’ west longitude. The subject property is relatively flat with an elevation of approximately 23 feet (ft) above mean sea level. |
| **Subject Property General Location:** | The subject property is located in the southwest portion of the island of Oahu within the south-central portion of former Naval Air Station (NAS) Barbers Point. |
| **Subject Property Area:** | The subject property is located west of the intersection of Coral Sea Road and Long Island Road. Access to the site is through Coral Sea Road. The subject property has been vacant and inactive since the engine test cell operations were discontinued in the 1980s. The Nimitz Beach cottages, which are vacation homes, are located about 0.5 mile to the south and are the nearest residential properties. An industrial and commercial area is located approximately 0.75 mile north of the site. |
| **Subject Property Existing Use:** | The subject property is currently vacant. |
| **Geologic Setting:** | The coastal plain in which the subject property lies is a broad, elevated coral reef that is partially buried by alluvium eroded from upland areas. The caprock at Barbers Point is underlain by Waianae, and possibly Koolau, volcanic rock. These volcanic units consist of finely crystalline to glassy basalts, with minor amounts of interbedded welded ashes and alluvial volcanic material. Cooling joints, fractures, lava tubes, brecciated zones, and other depositional features are present within the volcanic rock.<br>Portions of the Ewa region, including Kalaeloa, consist of a geology known as karst, where limestone bedrock is dissolved by the carbonic acid found in rainwater. The acidity in the rainwater eventually erodes enough limestone to cause the surface layer to collapse, creating a combination of sinkholes, caves, and underground channels. Within this region, water seeps and flows through these underground tunnels, caves, and streams. The Ewa Karst, covering about 31 square miles, is the largest network of karsts on Oahu. Some sinkholes are no more than four to five feet deep, while some are as deep as ten feet and extend to the water table. |
| **Nearest Surface Water Body:** | The closest surface water body is the Pacific Ocean located approximately 500 ft south of the site. The highly permeable soil and rock allow storm water to percolate into the ground. Due to the flat topography, runoff collects in natural sinkholes for infiltration into the subsurface naturally; however, stormwater runoff at Barbers Point is controlled through diversion to sanitary sewers as well as to a series of approximately 250 dry wells, several of which are located on the subject property. |

| | |
|---|---|
| **Soil and Geologic Conditions:** | The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) lists native soil in the site vicinity as Coral Outcrop, (Soil Survey Staff, NRCS USDA 2022). The coral reefs formed in shallow ocean water during the time the ocean stand was at a higher level. This land type is used for military installations, quarries, and urban development.<br>Much of the fill at the site consists of concrete debris that has been broken and crushed to cobble and medium-to-coarse, gravel-sized fragments. Abundant sand and silt are intermixed with the concrete fragments. The granular and unconsolidated nature of the fill suggests high permeability. Average thickness of the fill is approximately 2 ft, with up to 5 ft of fill beneath the elevated debris piles (Naval Facilities Engineering Systems Command [NAVFAC] 2000).<br>Coralline limestone bedrock encountered from 2 to 5 ft below ground surface (bgs) is generally very pale brown in color, dry to slightly moist, and hard to very hard. These characteristics are consistent with geologic observations reported for several other remedial investigations (RIs) conducted throughout the base (NAVFAC 2000). |
| **Depth to Groundwater and Location Relative to the Underground Injection Control (UIC) Line:** | The groundwater table is anticipated to be approximately 20 ft bgs in the vicinity of the subject property. The subject site lies makai (ocean side) of the UIC line and groundwater beneath the site is not considered a potential source of drinking water. Production wells have not been developed, and there are no beneficial human uses of this aquifer. However, the caprock aquifer has received surface runoff via injection wells and drywells. |
| **Inferred Direction of Shallow Groundwater Flow:** | Groundwater flow is generally southward. |
| **Flood Zone Designation:** | As identified by the Federal Emergency Management Agency Federal Insurance Rate Map is located within "Zone D – Undetermined Flood Hazard." Zone D is the resulting designation on the flood map, to indicate that while flood risk remains, the probability of that flood risk has not been quantified. |
| **State Land Use Ordinance (LUO):** | The State LUO for the site is Urban (CCH 2022a). |
| **CCH Zoning LUO:** | The CCH zoning LUO designation for the subject and adjoining properties is F-1 Military and Federal Preservation. The purpose of the Military and Federal Preservation district is to identify areas in military or federal government use and to permit the full range of military or federal government activities. The site is not within the Special Management Area. |

## 2.2 Current Uses of the Adjacent Properties

Table 2-2 lists the parcel numbers and owner/occupant activities for the adjacent properties. Figure 2, included in Appendix A, shows the locations of adjacent properties.

## Table 2-2: Adjacent Properties

| Tax Map Key (TMK): (1) | Occupant | Owner/Occupant Activities |
|---|---|---|
| **Parcel adjacent to the northwest** | | |
| 9-1-013:032 | State of Hawaii Department of Transportation (HDOT) – Airports Division (AIR)<br>91-1175 Midway Road | Kalaeloa (John Rodgers Field) Airport<br>Former NAS Barbers Point |
| **Parcels adjacent to the east across Coral Sea Road** | | |
| 9-1-013:039 | U.S.A.<br>No associated address | Former Northern Trap and Skeet Range |
| 9-1-013:040 | Hawaiian Homelands<br>No associated address | State of Hawaii Department of Hawaiian Home Lands (DHHL) Renewable Energy Project location<br>Former Kalaeloa Raceway Park (KRP) |
| **Parcels adjacent to the south** | | |
| 9-1-013:069 | HCDA<br>91-1940 Coral Sea Road | Kalaeloa Heritage and Legacy Foundation Park (KHLFP) |
| 9-1-013:067 | HCDA<br>No associated address | |

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# Section 3 User Provided Information

A user questionnaire was completed by Mr. Steve Yuen, Director of Planning for the Honokea Kalaeloa, LLC, the user, as of the date of this report. A copy of the questionnaire is provided in Appendix B, and Mr. Yuen's responses are provided in the following sections.

## 3.1 Title Records

No title records were provided for the subject property.

## 3.2 Environmental Liens or Activity and Use Limitations

The user has no knowledge of environmental liens or AULs for the subject property with the exception of allowable use and development standards.

## 3.3 Specialized Knowledge

The user has no specialized knowledge of the subject or adjoining property.

## 3.4 Valuation Reduction for Environmental Issues

No valuation reduction evaluation for environmental issues has been conducted for the property.

## 3.5 Commonly Known or Reasonably Ascertainable Information

The property was used for general military use from the 1930's to 1998, no knowledge of specific uses.

## 3.6 Owner, Property Manager, and Occupant Information

The property owner contact is Lindsey Doi, Asset Manager for HCDA, 547 Queen Street, Honolulu, HI 96813.

## 3.7 Reason for Performing the Phase I ESA

The purpose of the Phase I ESA was to identify environmental issues (if any) as part of due diligence prior to the proposed lease and development as a recreational village.

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# Section 4 Records Review

## 4.1 Standard Environmental Record Sources

### 4.1.1 Environmental Data Resources, Inc. Report

To identify the presence of adverse environmental conditions at the subject property, several published sources of environmental records were reviewed. This section lists the records that were searched and the results of each search.

ASTM E1527-13 specifies search distances for specific environmental record sources Table 4-1, identifies the record sources searched for incidents or sites within the listed search distances of the subject property:

**Table 4-1: Environmental Record Sources Searched**

| Standard Environmental Record Sources | Search Distance (miles) | Number of Sites Identified |
|---|---|---|
| Federal National Priorities List (NPL) site list | 1.0 | 0 |
| Federal Delisted NPL site list | 0.5 | 0 |
| Federal SEMS list (formerly CERCLIS) | 0.5 | 0 |
| Federal SEMS-Archive (formerly CERCLIS No Further Remedial Action Planned) site list | 0.5 | 0 |
| Federal RCRA Corrective Action Sites under RCRA (CORRACTS) facilities list | 1.0 | 0 |
| Federal RCRA Non-CORRACTS Treatment, Storage, and Disposal (TSD) facilities list | 0.5 | 0 |
| Federal RCRA generators list (conditionally exempt small quantity generator [CESQG], small quantity generator [SQG], very small quantity generators [VESQGs], and large quantity generator[LQG]) | Subject and Adjacent properties | 0 |
| Federal IEC registries | Subject property only | 0 |
| Federal ERNS list | Subject property only | 0 |
| State list of SHWS identified for investigation or remediation (NPL or CERCLIS equivalents) | 1.0 | 7 Orphan Sites |
| State landfill and/or solid waste disposal site lists | 0.5 | 0 |
| State LUST list | 0.5 | 4 |
| State registered UST list | Subject and Adjacent properties | 4 |
| State IEC registries | Subject and Adjacent properties | 0 |
| State VRP sites | 0.5 | 0 |
| State Brownfield sites | 0.5 | 0 |
| Additional Sites Searched but not required by ASTM | | |
| Department of Defense (DoD) | 1.0 | 1 |

E2 used an online regulatory database search service, provided by EDR, to review the above listed Federal and State government databases within prescribed search distances. A copy of the EDR report is included in Appendix C.

In reviewing the environmental databases, it should be noted that the specific regulatory agencies do not instantaneously update such databases. Depending on the database and the agency, updates may be as infrequent as annually. The dates of the most recent updates for the searched environmental databases are listed in the EDR report in Appendix C.

The subject and adjacent properties were identified on several of the EDR searched databases and are summarized in Table 4-2.

E2 reviewed the sites identified by EDR within the search radii. The closest sites (those located within a 1/8-mile distance from the site) and/or those with environmental concerns located beyond 1/8-mile that may impact the property are listed in Table 4-2. Refer to the EDR report (Appendix C) for a full listing of the sites within the required search radii.

**Table 4-2: Sites Located within 1/8-mile of Subject Property and/or Sites with Environmental Concerns Beyond 1/8-mile of Subject Property**

| Facility/Address | Database/ List | Location Relative to the Subject Property | Environmental Concerns/Information |
|---|---|---|---|
| Former NAS Barbers Point<br>Barber's Point NAS, HI 96882 | DoD | Subject and Adjacent Property | NAS Barbers Point |
| Former NAS Barbers Point<br>Barber's Point NAS, HI 96882 | LUST | Subject Property | Tank BP29, Building (Bldg.) 174<br>Facility Identification (FID): 9-103822 / Release Identification (RID): 070004<br>Site Cleanup<br>Completed (NFA) as of 01/12/2007 |
| | UST | | Tank BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40, Bldg. 174<br>FID: 9-103822<br><u>Permanently Out of Use</u><br>BP29: 25,000-gallon Other UST 1945 to 1992<br>BP30: 25,000-gallon Other UST 1945 to 1992<br>BP31: 5,000-gallon Other UST 1945 to 1992<br>BP32: 5,000-gallon Other UST 1945 to 1992<br>BP33: 5,000-gallon Other UST 1945 to 1992<br>BP34: 5,000-gallon Other UST 1945 to 1992<br>BP35: 260-gallon Other UST 1945 to 1992<br>BP36: 260-gallon Other UST 1945 to 1992<br>BP37: 260-gallon Other UST 1945 to 1992<br>BP38: 300-gallon Other UST 1945 to 1992<br>BP39: 300-gallon Other UST 1945 to 1992<br>BP40: 300-gallon Other UST 1945 to 1992 |

| Facility/Address | Database/ List | Location Relative to the Subject Property | Environmental Concerns/Information |
|---|---|---|---|
| Former NAS Barbers Point<br>Barber's Point NAS, HI 96882 | LUST | Adjacent Property<br>¼ to ½ mile northeast<br>(higher elevation / upgradient) | Tank BP76, Bldg. 1264<br>FID: 9-102236 / RID: 960105<br>Site Cleanup Completed (NFA) as of 05/14/1998 |
| | UST | | Permanently Out of Use<br>BP76: 25,000-gallon Gasoline UST 1996 to Unknown |
| | LUST | Adjacent Property<br>¼ to ½ mile northwest<br>(higher elevation/ upgradient) | Tank BP93, Bldg. 1863<br>FID: 9-102915 / RID: 940115<br>Site Cleanup Completed (NFA) as of 04/01/2004 |
| | UST | | Permanently Out of Use<br>BP93:500-gallon Used Oil UST 1996 to Unknown |
| | LUST | | Tank BP94, Bldg. 1866<br>FID: 9-103175 / RID: 010058<br>Site Cleanup Completed (NFA) as of 10/15/2001 |
| | UST | | Permanently Out of Use<br>BP94: 500-gallon used oil UST 1996 to Unknown |

EDR identified nine unmappable sites. E2 identified 7 of the 9 unmappable sites as being associated with the former NAS Barbers Point and are potentially on the adjacent parcel; however, are all located more than 0.5 miles from the subject property due to the size of the adjacent airport property. Unmappable sites cannot be plotted due to inaccurate or missing information in the environmental database record provided by its applicable agency.

# 4.2 Other Information Sources

The following sections describe information obtained from other information sources.

## 4.2.1 Government Agencies File Review

E2 submitted requests to access public information for the subject and adjacent properties, as shown in Table 4-3.

**Table 4-3: Government Agencies Information Requests**

| Agency | Contact | Notes: |
|---|---|---|
| HDOH Clean Water Branch (CWB) | Mr. Gonzalo Garcia-Rubio, Environmental Health Specialist | *Subject Property*<br>No records for the subject property. |
| | | *Adjacent Property (Kalaeloa Airport, TMK: [1] 9-1-013:032):*<br>• Several HI0021876, Kalaeloa Airport, National Pollutant Discharge Elimination System (NPDES) Permits were issued for Kalaeloa Airport (HI0021876, HI15FE793, HIR10D271, HIR10F404, HIR10F711, HIR10G432, and HIS000432). Two NPDES permits are currently active, HIR10F711 and HIR10G432, for the Kalaeloa Parcels 1, 2, and 3 and the Jet Fuel Facility that will expire in 2024. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH HEER Office | Ms. Rosa Iu, Public Records Contact | *Subject and Adjacent Properties*<br>No records were found for the subject or adjacent properties. The HDOH HEER Office database indicates that the NAS Barbers Point Old Engine Test Cell Area is a DoD Base Realignment and Closure (BRAC) Site that was issued a NFA status with Institutional Controls. The NAS Barbers Point Regional Groundwater System is also a DoD BRAC Site that has remedy in place. |
| HDOH Solid and Hazardous Waste Branch (SHWB) | Ms. Amy Susana Liana, Office Assistant | *Subject Property*<br>No records were found for the subject property.<br>*Adjacent Properties*<br>Adjacent properties with information are listed below.<br>• ***Adjacent Property at TMK (1) 9-1-013: Parcel 040, Former KRP (2007 through 2014)***<br>**Complaint 09-129**: Stockpiling of an unknown amount of contaminated soil (suspected dioxin) from cane field, amount of soil is unknown. Soil was stockpiled without a stockpiling permit and was cited by the CCH. Soil disposed of at PVT Landfill Company, Ltd. (PVT), NFA issued.<br>**Complaint 12-058**: Racetrack being set up, hundreds of tires at the site. Site inspection revealed grading occurring, a pile containing approximately 200 to 500 tires, and a 5 to 10 cubic yard pile of material containing concrete rubble greater than eight inches in diameter at KRP. HDOH warning letter **S0626TN** was issued on June 28, 2012, for unpermitted Solid Waste Management Facility.<br>On October 16, 2012, HDOH issued a Notice of Violation and Order (NOVO) and Notice of Right to Request a Hearing (**HI009NS**) for the KRP facility. The letter noted that a previous Phase II SI Report indicated a small volume of petroleum-contaminated soil could remain at depths 22 ft below the subsurface at the site (located hydraulically crossgradient of the subject property), and isolated pockets of contamination could be present due to the karstic nature of the KRP site. If the soil is excavated or disturbed, precautions should be taken for worker safety.<br>**Complaint 14-035**: Stockpiling and crushing concrete without a permit. Kalakai Nui was hauling concrete to KRP from Ameron and Island Ready-Mix from January 2014 through March 2014 when a Cease-and-Desist order was issued. The larger sized material was being used at KRP and fines were being hauled to the permitted facility Kalakai Nui. There were no hazardous waste violations noted with respect to the material being crushed.<br>**Complaint 14-067 and HDOH Letter S0912TN**: About 10,000 cubic yards (500 truckloads) of coral rock was dug out and removed from the site to build track leaving a hole that was 5 to 16 ft deep. Material was brought in to fill the hole consisting of layers of waste (concrete, tires, lumber, concrete, drywall, and metal) covered with layers of dirt. A geophysical electromagnetic survey and test pit excavations were conducted in order to identify buried solid waste material and gather site characterization information on September 11, 2017. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH SHWB | Ms. Amy Susana Liana, Office Assistant | In January 2015, a Phase I ESA was conducted at the former KRP. No RECs were identified at the subject property. Several PECs requiring further investigation include the following:<br>o A leaking abandoned 100-gallon AST and assortment of drums and other containers observed in poor condition with evidence of a past release and a material threat of a release. Substances stored were not exactly verifiable, and it is possible that reportable quantities of hazardous substances or petroleum products may be abandoned and/or have been released.<br>o Significant amounts of unpermitted grading and stockpiling of fill material, as well as potential landfill and solid waste accumulation between 2008 and 2014. These unpermitted activities, attributed to KRP could have resulted in the release of hazardous substances or petroleum products in the subsurface or surface of the KRP site.<br>o The site reconnaissance and interview identified Bldg. 181 (also known as Bunker C) that was excavated and backfilled with a reported 10,000 cubic yards of material including various construction and demolition (C&D) debris.<br>o Solid waste piles consisting of various materials scattered throughout the former KRP was present in quantities and conditions determined to be an environmental concern and potential REC and; therefore, pose a hazardous and a material threat to human health and the environment.<br>In addition, the Phase I ESA noted that due to the proximity and concentration of firing ranges that were previously located along the southeast and adjacent to the east of the KRP (located to the east hydraulically crossgradient), unexploded ordnance remains an environmental concern for the undisturbed portion of the KRP site. The Phase I ESA was used to develop methodology for the 2015 Work Plan (WP) for the Phase II Site Investigation (SI) to characterize the site and to comply with.<br>NOVO issued on March 25, 2015 (**Docket No. 15-HW-EA-01**) for the storage of hazardous waste without a permit, failure to make a hazardous waste determination, failure to label containers of used oil, illegal disposal of petroleum fluids, failure to respond to petroleum releases. In September 2017, excavation and sampling of spill spot areas was completed and a response letter was completed on October 11, 2017.<br>On June 26, 2015, a WP was completed to comply with the HDOH NOVO (**Docket No. 15-HW-EA-01**).<br>**Incident Case No.: 20150722-1238**: Illegal dumping of a 300-gallon intermediate bulk container (IBC) (plastic tote) containing waste oil, was observed overturned adjacent to the east property boundary on July 21, 2015. A non-hazardous substance release response team was mobilized to remediate the spill and a Hawaii Hazardous Substance Written Follow-Up Notification Form was prepared. A NFA Status was issued for the site. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH SHWB | Ms. Amy Susana Liana, Office Assistant | On January 2018, a Phase II SI included validations of hazardous waste on the property and surface soil sampling for analysis of semi-volatile organic compounds (SVOCs) and total petroleum hydrocarbons (TPH) as gasoline range organics (GRO), TPH as diesel range organics (DRO), and oil range organics (ORO). The conditions for compliance were met for all NOVO **Docket No. 15-HW-EA-01** requirements except for the residual spill areas on the subject property.<br><br>On April 2018, DHHL submitted a Corrective Action Letter Report in Response to the NOVO **Docket No. 15-HW-EA-01**. DHHL has owned the property since 2002 and leased and operated by Save Oahu's Race Tracks, LLC (SORT) as the KRP from August 2007 until their eviction in August 2014. DHHL terminated the lease and evicted SORT based on non-compliance with environmental and land use regulatory requirements. A summary of site characterization finding and DHHL's recommended NFA is provided for HDOH review:<br><br>o Interim corrective actions were completed during the Phase I ESA and Phase II SI process. Solid and hazard waste material have been removed, so there is no longer a threat of release impacting human health and the environment.<br><br>o Six decision units (DUs) (A-F) were established and sampled from the surface of the entire Property. Laboratory results indicated that soil samples were below the Tier 1 HDOH Environmental Action Levels (EALs) for the Property's commercial/industrial use. In addition, only TPH-ORO exceeded the unrestricted/ residential HDOH EALs at DU-A, DU-B, and DU-F. Minor-stained area remediation, per agreed to methodology, was scheduled.<br><br>o Stained area identification and remedial action was performed at twelve locations, per modified WP approved by HDOH. None of the locations (surface or sub surface) had photoionization detector (PID) readings exceeding 100 parts per million (ppm). Visibly stained soil was removed. NFA is recommended.<br><br>o The EM61 geophysical survey identified no subsurface major metallic anomalies within the unburied waste area (i.e., USTs, 55-gallon drums, engine blocks, fuel tanks, etc.) that could be potentially detrimental to human health or the environment. Test pit excavation over minor anomalies was recommended, and approved by HDOH, prior to exploratory trenching through the area.<br><br>o Four DUs for test pit excavation piles were sampled at the buried waste area. Laboratory results showed all soil samples below Tier 1 HDOH EAL's, and toxicity equivalence (TEQ) Dioxin Management Category (DMC) A and B acceptable for the Property and protective of human health and the environment. Minimal amounts of C&D material (small tires, concrete blocks, rebar, debris) was excavated, with no significant concern. The C&D material was properly disposed of and manifest documented. However, exploratory trenching, with HDOH-approved modified WP, was recommended. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH SHWB | Ms. Amy Susana Liana, Office Assistant | o Six DU's were established for exploratory trenching through the buried waste area. Laboratory results showed all soil samples below Tier 1 HDOH EALs, and TEQ DMC A and B, acceptable for the KRP property and protective of human health and the environment. Minimal amounts of C&D material, similar to that found in the test pits, was excavated from four trenches throughout the area and four additional test pits. The C&D material was properly disposed of and manifest documented. NFA is recommended.<br><br>Violations listed in the NOVO have been addressed with the completion of various actions listed above. As such, the soil from the site does not pose a hazard and additional SI actions are not required.<br><br>• ***Adjacent Property, KHLFP, at 91-1940 Coral Sea Road, TMK (1) 9-1-013: Parcels 069 and 067***<br><br>**Complaint No. 13-115**: Dump site off coral sea road by racetrack. On May 15, 2017, the HCDA responded to HDOH stating these are the three stockpiles discussed above. On March 3, 2020, HCDA has removed all solid waste from the site.<br><br>On July 5, 2017, HDOH SHWB sent a letter to KHLFP (**S0703TN**) stating that is they deviate from the March 10, 2016, soil use report, that they hire an environmental consultant to review the December 30, 2015 soil stockpile sampling finding report and make recommendations.<br><br>On August 18, 2018, a WP was completed for soil stockpile characterization. HCDA leases the parcel to KHLFP. KHLFP has had right-of-entry from 2011 to 2015 and has been leasing the parcel since 2015. Prior to September 2013, KHLFP accepted the import of soil from multiple off-site sources located in Pearl City and Honolulu areas of Oahu. The soil was observed by HDOH SHWB to be mixed with large pieces of concrete, as well as small amounts of auto parts and other scrap metal. The fill was to be used on the KHLFP parcels (069 and 067).<br><br>On September 23, 2013, HCDA received a NOVO from the CCH **(2013/NOVO-09-085[SD])** for unauthorized stockpiling of approximately 2,259 cubic yards of soil without a permit at the site. On April 6, 2015, the HCDA received a letter from State Historic Preservation Division stating that "*…the violation resulted in no historic properties affected.*" On May 7, 2015, a stockpiling permit (**GP2015-05-0218**) was issued for the site. On May 20, 2015, the CCH NOVO file for the KHLFP site is closed. In November 2015 soil sampling of three stockpiles was conducted. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH SHWB | Ms. Amy Susana Liana, Office Assistant | The HDOH SHWB acknowledged receipt of the sampling report and stated that the report recommended following HEER Office guidance related to import/export of fill material. On April 25, 2016, the HDOH SHWB acknowledges the plan to reuse one stockpile (westernmost pile) on-site and dispose of the other two at PVT Landfill. In March 2018, KHLFP and HCDA decided to export the stockpile material (approximately 100 cubic yards) off-site for use as acceptable fill material rather than disposal at PVT Landfill. During the loading suspect building materials (gray transite pipe) were observed and analysis indicated the pipe is considered ACM. The export of soil was not conducted. On March 28, 2019, the HDOH SHWB confirms the acceptance of Soil Stockpile Characterization WP (**S0320TN**). The CCH issued a stockpiling permit (**GP2018-04-0174**) for the 6,251 cubic yards and is effective for the period of April 23, 2018, to April 23, 2019. A WP was prepared for additional sampling of the stockpiles.<br><br>On August 12, 2019 (**ENGR 240.0**) HCDA sent a letter to HDOH SHWB requesting an additional time to complete corrective actions.<br><br>In January 2020, a notice to proceed for disposal of stockpiled material was issued. All materials were taken to either PVT Landfill or West Oahu Aggregate Co., Inc. On March 3, 2020, the HDOH and HCDA conducted an inspection of the site and NFA is required.<br><br>In March 2020, HCDA completed a Final Report of Corrective Activities for the three stockpiles. |
| | | UST Section: The following records were found for the subject and adjacent properties:<br><br>• The NAS Barbers Point encompassed approximately 388 acres of land, the UST Section identified several UST FIDs associated with the facility. With the exception of FID 9-103822 on the subject property and 9-102236, 9-102915, and 9-103175 located within 0.5 miles on the adjacent property the rest of the facilities are assumed to be 0.5 to 2 miles away from the site.<br>o **9-101691 (USTs BP27, BP27A, and BP28) for one 5,000-gallon fuel oil UST, one 1,500-gallon blowdown/steam UST, and one 10,000-gallon reclaim oil UST at Bldg. 174 (Engine Test Cell) located on the subject property. RID 970012 Site Cleanup Completed (NFA) as of 01/22/2008.**<br>o **9-103822 (USTs BP29 through BP40) for multiple USTs at Bldg. 174 (Engine Test Cell) located on the subject property. RID 070004 Site Cleanup Completed (NFA) as of 01/12/2007.**<br>o **9-102236 (UST BP76) for one 25,000-gallon aviation gasoline (AVGAS) UST at Bldg. 110 (ETD) located within 0.5 miles of the subject property. RID 960105 Site Cleanup Completed (NFA) as of 03/24/2014.**<br>o **9-102915 (UST BP93) for one 500-gallon waste oil UST at Bldg. 1863 located within 0.5 miles of the subject property. RID 940115 Site Cleanup Completed (NFA) as of 04/01/2004.**<br>o **9-103175 (UST BP94) for one 500-gallon waste oil UST at Bldg. 1866. RID 010058 Site Cleanup Completed (NFA) as of 10/15/2001.** |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH SHWB | Ms. Amy Susana Liana, Office Assistant | o 9-100375 (UST BP2) for one 500-gallon diesel UST at Bldg. 34. RID 020040 Site Cleanup Completed (NFA) as of 09/05/2002.<br>o 9-100670 (USTs BP03 and BP04) for one 990-gallon diesel UST and one 600-gallon diesel UST at Bldg. 34 (Security). Heating oil tank for consumptive use not UST as defined in 40 CFR 280.12.<br>o 9-100897 (UST BP74) for one 25,000-gallon AVGAS USTs at Bldg. 1262 (intersection Bismarck Sea Road and Forarty Street) located approximately 0.75-mile northeast from the subject property.<br>o 9-101726 (USTs BP5 and BP6) for one 990-gallon diesel UST and one 600-gallon diesel UST at Bldg. 36 (BEQ). Heating oil tanks for consumptive use not USTs as defined in 40 CFR 280.12.<br>o 9-102003 (USTs BP72 and BP73) for two 50,000-gallon AVGAS USTs at Bldg. 1543 at the intersection of Norris and Sarles. RID 970001 Site Cleanup Completed (NFA) as of 01/16/2003.<br>o 9-102203 (USTs BP7 and BP8) for one 990-gallon diesel UST and one 600-gallon diesel UST at Bldg. 37 (BEQ). Heating oil tank for consumptive use not UST as defined in 40 CFR 280.12.<br>o 9-102226 (USTs BP9 and BP10) for one 660-gallon diesel UST and one 990-gallon diesel at Bldg. 39 (BEQ). Heating oil tank for consumptive use not UST as defined in 40 CFR 280.12.<br>o 9-102227 (USTs BP11 and BP12) for one 990-gallon diesel UST and one 600-gallon diesel UST at Bldg. 48 (BEQ). Heating oil tanks for consumptive use not USTs as defined in 40 CFR 280.12.<br>o 9-102228 (USTs BP13 and BP14) for one 990-gallon diesel UST and one 600-gallon diesel UST at Bldg. 46 (BEQ). Heating oil tanks for consumptive use not USTs as defined in 40 CFR 280.12.<br>o 9-102229 (USTs BP17 and BP19) for one 660-gallon diesel UST and one 990-gallon diesel UST at Bldg. 55 (RSD) located approximately 1.25-miles northwest the subject property. Heating oil tanks for consumptive use not USTs as defined in 40 CFR 280.12.<br>o 9-102230 (USTs BP19 and BP20) for one 660-gallon diesel UST and one 2,000-gallong diesel UST at Bldg. 77 (BOQ). Heating oil tank for consumptive use not UST as defined in 40 CFR 280.12.<br>o 9-102231 (UST BP21) for one 1,100-gallon diesel UST at Bldg. 91 (Power Plant).<br>o 9-102232 (UST BP75) for one 25,000-gallon AVGAS UST at Bldg. 110 (ETD).<br>o 9-102233 (USTs BP22 and BP23) for one 160-gallon diesel UST and one 375-gallon UST at Bldg. 110.<br>o 9-102234 (USTs BP24 and BP25) for two 2,500-gallon used oil USTs at Bldg. 117 (AIMD Hangar). RID 110006 Site Cleanup Completed (NFA) as of 03/24/2014.<br>o 9-102237 (USTs BP41 and BP42) for two 10,000-gallon AVGAS USTs at Bldg. 175 located on the subject property. No releases identified. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH SHWB | Ms. Amy Susana Liana, Office Assistant | o 9-102238 (USTs BP43 and BP44) for one 5,0000-gallon UST and one 6,000-gallon UST located approximately 0.7 miles northwest of the subject property.<br>o 9-102239 (UST BP48) for one 567,000-gallon other UST at Bldg. 706.<br>o 9-102240 (USTs BP49, BP50, BP51, BP51B, and BP52) for two 25,000-gallon waste fuel AST, two 25,000-gallon diesel USTs and one 25,0000-gallon water UST at Bldg. 91 (Power Plant) located approximately 0.6-mile from the subject property. RIDs 990132 Stie Cleanup Completed (NFA) as of 07/05/2000 and 920123 Site Cleanup Completed (NFA) as of 02/19/2013.<br>o 9-102241 (USTs BP70, BP71, BP77, and BP79) for one 2,500-gallon UST at Bldg. 1769, one 50,000-gallon UST, one 25,000-gallon UST at Bldg. 1089, and one 50,000-gallon UST at Bunker 1297 and 1298 located approximately 1-mile northeast of the subject property. RIDs 990132 Stie Cleanup Completed (NFA) as of 07/05/2000 and 920123 Site Cleanup Completed (NFA) as of 02/19/2013.<br>o 9-102242 (UST BP78) for one 50,000-gallon AVGAS UST at Revetment 1296.<br>o 9-102244 (UST BP53) for one 500-gallon diesel UST at Bldg. 947. RID 960092 Site Cleanup Completed (NFA) as of 10/16/2001.<br>o 9-102245 (USTs BP54 and BP55) for two 2,500-gallon diesel USTs at Bldg. 972. RID 030013 Site Cleanup Completed (NFA) as of 11/07/2003.<br>o 9-102246 (USTs 56) for one 1,000-gallon diesel UST at Bldg. 1667.<br>o 9-102247 (UST BP57) for one 1,000-gallon fuel oil UST at Bldg. 1681. RID 940116 Site Cleanup Completed (NFA) as of 02/05/2004.<br>o 9-102248 (UST BP58) for one 110-gallon waste oil UST at Bldg. 1744 (McDonalds & Subway).<br>o 9-102249 (UST BP59) for one 1,000-gallon diesel UST at Bldg. 1756 (BEQ). Heating oil tank for consumptive use not UST as defined in 40 CFR 280.12.<br>o 9-102250 (UST BP60) for one 550-gallon diesel UST at Bldg. 1762 (EM Club). Heating oil tank for consumptive use not UST as defined in 40 CFR 280.12.<br>o 9-102251 (UST BP61) for one 950-gallon diesel UST at Bldg. 1788 (BEQ). Heating oil tank for consumptive use not UST as defined in 40 CFR 280.12.<br>o 9-102252 (UST BP62). No further information provided, likely a heating oil tank.<br>o 9-102253 (UST BP63) at Bldg. 1833. No further information provided, likely a heating oil tank.<br>o 9-102254 (USTs BP64 and BP65) for one 4,300-gallon other UST and one 3,000-gallon other UST at Bldg. 1868. RID 990041 Site Cleanup Completed (NFA) as of 03/11/1999. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH SHWB | Ms. Amy Susana Liana, Office Assistant | o 9-102255 (UST BP80) for one 40,000-gallon unknown UST within the middle of the runway.<br>o 9-102256 (USTs BP66 and BP67) at Bldg. 1907. No further information provided; likely they are heating oil tanks.<br>o 9-102258 (USTs BP15 and BP16) for one 660-gallon diesel UST and one 990-gallon diesel UST at Bldg. 50 (PSD/Library) located approximately 0.7-mile northwest of the subject property. Heating oil tanks for consumptive use not USTs as defined in 40 CFR 280.12.<br>o 9-102500 (USTs BP84 and BP85) for two 1,000-gallon diesel USTs at Bldg. 1923 (HANG). DoN confirmed no USTs at the site only two ASTs.<br>o 9-102501 (UST BP86) for one 500-gallon waste oil UST at Bldg. 1874 (Flight Simulator).<br>o 9-102502 (UST BP87) for one 500-gallon UST at Empty Bldg.<br>o 9-102503 (UST BP88 and BP89) for two 1,000-gallon diesel USTs (Galley) located approximately 0.7 from the subject property.<br>o 9-102504 (USTs BP90 and BP91) at Bldg. 1765. No further information provided; likely they are heating oil tanks.<br>o 9-103034 (UST BP95) for one 1,000-gallon diesel UST at Bldg. 785. RID 950081 Site Cleanup Completed (NFA) as of 06/27/2011.<br>o 9-103191 (UST BP92) for one 250 used oil UST located at Bldg. 74. RID 030039 Site Cleanup Completed (NFA) as of 06/27/2011.<br>o 9-103337 (UST BP97) for unknown capacity and storage UST at Bldg. 1772. RID 990048 Site Cleanup Completed (NFA) as of 10/26/2001.<br>o 9-103338 (UST BP98) for unknown capacity and storage UST at Bldg. 1822.<br>o 9-200998 (USTs BP68, BP69, and BP70) for three 2,500-gallon diesel UST at Bldg. 1769. RID 920018 Site Cleanup Completed (NFA) as of 06/27/2011. |
| HDOH Indoor & Radiological Health Branch (IRHB) | Mr. Thomas Lileikis, Program Manager | No records or communications pertaining to noise, radiation, indoor air quality, mechanical ventilation, asbestos, or lead problems at the subject or adjacent property were found. |
| HDOH Safe Drinking Water Branch (SDWB) | Mr. Norris Uehara, Section Supervisor | No UIC records associated with the subject or adjacent properties were identified with the exception of the following:<br>***Subject Property (Old Engine Test Call Area):***<br>• UO-2127 and UO-1995C, DoN completed abandonment of a total of five wells; one registered UIC well 22 (F9-03) under UO-1996 and four unregistered UIC wells under application UO-2127 at the subject property. The UIC Application and File No. UO-2127 is officially closed as of January 8, 2002.<br>***Kalaeloa Airport (adjacent property at TMK: [1] 9-1-013:032)***:<br>• UO-2072 for active drainage wells (1-14, 17-32, 34-38, and 42-44) permit issued on February 14, 2021 and expires on February 13, 2026. |

| Agency | Contact | Notes: |
|---|---|---|
| HDOH WWB | Ms. Lori Morikami, Planner | The subject and adjoining properties have no individual wastewater system (i.e., cesspool, septic tank, and/or aerobic unit) some of the properties may be connected to the CCH sewer system. No past or pending environmental permits, licenses, citations, releases and/or other information pertaining to the subject and adjacent properties was found. |
| Department of Land and Natural Resources (DLNR) Commission on Water Resources Management (CWRM) | Mr. Jonas Burgon, Engineer Technician | There are no registered DLNR wells located within one mile of the subject property. |
| Honolulu Fire Department, Fire Prevention Bureau | Ms. Christine Cabalo, Information Specialist | No UST or AST records were found for the subject or adjoining properties with the exception of the following:<br>• Kalaeloa Airport, TMK: (1) 9-1-013:032, Application and Permit for AST, Permit No. FC11-267 for (1) 10,000-gallon AVGAS AST on 02/04/2011. |

# 4.3 Vapor Encroachment Screening

The EDR Radius Map provided an initial search of all standard government record databases and EDR historical records within the ASTM E1527-13 recommended radii. E2 reviewed those sites related to former dry cleaners, gas stations, and manufactured gas plants which met the criteria for vapor encroachment screening (VES) as provided by the ASTM E2600-10 *Standard Guide for Vapor Encroachment Screening of Property Involved in Real Estate Transactions* (ASTM 2010).

E2 reviewed the regulatory database search of those sites for recorded releases of contaminants of potential concern (COPCs) within the 1/3 mile and 1/10-mile approximate minimum distances defined in ASTM E2600-10 for vapor encroachment from COPC contaminated sites. This measurement is based upon the distance from the known or suspect contaminated property to the property boundary. E2's review of EDR's database search for potential vapor encroachment conditions (VECs) takes into account the following factors:

- The land use of the property;
- Type of COPC(s);
- Location of known or suspect contaminated property is within the area of concern;
- Characteristics of the soil;
- Depth to groundwater;
- Vapor conduits that may result in significant preferential pathways; and
- Cleanup status of contaminated property.

Potential VECs evaluated included all RECs, including HRECs and CRECs, with identified releases of petroleum products or other potentially volatile contaminants of concern.

As is provided by ASTM E2600-10, E2 also considered the predicted hydrogeological gradient around the property when determining the potential for VECs to impact the site.

E2 did not identify any VECs at the subject property as contamination from the LUSTs on the subject property has been excavated and the site has been issued a Site Cleanup Completed (NFA) by the regulatory agency. See the VES included in Appendix E.

# 4.4 Historical Use Information

## 4.4.1 Standard Historical Sources

Historical use information for the subject and adjacent properties was obtained by reviewing the historical sources listed in Table 4-4. A discussion of RECs and/or environmental concerns identified as a result of the review of standard historical sources is included in Section 7 of this report.

**Table 4-4: Historical Sources Reviewed**

| Source Type | Year Reviewed | Source | Environmental Concerns/Notes: |
|---|---|---|---|
| Environmental Lien and AUL Searches | 2011 | (EDR 2022a) | Quit Claim Deed from U.S. (grantor) to HCDA (grantee) on 10/06/2011 for Lot 13073-C Map 971 LCAPP 1069 19.361 AC, the property is part of the former NAS Barbers Point.<br>Grantee is notified that arsenic, atrazine, bis(2-ethylhexyl) phthalate, 4,4-DDE, 4,4-DDT, lead, lindane, and thallium were released in the Regional Groundwater System (Point of Interest [POI]-49, which lies beneath the property). The chemicals detected were at concentrations that did not require a response action<br>Grantee is notified that petroleum hydrocarbons are present in the groundwater beneath the subject property.<br>Grantee covenants and agrees for itself, its successors and assigns that any soil removed from the subject property during excavation into the water table shall be tested and disposed of in accordance with applicable laws and regulations.<br>Grantee covenants and agrees for itself, its successors and assigns, to apply with the HDOH within 90 days of the conveyance of the property for UIC permits for the existing dry wells located on the subject property.<br>In the event that any sediment is removed from the dry wells on the subject property, transferee shall dispose of the sediment off-site in an appropriate facility in accordance with applicable laws and regulations.<br>Releases to the subject property include:<br>• POI-42: Old Engine Test Cells Area, ACM, 0.454 asbestos (friable), released in 1981. A removal action was conducted at the Old Engine Test Cells Area from November 2000 to February 2001. Approximately 9,000 cubic yards of soil mixed with ACM was excavated from 5 acres of the site. The soil mixed with ACM was disposed of. No further response action is necessary and a NFA Record of Decision (ROD) was signed for the in 2001. |

| Source Type | Year Reviewed | Source | Environmental Concerns/Notes: |
|---|---|---|---|
| Environmental Lien and AUL Searches | 2011 | (EDR 2022a) | • POI-49: Regional Groundwater System, arsenic, atrazine, bis(2ethylhexyl)phthalate, 4-4'DDE, 4,4'-DDT, lead, lindane, and thallium were released in the Regional Groundwater System, which lies beneath the subject property. No action required. A NFA decision was concurred with by EPA and HDOH in 1999 ROD.<br>Additional covenants are listed in the report, included in Appendix C. |
| Property Tax Map Reports | No Coverage | (EDR 2021b) | No coverage for the subject property. |
| | 2021 | (CCH 2022b) | Parcel 68, 19.361 acres. |
| Aerial Photographs | 1951, 1976, 1977, 1985, 1992, 2000, 2001, 2004, 2006, 2008, 2011, 2013, 2014, 2017, 2018, 2019, and 2021 | (EDR 2021c) (Google Earth 2021) | 1951: Two Quonset huts one in the central portion of the subject property and one on the northwest corner, and a long building trending northwest to southeast located within the subject property. Subject and adjacent property appear to be in military use. |
| | | | 1976-1985: Quonset hut in the northwest corner of the property no longer visible. |
| | | | 1992: Long building no longer visible only the Quonset hut in the central portion of the building shown. |
| | | | 2000-2008: No visible permanent structures on the subject property. |
| Fire Insurance Maps | No Coverage | (EDR 2021d) | No coverage for the subject property. |
| USGS Topo Maps (Ewa and Barbers Point Quadrangles) | 1928, 1943, 1953, 1963, 1968, 1970, 1977, 1983, 1998, 2013, and 2017 | (EDR 2021e) (U.S. Army War Department 1943) | 1928: No significant features shown on the subject property. |
| | | | 1943: No significant features shown on the subject property. |
| | | | 1953: Two Quonset huts one in the centration portion of the subject property and one on the northwest corner, a small building on the southwest corner of the property, and a long building trending northwest to southeast located within the central portion of the site. |
| | | | 1963-1968: The Quonset hut and small building on the west side of the site no longer shown. |
| | | | 1970: No structures shown on the subject property. |
| | | | 1977-1983: Long building located within the subject property trending northwest to southeast and a Quonset hut on the northeast side of the long building. The subject property is now labeled as being within the NAS Barbers Point and the airport has been developed. |
| | | | 1998-2017: No significant feature shown on the subject property. |
| Street Directories | 1992, 1995, 2000, 2005, 2010, 2014, and 2017 (NAS Barbers Point and Coral Sea Street) | (EDR 2021f) | No significant information was found for the subject or adjacent properties. The full list of street directories is included in Appendix C. |

| Source Type | Year Reviewed | Source | Environmental Concerns/Notes: |
|---|---|---|---|
| Building Permit Records | 1961 through 2021 | (EDR 2021g) | No permit found for the subject or adjacent properties. |
| Historical Maps | 1876 | (Alexander, W. D. 1876) | Subject and Adjacent property shown as being located within Coral Plain. |
| | 1881 | (David Rumsey Map Collection Cartography Associates 1881) | |
| | 1899 | (David Rumsey Map Collection Cartography Associates 1899) | |
| | 1902 | (Donn, John M 1902) | |
| | 1942 | (John Bond, personnal communication, February 18, 2022) | • Subject property and adjacent properties (1) 9-1-013:067 and 069 (KHLFP) were labeled "Future Aircraft Dispersal Parking Area."<br>• Adjacent Property (1) 9-1-013:032 (Kalaeloa Airport) was occupied by runways.<br>• Adjacent property (1) 9-1-013:039 (former Northern Trap and Skeet Range) was occupied by Fuse & Detonator Magazines.<br>• Adjacent Property (1) 9-1-013:040 (KRP) was occupied by High Explosive Magazines. |
| | 1943 | (John Bond, personnal communication, February 18, 2022) | • Subject property was vacant.<br>• Adjacent Property (1) 9-1-013:032 (Kalaeloa Airport) was occupied by runways and structures labeled Unit No. 1 (A-K) located on the northeast portion of the runway close to the subject property.<br>• Adjacent property (1) 9-1-013:039 (former Northern Trap and Skeet Range) was occupied by structures S-170 and S-171.<br>• Adjacent Property (1) 9-1-013:040 (KRP) was occupied by 183 and High Explosive Magazines 176, 177, 178, 179, and 180.<br>• Adjacent Property (1) 9-1-013:067 (KHLFP) occupied by structures 200 (A-D), 201 (A-D), 202 (A-D).<br>• Adjacent Property (1) 9-1-013:069 (KHLFP) was occupied by Structure 183. |
| | 1949 | (John Bond, personnal communication, February 18, 2022) | • Subject property was vacant.<br>• Adjacent Property (1) 9-1-013:032 (Kalaeloa Airport) was occupied by runways and structures 555, 554, 553, 552, 551, 549, 548, 547, 546, and 545 located on the northeast portion of the runway close to the subject property.<br>• Adjacent property (1) 9-1-013:039 (former Northern Trap and Skeet Range) was occupied by Magazine Fuse & Detonator Magazines 170, 171, and 172. |

| Source Type | Year Reviewed | Source | Environmental Concerns/Notes: |
|---|---|---|---|
| | | | • Adjacent Property (1) 9-1-013:040 (KRP) was occupied by 183 and High Explosive Magazines 176, 177, 178, 179, 180, and 181.<br>• Adjacent Property (1) 9-1-013:067 (KHLFP) occupied by structures 556, 557, 558, and 559, 560, 561, 562, 563, 564, 545, 566, and 567.<br>• Adjacent Property (1) 9-1-013:069 (KHLFP) was occupied by Structure 183. |
| | 1951 | (John Bond, personnal communication, February 18, 2022) | • Subject property was occupied by Buildings 173, 174, 174A, and 174B and S-802.<br>• Adjacent Property (1) 9-1-013:032 (Kalaeloa Airport) was occupied by runways and structures S-548, S-549, S-550, S-551, S-552, S-553, and S-554 located on the northeast portion of the runway close to the subject property.<br>• Adjacent property (1) 9-1-013:039 (former Northern Trap and Skeet Range) was occupied by Skeet Range S-1535, and Magazine Fuse & Detonator Magazines S-170, S-171, and S-172.<br>• Adjacent Property (1) 9-1-013:040 (KRP) was occupied by High Explosive Magazines S-176, S-177, S-178, S-179, S-180, and S-181.<br>• Adjacent Property (1) 9-1-013:067 (KHLFP) occupied by Structures S-556, S-557, S-558, S-559, S-560, S-561, S-562, S-563, S-564, S-545, S-566, and S-567.<br>• Adjacent Property (1) 9-1-013:069 (KHLFP) was occupied by Structure S-183. |
| | 1999 | (Department of Accounting and General Services [DAGS] 2022) | Land Court Application 1069,<br>Owner: U.S., Transfer Certificate of Title 529,664<br>No easements shown on the subject property. |
| State of Hawaii GIS Maps | 1900, 1920, and 1937 | (HDOH Environmental Health 2018) | The subject property and adjoining properties are not mapped as being within the historic sugarcane lands. |

## 4.4.2 Previous Environmental Reports

E2 reviewed previous reports as listed in Table 4-5. A discussion of RECs and/or environmental concerns identified as a result of the review of the previous reports are included in Section 7 of this report.

## Table 4-5: Previous Reports Reviewed

| Year | Report Title | Environmental Concerns/Notes: |
|---|---|---|
| 1995 | *Comprehensive Long-Term Environmental Action Navy (CLEAN), Interim Abbreviated Remedial Investigation (RI) Report for BRAC-Related Activities, Old Engine Test Cells Area, NAS Barbers Point, Oahu, Hawaii* (NAVFAC 1995) | • The RI was conducted to assess whether ACM was present in soil at levels that posed a risk to human or ecological receptors under potential reuse scenarios.<br>• RI field work was conducted in June 1995. A total of 18 surface soil samples, 8 shallow subsurface soil samples, and six transite samples were collected from 16 sampling locations at the Old Engine Test Cells Area. All soil and transite samples were screened for asbestos using the semi-quantitative polarized light microscopy method. To estimate the mass per unit mass concentrations of asbestos fibers for the purpose of the human health risk assessment, selected soil and transite samples were also analyzed using the quantitative transmission electron microscopy method.<br>• Sampling results indicated that asbestos fibers were present in trace quantities (1 to 5 percent) in soil located in approximately 2 acres. Samples of broken, flat transite material found in surface soil were also analyzed. The broken transite pieces contained much higher concentrations of ACM. The asbestos fiber chrysotile was detected at concentrations of I0 to 35 percent. Although the transite material was found to be intact and the trace amounts of asbestos fibers did not pose significant health threat, removal of ACM was recommended. The transite currently shows evidence of erosion and weathering. Soil containing ACM was identified on approximately two acres. |
| 1996 | *CLEAN BRAC Cleanup Plan, NAS Barbers Point, Oahu, Hawaii* (NAVFAC 1996) | • POI-42 Old Engine Test Cells Area, Bldg. 174; asbestos present in soils. No significant human or ecological risks.<br>• Location of former USTs needs to be investigated. Former USTs at the subject property are listed in Table 4-6.<br>• One 2,000-gallon unknown AST was located on abandoned cradle; the tank has been removed. |
| 1997 | *Environmental Restoration Program Community Relations Plan (Final), NAS Barbers Point, Oahu, Hawaii* (DoN 1997) | • To prevent releases, the ACMs are scheduled to be removed from the surface and shallow subsurface in 2002 and 2003.<br>• The dry well network was evaluated, and the Navy determined that sediments in the dry wells are not affecting overall groundwater quality and humans will not come into direct contact with the sediments.<br>• In 1997, the Navy conducted a maintenance activity to remove solid waste during which sections of old insulated piping that may have contained asbestos were removed. In the process, topsoil was bulldozed, and transite fragments were crushed and spread further across the site. |

| Year | Report Title | Environmental Concerns/Notes: |
|---|---|---|
| 1999 | *CLEAN, RI Report for BRAC – Related Activities, Old Engine Test Cells Area, NAS Barbers Point, Oahu, Hawaii* (NAVFAC 1999) | • Site reconnaissance activities were conducted to visually assess whether potential ACM was present outside of the approximately 2-acre area in which ACM was reported in the RI. Site visits were made in January and February 1999. No ACM was observed on the ground surface in the area northeast of the site boundaries established in the RI. However, ACM was present on the ground surface along the length of former Bldgs. 174-A and 174-B and to the south and west outside of the approximately 2-acre area where ACM was reported in the RI. The boundaries of the areas disturbed by former solid waste removal activities were also mapped to further define the extent of potential ACM contamination. Results indicated that the area of asbestos contamination was greater than anticipated based on the results of the RI.<br>• It was also reported that the concrete slab foundations of former Bldgs. 174-A and 174-B remain at the site. Most of these foundations are flush with the surrounding ground surface; however, three concrete slabs are elevated above the surrounding ground surface. These elevated slabs are about 10 ft wide by 13 ft long by 1-ft thick (above grade).<br>• During the removal of the USTs and piping in 1992, a 400-gallon spill of JP-4 Jet Fuel occurred. The contaminated soil was removed in 1994. When the USTs were being removed, the contractor (Martech U.S.A.) reportedly exposed buried asbestos.<br>• During the period of December 1994 to March 1995, a contractor (OHM Remediation Services Corporation) removed petroleum-contaminated soils from several of the UST excavations and. backfilled the excavations. In October 1995, the area was investigated to determine the horizontal and vertical extent of petroleum contamination in soil and groundwater. The detected levels of petroleum-related compounds in soil and groundwater samples were below regulatory thresholds, and NFA is planned. Use of the engine test cells was discontinued in the 1980s, and the buildings, USTs, and associated piping were removed between 1992 and 1996. |
| 2000 | *Action Memorandum for Removal Action at the Old Engine Test Cells Area, Former NAS, Barbers Point, Oahu, Hawaii* (NAVFAC 2000) | • The Old Engine Test Cells Area covers approximately 6 acres. Approximately 2 acres were known to contain ACM based on RI sampling results. The remaining approximately 4 acres were visually assessed in accordance with the site assessment plan prepared for the site. The criterion developed for the assessment was "no visual observation of ACM."<br>• The site was divided into 65 approximately 50-ft by 50-ft sections. Some of the grid sections were irregular in shape and were larger or smaller than the average 2,500 square ft area. Each section was visually assessed for surface contamination by an Asbestos Hazard Emergency Response Act (AHERA)-certified Inspector and Certified Industrial Hygienist. Five-ft trenches were cut into each grid to inspect for subsurface ACM. A sample of soil was taken from the trench and inspected for ACM by hand screening. |

| Year | Report Title | Environmental Concerns/Notes: |
|---|---|---|
| | | • Broken non-friable asbestos transite was the only ACM observed during the site asbestos assessment (old piping was removed in 1997). Surface contamination ranged from none to more than 20 pieces of transite in a grid section. No ACM was observed on the surface or the subsurface in 24 sections (approximately I-acre) in the southwest portion of the site. Surface ACM only was observed in the UST excavation area and the lower eastern portion of the site. Both surface and subsurface ACM were present in 24 out of 65 sections. The major concern is the debris piles associated with these areas. There are noticeable debris piles under the larger trees, and they contain construction debris and ACM. The largest debris pile covers over 11,250 square ft of the site and is over 4 ft deep in areas. The larger debris piles contain both ACM and large construction waste, such as corrugated sheet metal, large metal sinks, large metal grates, scrap metal and rebar, and small to very large concrete rubble. The 4-acre site assessment report concluded that 41 of the 65 grid sections, or approximately 2.5 to 3 of the 4 acres, contained surface or buried ACM. The site assessment concluded that ACM has been spread across the majority of the site, mixed with surface soil cover, and concentrated in the debris piles.<br>• In a large, central area of the site, a 6- to 12-inch lift of sand fill and a plastic liner were placed as part of the earlier UST removals. The purpose of the liner and fill was to isolate workers from soil that potentially contained ACM. |
| 2001 | *ROD for the Old Engine Test Cells Area, Former NAS Barbers Point, Oahu, Hawaii* (EPA 2001) | • The EPA agrees with the NFA remedy selected in the ROD. Asbestos-containing tiles from a demolished building had been found on the surface soil at the subject property. The ROD describes the previous removal of approximately 9,000 cubic yards of soil and debris to remove the potential threat of future human exposure to asbestos. |
| 2009 | *Final Project WP, Abandonment of Eight Groundwater Monitoring Wells at Former UST NAS Barbers Point 29 through 40 Site, Former NAS Barbers Point* (NAVFAC 2009) | • The twelve USTs ranging in capacity from 260 to 25,000 gallons were removed between 1992 and 1996. A petroleum release was discovered at the excavation during the UST removal. Monitoring wells were installed to assess groundwater quality following the removal of the former USTs.<br>• In December 1994, a re-excavation at the location of USTs BP29 through BP40 was performed based on the results from the initial site assessment conducted in March 1994. A 54 ft by 56 ft by 22 ft deep pit was excavated. Approximately 4,000 cubic yards of petroleum-impacted soil were removed from the site and the excavation was backfilled with clean material. During the excavation, two groundwater monitoring wells were installed in the center (well MW-1) and in a location topographically downgradient (well MW-2) of the excavation. Analytical results of the soil sample collected from MW-1 indicated TPH-GRO was detected at a concentration of 3,100 milligrams per kilogram (mg/kg) higher than the HDOH Tier 1 EALs.<br>• Following the rec-excavation in December 1994, a Phase II SI was performed to evaluate the remedial activities for the subject site in October 1995. Twelve soil borings were advanced at a distance of 200 to 600 ft from the former UST excavation and six of the soil borings were converted to groundwater monitoring wells. Petroleum COPCs were not detected at concentrations higher than HDOH Tier 1 EALs in the soil and groundwater samples collected from the soil borings and monitoring wells. The results of the Phase II SI indicate that the petroleum contamination is limited to the UST excavation. |

| Year | Report Title | Environmental Concerns/Notes: |
|---|---|---|
| | | • The third round of groundwater sampling was conducted in May 2000. Groundwater samples were collected and analyzed from four of eight monitoring wells (others were dry and could not be sampled). Petroleum contaminants of concern from the collected groundwater samples were not detected at concentrations higher than HDOH Tier 1 EALs.<br>• Based on the information submitted, HDOH concludes that NFA is necessary for the subject release (**HDOH Letter U1256SF**). As noted in the Phase II SI report, a small volume of petroleum-contaminated soil could remain at depths 22 ft below the subsurface at the site, and isolated pockets of contamination could be present due to the karstic nature of the site. If the soil is excavated or disturbed, precautions should be taken for worker safety. Excavated soil may be reused on-site provided that any nuisance concerns are addressed and the soil is not moved to an ecologically-sensitive area of the property such as wetlands, marshes, surface water bodies, etc. |
| 2011 | *Final Environmental Assessment, Disposal and Reuse of Surplus Property at NAS Barbers Point, Oahu, Hawaii* (DoN 2011) | • Based on the 1997 NAS Barbers Point Community Redevelopment Plan (*herein referred to as the 1997 Reuse Plan*), with its subsequent amendments in 1998 and 2000, the Navy initiated the National Environmental Policy Act process and prepared and Final Environmental Impact Statement (FEIS) for the disposal and reuse of the former NAS Barbers Point surplus property. The FEIS was completed in February 1999 and a ROD was published in the Federal Register on June 30, 1999 (Volume 64, Number 125). The station was closed on July 2, 1999.<br>• The Kalaeloa Community Development District parcels discussed in this document do not include the subject property (OS-5); however, includes the Adjacent Lot 13058-D (Northern Trap and Skeet Range) parcel (TMK: [1] 9-1-013:039). Portions of Lot 13058-D is proposed by the United States Fish and Wildlife Service to be designated as critical habitat. No building or other historic properties are located on Lot 13058-D.<br>• The Lot 13058-D parcel contains an area that was formerly used as a trap and skeet range. The lot is mainly open space but does contain seven structures associated with the range including: (1) Bldgs. 171, 172 and 173, Fuse-Detonator Magazines constructed in 1943; (2) Bldg. 1493, Disaster Control Storage constructed in 1944; (3) Bldg. 1527, Miscellaneous Storage constructed in 1944; (4) Bldg. 1528, Fuse-Detonator Magazine constructed in 1944; and (5) Bldg. 1529, believed to be an Ammunition Magazine constructed in 1944. The lot is overgrown with grasses and shrubs with a few trees.<br>• The Finding of Suitability to Transfer (FOST) for the Northern Trap and Skeet Range lot identified the presence of hazardous substances (former POI-44 and former POI-45); LBP; and ordnance, munitions, and explosives of concern (former POI-44). The Northern Trap and Skeet Range includes the majority of former POI-44 (Northern Trap and Skeet Range), a portion of former POI-45 (Coral Pit 3), and a portion of former POI-49 (Regional Groundwater System). Investigation of these sites determined that NFA is warranted at former POI-45 or former POI-44. Former POI-44 was remediated in accordance with CERCLA and a NFA decision document was prepared for the site. Notifications of the presence of LBP in Bldgs. 172, 1528 and 1529 and the presence of the Northern Trap and Skeet Range are included in the FOST. |

| Year | Report Title | Environmental Concerns/Notes: |
|---|---|---|
| 2014 | *Final Environmental Assessment for Kalaeloa Heritage Park, Ewa, Oahu* (Townscape, Inc. 2014) | • The Final Environmental Assessment was completed for the adjacent properties located at TMK: (1) 9-1-013: Parcels 067 and 069 for the creation of KHLFP.<br>• In 2009, federal legislation allowed the U.S. Navy to convey the land to the HCDA. |
| 2021 | *Draft Environmental Assessment for the Proposed Barbers Point Solar Project, Department of Hawaiian Home Lands Property, Ewa District, Oahu, Hawaii* (Tetra Tech Inc. 2021) | • The Draft Environmental Assessment was completed for the adjacent property located at TMK: (1) 9-1-013: Parcel 040 for the construction and operation of solar project.<br>• Parcels transferred from the U.S. Navy to DHHL in 1996 as part of a settlement agreement under the Hawaiian Home Lands Recovery Act. |

The previous USTs located at the site according to the 1995 Barbers Point Staff Civil Engineering Environmental Office Underground Storage Tank Database (NAVFAC 1996) and the HDOH UST Database are listed in Table 4-6.

**Table 4-6: Previous Underground Storage Tanks**

| Site | Tank No. | Year Installed | Capacity (gallons)/ Material | Substance Stored | Status |
|---|---|---|---|---|---|
| POI-42 Bldg. 174 | BP27 | 1945 | 5,000 Steel | Fuel Oil | Abandoned |
| | BP27A | 1945 | 1,500 Concrete | Waste Oil | Not in Service |
| | BP28 | 1945 | 10,000 Concrete | Waste Oil | Abandoned |
| | BP29 | 1945 | 25,000 Unknown | AVGAS | Removed* |
| | BP30 | 1945 | 25,000 Unknown | AVGAS | Removed |
| | BP31 | 1945 | 5,000 Unknown | AVGAS | Removed* |
| | BP32 | 1945 | 5,000 Unknown | AVGAS | Removed |
| | BP33 | 1945 | 5,000 Unknown | AVGAS | Removed |
| | BP34 | 1945 | 5,000 Unknown | AVGAS | Removed |
| | BP35 | 1945 | 260 Unknown | AVGAS | Removed* |
| | BP36 | 1945 | 260 Unknown | AVGAS | Removed* |
| | BP37 | 1945 | 260 Unknown | AVGAS | Removed* |
| | BP38 | 1945 | 300 Unknown | AVGAS | Removed |
| | BP39 | 1945 | 300 Unknown | AVGAS | Removed |
| | BP40 | 1945 | 300 Unknown | AVGAS | Removed |

Note: *Potential contamination/leak discovered during tank excavation or tank tightness testing.

## 4.4.3 Summary of Historical Land Use

Military activity in the Barbers Point area reportedly began in the 1930s with the establishment of an emergency landing field, when the Navy leased a parcel of land from the Estate of James Campbell. This emergency airfield, known as Ewa Marine Corps Air Station (EMCAS) Ewa, was completed in 1942, but was disestablished in the late 1940s and was absorbed by NAS Barbers Point. Construction of the currently utilized Barbers Point aifield was completed in 1943. Many of the properties surrounding the airfield

including the subject property were relatively undisturbed because the area was used as a military buffer zone.

The Old Engine Test Cells Area was used to support the base mission. The facility test cells were oriented towards the primary prevailing trade winds, like runway 22. The former engine test cells were located west of the intersection of Coral Sea Road and Long Island Street. Bldgs. 173 (test cells engine), 174 (engine preservation Bldg.), 174-A (Compressor building), and 174-B (test cell engine) were located on the subject property. The Navy was still using radial engines during the Korean War (1950's) but phasing in jets which had different engine maintenance requirements (John Bond, personnal communication, February 18, 2022). By the mid-1970's Cold War era the facility falls into disuse (John Bond, personnal communication, February 18, 2022). A photo from mid-1980's shows it still there but sometime near the 1999 Base Closure Bldgs. 173 and 174 are demolished (John Bond, personnal communication, February 18, 2022). Use of the engine test cells was discontinued in the 1980s, and the buildings, USTs, and associated piping were removed or discarded around the 6-acre site. The site has been vacant and inactive since the engine test cells operation was discontinued (NAVFAC 2000).

Former NAS Barbers Point was designated for closure by the BRAC Commission of 1993 (BRAC III) and officially closed on July 2, 1999 (NAVFAC 2000). Decisions regarding the environmental cleanup of a closing base are made by the BRAC Cleanup Team (BCT). The BCT for Former NAS Barbers Point includes representatives from the HDOH, Region IX of the EPA, and the Navy (NAVFAC 2000). Members of the local community provide input on the cleanup process through the Restoration Advisory Board (RAB) (NAVFAC 2000).

# Section 5 Visual Site Inspection

## 5.1 Methodology and Limitations

The VSI was conducted by Ms. Arlene Campbell and Mr. John Ellis with E2 on February 3, 2022, and included a brief survey of visible portions of the adjacent parcels from public access areas. Site photographs are included in Appendix A.

## 5.2 General Observations on the Subject Property

At the time of the VSI, moderate to heavy vegetation covered greater than 90 percent of the subject property while asphalt paved roadways and concrete foundations associated with former NAS Barbers Point engine test cells were trending northwest to southeast across the center of the property (Photo Plates 1-10). Multiple concrete, metal, and rebar stockpiles are located within the southwest portion of the subject property (Photo Plates 20-33). Sinkholes of various sizes, some of which were concrete filled, were observed throughout the subject property (Photo Plates 11-12). Coral bedrock was observed in areas clear of vegetation.

The subject property is bounded by Kalaeloa Airport to the northwest, Coral Sea Road to the east, Long Island Street and KHLFP to the south, and Prince Williams Road to the southwest. Access to the site is through Coral Sea Road. Utility connections were not observed.

Table 5-1, below summarizes the VSI observations made during the VSI.

**Table 5-1: Summary of Visual Site Inspection Observations**

| Feature | Observed? | | Comment, Location and/or Description |
|---|---|---|---|
| | Yes | No | |
| General Description of Current Structures (age, stories, ancillary structures [if any]) | ✓ | | • Two asphalt paved roadways crisscross through the center of the site (Photo Plate 4). A chain-link fence stands to the north of their intersection (Photo Plate 13).<br>• Multiple bare wooden utility poles extend from the center of the subject property to the south boundary (Photo Plate 14).<br>• Unlabeled underground utility vaults and utility pipes were observed within the center portion of the subject property (Photo Plates 15-17). |
| Structures (evidence of former) | ✓ | | • Concrete foundations associated with former engine test cells and supporting facilities extend northwest across the center of the subject property from the southeast corner (Photo Plates 18-19).<br>• Concrete, metal, and rebar stockpiles are located within the southwest portion of the subject property (Photo Plates 20-33).<br>• A concrete tank cradle is located in the center portion of the subject property (Photo Plates 34-35).<br>• A bollard possibly in the location of a former fire hydrant was observed. |
| Source of Potable Water | | ✓ | Not observed. |
| Sewage Disposal System | | ✓ | Not observed. |
| Power to Subject Property | | ✓ | Not observed. |

| Feature | Observed? | | Comment, Location and/or Description |
|---|---|---|---|
| | Yes | No | |
| **Interior and Exterior Observations** | | | |
| Hazardous Substances and Petroleum Products in Connection with Identified Uses | | ✓ | |
| Hazardous Substances and Petroleum Products (Not Necessarily in Connection with Identified Uses) | | ✓ | |
| Evidence of ASTs | ✓ | | • A concrete tank cradle is located in the center portion of the subject property (Photo Plates 34-35). |
| Evidence of USTs (e.g.., fill pipes, vent pipes, concrete patching) | ✓ | | • Concrete patching within a concrete foundation is located in the center portion of the subject property (Photo Plate 36). |
| Drums, Totes, and/or Unidentified Substances Containers | | ✓ | |
| Odors (strong, pungent, or noxious odors) | | ✓ | |
| Pools of Liquid (standing water) | | ✓ | |
| Evidence of polychlorinated biphenyls (PCBs) or likely containing PCBs (e.g., pole-mounted and pad-mounted transformer, electric or hydraulic equipment, fluorescent light ballasts, capacitors) | | ✓ | |
| Heating/Cooling (including fuel source) | | ✓ | |
| Evidence of Leaks, Spills, or Releases | | ✓ | |
| Drains and Sumps | ✓ | | • A concrete filled drywell is located in the southeast portion of the subject property (Photo Plate 11).<br>• A concrete filled drywell and associated drainage piping are located in the southwest portion of the subject property (Photo Plate 12).<br>• A floor drain was observed in a concrete foundation within the center portion of the subject property (Photo Plate 39). |
| Unknown feature(s) | ✓ | | • Evidence of an automobile fire is located in the center portion of the subject property (Photo Plate 40). Although the chassis has been removed, melted aluminum, melted rubber, automobile parts, and broken glass remain (Photo Plate 41). |
| **Exterior Observations** | | | |
| Pits, Ponds, or Lagoons | | ✓ | |
| Stained Soil or Pavement | | ✓ | |
| Stressed Vegetation (from something other than insufficient water) | | ✓ | |
| Solid Waste (non-natural fill, trash, construction debris, demolition debris, or other solid waste disposal) | ✓ | | • Multiple green waste stockpiles are located within the subject property along the southern boundary (Photo Plates 42-43).<br>• Multiple small stockpiles of solid waste including wood, metal, plastic, insulation, and netting are located within the subject property along the southern boundary (Photo Plates 44-45).<br>• A specialized railcar chassis is located along the west boundary of the subject property (Photo Plate 46).<br>• A foam mattress and other small solid municipal wastes are located in the center portion of the subject property (Photo Plate 47). |

| Feature | Observed? | | Comment, Location and/or Description |
|---|---|---|---|
| | Yes | No | |
| Waste or Wastewater Discharges (wastewater or other liquid [including storm water] or any discharge into a drain, ditch, underground injection system, or stream on or adjacent to the property) | | ✓ | |
| Wells (including dry wells, irrigation wells, injection wells, abandoned wells, or other wells) | | ✓ | |
| Septic System (on-site septic systems or cesspools) | ✓ | | • A marked buried sewer force main runs along the east boundary of the subject property (Photo Plate 48). |

## 5.3 Adjacent Property Observations

The adjacent properties were inspected for PECs (e.g., conditions observed near or adjacent to the subject property that could potentially affect the subject property). Only the following was identified:

- Approximately (30) 275-gallon caged IBC totes of unknown contents associated with KHLFP are located on or immediately adjacent to the southern boundary of the subject property (Photo Plates 37-38). They were observed in good condition and no leaks or spills were observed.

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# Section 6 Interviews

## 6.1 Interviewed Parties

E2 interviewed the following people listed in Table 6-1 regarding the past and current use and activities on the subject and adjacent properties.

**Table 6-1: Interviewed Parties**

| Name | Affiliation | Role |
|---|---|---|
| Mr. Steve Yuen | Director of Planning for the Honokea Kalaeloa, LLC | User Representative |
| Ms. Linsey Doi | Asset Manager for HCDA | Owner Representative |
| Mr. John Bond | Kanehili Cultural Hui | Historian |
| Mr. Joseph T. Kostiha | Acting Assistant Chief for the Fire Operations Division at the Honolulu Fire Department (HFD)<br>Information Provided:<br>• The property was used for chainsaw training that lasted approximately 5 days.<br>• No more than 10 gallons of unleaded fuel was used on-site for more than 9 hours a day for a 2-week training period.<br>• The unleaded fuel was mixed with 2-cycle oil to fuel seven chainsaws.<br>• All fueling of chainsaws were performed over a 4 ft by 8 ft sheet of plywood.<br>• No fuel spills were reported.<br>• The lesson plan was developed through consultation.<br>• Activities on-site included equipment maintenance, tree-felling assessment, felling trees, and bucking trees.<br>• A port-a-potty was delivered to the site for the duration of the training. No wastewater spill was reported.<br>• Use of the site for auto extrication and utility terrain vehicle training was discussed; however, the HFD was unable to develop a training plan nor deliver training.<br>• HFD does not use PFAS (per- and polyfluoroalkyl substances) based firefighting foam.<br>• No fire stream training was conducted during the training. | Right-of Entry Holder from September 30, 2015 through August 31, 2017 for firefighting training exercises |
| Ms. Barbara Natale | Information Provided:<br>• Confirmed with KHLFP that the IBC totes were only used for the storage of water. | User Representative |
| Mr. Gonzalo Garcia-Rubio | Environmental Health Specialist for the HDOH CWB | Local Government Agency File Review |

| Name | Affiliation | Role |
|---|---|---|
| Mr. Steve Yuen | Director of Planning for the Honokea Kalaeloa, LLC | User Representative |
| Ms. Linsey Doi | Asset Manager for HCDA | Owner Representative |
| Mr. John Bond | Kanehili Cultural Hui | Historian |
| Ms. Rosa Iu | Public Records Contact for the HDOH HEER Office | Local Government Agency File Review |
| Ms. Amy Susana Liana | Office Assistant for the HDOH SHWB | Local Government Agency File Review |
| Mr. Thomas Lileikis | Program Manager for the HDOH IRHB | Local Government Agency File Review |
| Mr. Norris Uehara | Section Supervisor for the HDOH SDWB | Local Government Agency File Review |
| Ms. Lori Morikami | Planner for the Planning & Design Section for the HDOH WWB | Local Government Agency File Review |
| Mr. Jonas Burgon | Engineer Technician for the DLNR CWRM | Local Government Agency File Review |
| Ms. Christine Cabalo | Information Specialist for the Honolulu Fire Department | Local Government Agency File Review |

## 6.2 Interview Findings

Additional information obtained during interviews is included in the pertinent sections of this report.

# Section 7 Findings and Opinions

A summary of site conditions as identified from the records review and the VSI are outlined in Table 7-1.

**Table 7-1: Findings and Opinions**

| Findings | *Determination* | | | | |
|---|---|---|---|---|---|
| | REC | CREC | HREC | PEC | *de minimums* |
| The subject and adjoining properties were formerly part of the NAS Barbers Point a DoD site. Environmental cleanup of the sites was directed by the BCT. The site consisted of 388 acres of land. It is possible military training and storage of potentially hazardous materials and petroleum products were used or stored at the site during World War II and up until its closure on July 2, 1999 (including but not limited to at least 98 USTs). The exact nature of the training and storage is unknown. This is considered a HREC as the site has been cleaned up to regulatory agency in this case the BCT consisting of the HDOH, EPA, and the Navy. Although this site has been closed, regulatory closure does not preclude that a site may be reopened in the future should new data become available.<br>• POI-49: Regional Groundwater System (1940s through 1990s). Arsenic, atrazine, bis(2ethylhexyl)phthalate, 4-4'DDE, 4,4'-DDT, lead, lindane, and thallium were released in the Regional Groundwater System, which lies beneath the subject and adjacent properties. No action required. A NFA decision was concurred with by EPA and HDOH in 1999 ROD. | | ✓ | | | |
| EDR identified nine unmappable sites. E2 identified 7 of the 9 unmappable sites as being associated with the former NAS Barbers Point and are potentially on the adjacent parcel; however, are all located more than 0.5 miles from the subject property due to the size of the adjacent airport property. Unmappable sites cannot be plotted due to inaccurate or missing information in the environmental database record provided by its applicable agency. | | | | | ✓ |
| **Subject Property** | | | | | |
| ***Former Military Use***:<br>Known operations, hazardous materials storage, and releases that occurred during military occupation of the subject property included the following:<br>• The subject property was used as an aviation engine test cell site from the 1940's to the 1980s. The main structures located on the subject property included Bldgs. 173 (test cells engine), 174 (engine preservation building), 174-A (Compressor building), and 174-B (test cell engine).<br>• POI-42: Old Engine Test Cells Area (1940s through 1980s). ACM, 0.454 asbestos (friable), released in 1981. A removal action was conducted at the Old Engine Test Cells Area from November 2000 to February 2001. Approximately 9,000 cubic yards of soil mixed with ACM was excavated from 5 acres of the site. The soil mixed with ACM was disposed of in the CU. No further response action is necessary and a NFA ROD was signed for the in 2001.<br>• POI-47: Dry Well Network (1943 through 1994). A RI was conducted, and results of the investigation indicated that sediments in several dry wells contained hazardous substances; however, the impacted sediments posed no threat to human health or the environment because the sediments are not affecting regional groundwater quality and there is no potential for direct contact with the sediments in the dry well. A no action ROD was signed in 1999. Five dry wells that were part of this system have been closed at the site. | | ✓ | | | |

| Findings | Determination | | | | |
|---|---|---|---|---|---|
| | REC | CREC | HREC | PEC | *de minimums* |
| • A 2,000-gallon AST within unknown contents was formerly located on the AST cradle located in the center portion of the subject property.<br>• The subject property had several USTs, Tanks at Bldg. 174 were installed in 1945, all the tanks were removed from service in 1992. The tanks ranged in size from 260 to 10,000 gallons with contents of fuel oil, waste oil, and/or AVGAS. The USTs were assigned FIDs 9-101691 and 9-103822. During closure investigations BP29, BP31, BP32, BP36, BP37, and BP42 were noted as having potential contamination/leak discovered during tank excavation or tank tightness testing. Two releases were reported to HDOH with regards to the USTs at the site, RID 970012 (FID 9-101691) and 070004 (FID 9-103822), that were issued a Site Cleanup Completed (NFA) status by HDOH. During the UST and piping removals contaminated soil was removed from the site, including the soil impacted by the 400-gallon JP-4 jet fuel release. Three rounds of groundwater monitoring were conducted at the subject property.<br>• ACM was discovered in soil at the site during UST removal operations. Further evaluation resulted in the removal of 9,000 cubic yards of soil and debris to remove the potential threat of future human exposure to asbestos. In addition, a plastic liner was placed as part of the earlier UST removals to isolate workers from soil that potentially contained ACM. The EPA agrees with the NFA remedy selected in the ROD. | | | | | |
| ***Former Honolulu Fire Department Use of the property***:<br>From September 30, 2015 through August 31, 2017 the CCH HFD held a Right-of-Entry for the property for firefighting training:<br>• The subject property was used for chainsaw training by the CCH HFD, who held Right-of-Entry for the property from September 30, 2015 through August 31, 2017. According to information provided by the Fire Operations Division at the HFD, fueling of chainsaw occurred over a sheet of plywood and no more than 10 gallons of unleaded fuel was used on-site for more than 9 hours a day for a 2-week training period, and no spills were reported. In addition, a port-a-potty was used during the duration of the training, and no spills were reported. No fire stream training was conducted at the site; therefore, PFAS was not used during the training. No reportable releases occurred at the site during the training exercises; therefore, this condition is not considered a REC or a de minimis conditions. | | | | | |
| ***Solid and Hazardous Waste and Green Waste***:<br>• During the VSI, several stockpiles with concrete, metal, and rebar were identified within the southwest portion of the subject property. The sources of the stockpiles are unknown. It is likely that that the concrete, metal, and rebar stockpiles are associated with former Navy structures, and it is possible that additional materials that may be considered hazardous (e.g., waste containers such as drums and tanks, petroleum from old piping, etc.) are present within the stockpiles.<br>• Small amounts of municipal solid waste including but not limited to a foam mattress was identified in the center portion of the subject property. This condition is considered to be *de minimis*.<br>• Several green waste stockpiles are present along the southern boundary of the subject property. The sources of the stockpiles are unknown; however, it is likely that they are associated with land clearing activities on the adjacent property and are considered to be a solid waste. While the material is not likely to be hazardous in nature, the dried material does pose a fire risk. | ✓ | | | ✓ | ✓ |

| Findings | Determination | | | | |
|---|---|---|---|---|---|
| | REC | CREC | HREC | PEC | *de minimums* |
| • A specialized railcar chassis is located along the west boundary of the subject property, and a burnt vehicle was identified at the site. This condition is considered to be *de minimis* as even if hazardous substances or petroleum products were released it would not result in a reportable amount. | | | | | ✓ |
| ***Drain***:<br>• During the VSI, a floor drain was observed in a concrete foundation within the center portion of the subject property. The use of the drain is unknown. The use of the drain in unknown. It is possible that hazardous materials may have been released to the ground via this drain. | ✓ | | | | |
| ***Residual Lead in Soil Attributable to LBP***:<br>• LBP may have been used in the construction and/or maintenance and upkeep of former structures built prior to the early to mid-1980s. | | | | ✓ | |
| ***Asbestos-cement Piping***:<br>• Asbestos-cement piping may have been used in the potable water distribution systems, sanitary sewer, and storm drains built prior to the 1980s. Over time the gradual degradation of the piping in the form of corrosion (i.e., internal calcium leaching due to conveyed water and/or external leaching due to groundwater) can occur. The crushing of asbestos-cement pipe with mechanical equipment causes this material to become a regulated ACM. | | | | ✓ | |
| ***Residual Pesticides Attributable to Termite Treatment***:<br>• In Hawaii, it was common practice to treat around building structures with pesticide, herbicides, and/or termiticides. It is possible that residual levels of pesticides, herbicides, and/or termiticides are present in the soil beneath and in the vicinity of the former structures at the site. Pesticide impacted soils are soils that were legally treated with organochlorine termiticides (pesticides used to control termites, such as chlordane, aldrin, dieldrin, heptachlor, and DDT) and applied underneath and around the perimeter of buildings/structures. Pesticide impacted soils may be found within 30 inches laterally of the perimeter of the building or footing, at depths of 0 to 2 feet below ground surface, and all areas under the building/structure footprint. These chemicals may persist years after application and pose risks to human health and the environment if the buildings/structures are removed and soils are exposed/disturbed. | | | | ✓ | |
| **Adjacent Property to the Northwest (hydraulically up/crossgradient) Kalaeloa Airport, TMK: (1) 9-1-013:032** | | | | | |
| ***Former Military Use***:<br>Known operations, hazardous materials storage, and releases that occurred during military occupation of the property included the following:<br>• Structures at this property included runways and structures Unit No. 1 (A-K) that were later re-named as structures S-545, S-546, S-547, S-548, S-549, S-551, S-552, S-553, S-554, and S-555, and located on the northeast portion of the runway close to the subject property.<br>• Many points of POIs and some Installation Restoration Program sites are located within the NAS Barbers Point.<br>• The site had known numerous USTs, the tanks identified within ¼ mile of the subject property included FID 9-102236 UST BP76 (Bldg. 1264), FID 9-102915 UST BP93 (Bldg. 1863), and FID 9-103175 UST BP94 (Bldg. 1866). Releases were reported to the HDOH for all three USTs and have all received a Site Cleanup Completed (NFA) status by HDOH. | | ✓ | | | |

| Findings | Determination | | | | |
|---|---|---|---|---|---|
| | REC | CREC | HREC | PEC | *de minimums* |
| • According to the EDR report and E2 knowledge, several orphan SHWS sites were identified on the site. | | | | | |
| **Adjacent Property to the East (hydraulically crossgradient) Vacant Land, TMK: (1) 9-1-013:039** | | | | | |
| ***Former Military Use***:<br>Known operations, hazardous materials storage, and releases that occurred during military occupation of the property included the following:<br>• The site was formerly used as a trap and skeet range and contained ammunition magazines. The FOST for the Northern Trap and Skeet Range lot identified the presence of hazardous substances LBP; and ordnance, munitions, and explosives of concern for former POI-44 and POI-45 sites. Investigation of these sites determined that NFA is warranted at former POI-45 or former POI-44. Former POI-44 was remediated in accordance with CERCLA and a NFA decision document was prepared for the site. Notifications of the presence of LBP in Bldgs. 172, 1528 and 1529 and the presence of the Northern Trap and Skeet Range are included in the FOST.<br>• Structures at the site included Magazine Fuse-Detonator S-170, S-171, S-172 and the skeet range S-1535. | | ✓ | | | |
| **Adjacent Property to the East (hydraulically crossgradient) Former KRP, TMK: (1) 9-1-013:040** | | | | | |
| ***Former Military Use***:<br>Known operations, hazardous materials storage, and releases that occurred during military occupation of the property included the following:<br>• Structures at this property included High Explosive Magazines S-176, S-177, S-178, S-179, S-180, and S-181.<br>• Bldg. 181 (also known as Bunker C) was excavated and backfilled with a reported 10,000 cubic yards of material including various C&D debris. | | ✓ | | | |
| ***Solid and Hazardous Waste***:<br>• SORT occupation of the subject property from 2002 until August 2014 resulting in several complaints for stockpiling of contaminated soil, tires, and concrete rubble as well as stockpiling and crushing concrete without a permit, burying of C&D waste, and storage of ASTs, IBCs, and drums. On April 2018, DHHL submitted a Corrective Action Letter Report in Response to the NOVO Docket No. 15-HW-EA-01. Violations listed in the NOVO have been addressed with the completion of various corrective actions and it was concluded that soil from the site does not pose a hazard and additional SI actions are not required. DHHL terminated the lease and evicted SORT based on non-compliance with environmental and land use regulatory requirement. This is considered a PEC as it is not known or suspected to be impacting the subject property due to the distance from and location hydraulically down/crossgradient from the subject property as well as the removal of the waste from the adjacent property. | | | | ✓ | |

| Findings | Determination | | | | |
|---|---|---|---|---|---|
| | REC | CREC | HREC | PEC | *de minimums* |
| **Adjacent Property to the South (hydraulically downgradient) KHLFP, TMK: (1) 9-1-013:067 and 069** | | | | | |
| ***Former Military Use***:<br>Known operations, hazardous materials storage, and releases that occurred during military occupation of the property included the following:<br>• Structures at this property included S-183, S-556, S-557, S-558, S-559, S-560, S-561, S-562, S-563, S-564, S-545, S-566, and S-567. | | ✓ | | | |
| ***Solid and Hazardous Waste***:<br>• Prior to September 2013, KHLFP accepted the import of soil from multiple off-site sources located in Pearl City and Honolulu areas of Oahu. The soil was observed by HDOH SHWB to be mixed with large pieces of concrete, as well as small amounts of auto parts and other scrap metal. An NOVO was issued from the CCH on September 23, 2013. During the stockpile removal suspect building materials (gray transite pipe) was observed and confirmed to be ACM. All materials were taken to disposed of and on March 3, 2020, the HDOH and HCDA conducted an inspection of the site and NFA is required. This is considered a PEC as it is not known or suspected to be impacting the subject property due to the distance from and location hydraulically downgradient from the subject property as well as the removal of the waste from the adjacent property. | | | | ✓ | |
| • During the VSI, approximately (30) 275-gallon caged IBC totes of unknown contents associated with the KHLFP were located on or immediately adjacent to the southern boundary of the subject property. They were observed in good condition and no leaks or spills were identified. G70 confirmed with KHLFP that the IBC totes only contained water; therefore, this is not considered a REC, PEC, or a *de minimums* condition. | | | | | |

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# Section 8 Conclusions

E2 performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13, *Standard Practice for Environmental Site Assessments* for one 19.361-acre parcel of residential land located in Honouliuli, Oahu, Hawaii, and designated as TMK: (1) 9-1-013: Parcel 068. Any exceptions to, or deletions from, this practice are described in Section 1 of this report.

The assessment has revealed no evidence of RECs in connection with the property except for the following listed in Tables 8-1 and 8-2. PECs, which cannot be definitively categorized as RECs due to insufficient available information required to make a determination, were identified as listed in Table 8-3.

**Table 8-1: Recognized Environmental Conditions**

| Recognized Environmental Conditions (RECs) | REC Categories | | |
|---|---|---|---|
| | **Release** | **Conditions Indicative of a Release** | **Conditions Posing a Material Threat of a Future Release to the Environment** |
| Solid and Hazardous Waste:<br>• During the VSI, several stockpiles with concrete, metal, and rebar were identified within the southwest portion of the subject property. The sources of the stockpiles are unknown. It is likely that that the concrete, metal, and rebar stockpiles are associated with former Navy structures, and it is possible that additional materials that may be considered hazardous (e.g., waste containers such as drums and tanks, petroleum from old piping, etc.) are present within the stockpiles. | | | ✓ |
| Drain:<br>• During the VSI, a floor drain was observed in a concrete foundation within the center portion of the subject property. The use of the drain in unknown. It is possible that hazardous materials may have been released to the ground via this drain. | | | ✓ |

**Table 8-2: Controlled Recognized Environmental Conditions**

| Category | Controlled Recognized Environmental Conditions (CRECs) |
|---|---|
| Subject and Adjacent Properties | The subject property and surrounding properties are located on the former NAS Barbers Point, a DoD BRAC Site that has been cleaned up to the regulatory agency acceptance, in this case the BCT consisting of the HDOH, EPA, and the Navy. Although this site has been closed, regulatory closure does not preclude that a site may be reopened in the future should new data become available. Deed restrictions on the subject property includes the following:<br>• Grantee is notified that arsenic, atrazine, bis(2-ethylhexyl) phthalate, 4,4-DDE, 4,4-DDT, lead, lindane, and thallium were released in the Regional Groundwater System (POI-49, which lies beneath the property). The chemicals detected were at concentrations that did not require a response action.<br>• Grantee is notified that petroleum hydrocarbons are present in the groundwater beneath the subject property. Grantee covenants and agrees for itself, its successors and assigns that any soil removed from the subject property during excavation into the water table shall be tested and disposed of in accordance with applicable laws and regulations. |

| Category | Controlled Recognized Environmental Conditions (CRECs) |
|---|---|
| | • Grantee covenants and agrees for itself, its successors and assigns, to apply with the HDOH within 90 days of the conveyance of the property for UIC permits for the existing dry wells located on the subject property.<br>• In the event that any sediment is removed from the dry wells on the subject property, transferee shall dispose of the sediment off-site in an appropriate facility in accordance with applicable laws and regulations. |

## Table 8-3: Potential Environmental Concerns

| Category | Potential Environmental Concerns (PECs) |
|---|---|
| Residual Lead in Soil Attributable to LBP | LBP may have been used in the construction and/or maintenance and upkeep of former structures built prior to the early to mid-1980s. |
| Asbestos-cement Piping | Asbestos-cement piping may have been used in the potable water distribution systems, sanitary sewer, and storm drains built prior to the 1980s. Over time the gradual degradation of the piping in the form of corrosion (i.e., internal calcium leaching due to conveyed water and/or external leaching due to groundwater) can occur. The crushing of asbestos-cement pipe with mechanical equipment causes this material to become a regulated ACM. |
| Residual Pesticides Attributable to Termite Treatment | It is possible that residual levels of pesticides, herbicides, and/or termiticides are present in the soil beneath and in the vicinity of the former structures at the site. |
| Green Waste | Several green waste stockpiles are present along the southern boundary of the subject property. The sources of the stockpiles are unknown; however, it is likely that they are associated with land clearing activities on the adjacent property and are considered to be a solid waste. While the material is not likely to be hazardous in nature, the dried material does pose a fire risk. |
| Adjacent Property Concern | **DHHL located at TMK: (1) 9-1-013: Parcel 040, hydraulically crossgradient**<br>SORT occupation of the subject property from 2002 until August 2014 resulted in several complaints regarding stockpiling of contaminated soil, tires, and concrete rubble as well as stockpiling and crushing concrete without a permit, burying of C&D waste, and storage of AST, IBCs, and drums. On April 2018, DHHL submitted a Corrective Action Letter Report in Response to the NOVO Docket No. 15-HW-EA-01. Violations listed in the NOVO have been addressed with the completion of various corrective actions and it was concluded that soil from the site does not pose a hazard and additional SI actions are not required. DHHL terminated the lease and evicted SORT based on non-compliance with environmental and land use regulatory requirements. It is not known if the land use violations listed in the NOVO have negatively impacted the subject property. |
| | **HCDA, KHLFP, located at TMK: (1) 9-1-013: Parcels 069 and 067, hydraulically downgradient**<br>Prior to September 2013, KHLFP accepted the import of soil from multiple off-site sources located in Pearl City and Honolulu areas of Oahu. The soil was observed by HDOH SHWB to be mixed with large pieces of concrete, as well as small amounts of auto parts and other scrap metal. An NOVO was issued from the CCH on September 23, 2013. During the stockpile removal suspect building materials (gray transite pipe) was observed and confirmed to be ACM. All materials were taken to disposed of and on March 3, 2020, the HDOH and HCDA conducted an inspection of the site and NFA is required. This is considered a PEC as it is not known or suspected to be impacting the subject property due to the distance from and location hydraulically downgradient from the subject property as well as the removal of the waste from the adjacent property. |

# Section 9 Qualifications of Environmental Professionals

Qualifications of the Environmental Professionals are included in Appendix F.

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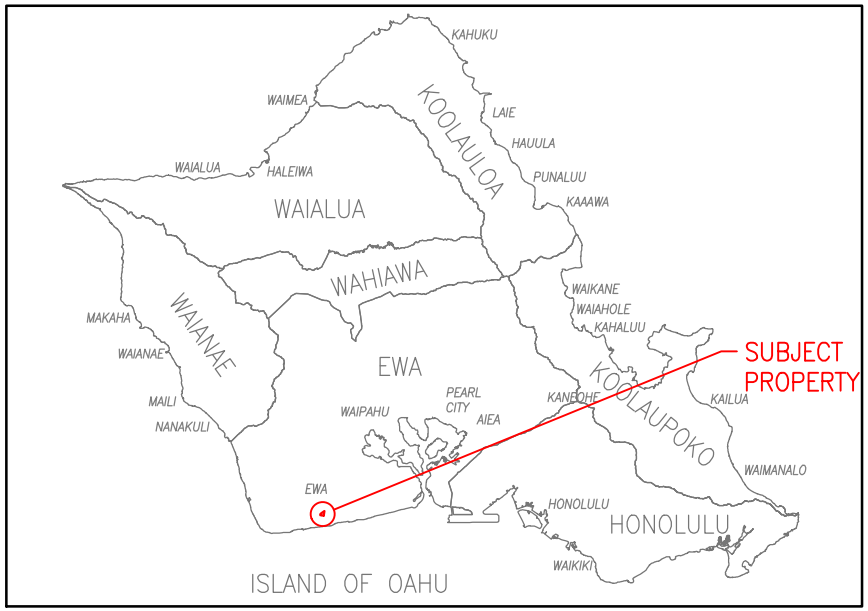
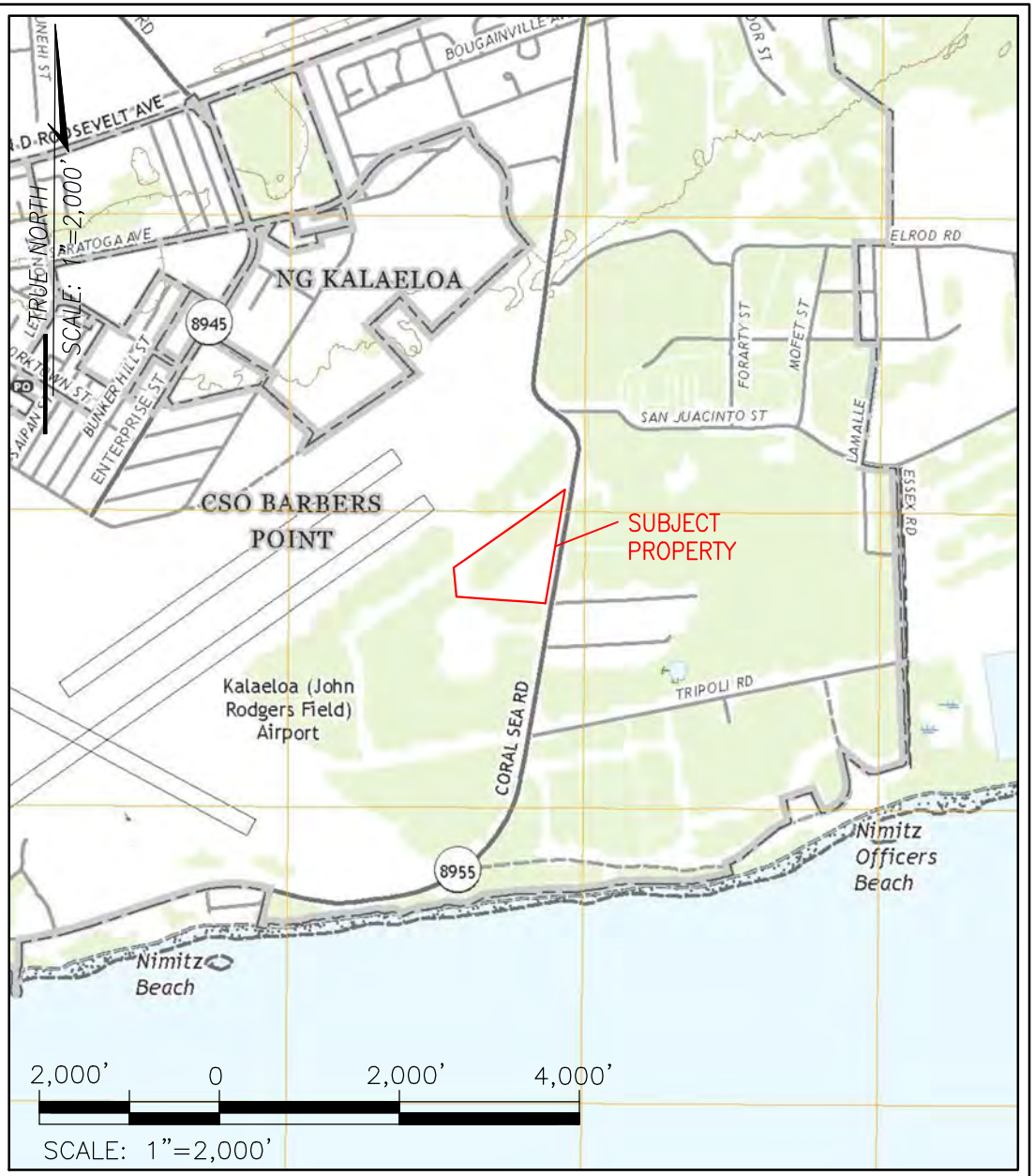
# APPENDIX A

# FIGURES AND PHOTOGRAPHS

# Figures








| | | |
|---|---|---|
| | DATE: MAY 2022 | PROJECT TITLE: HONOKEA PHASE I ENVIRONMENTAL SITE ASSESSMENT<br>TAX MAP KEY (1) 9-1-013: PARCEL 068<br>KAPOLEI, OAHU, HAWAII |
| | FIGURE TITLE: SITE VICINITY AND LOCATION MAP | FIGURE NO.: 1 |

REFERENCES: STATE OF HAWAII 2017, USGS 2013, AND GOOGLE EARTH 2022


element environmental llc
environmental · engineering · water resources

PROJECT TITLE:
HONOKEA PHASE I ENVIRONMENTAL SITE ASSESSMENT
TAX MAP KEY (1) 9-1-013: PARCEL 068
KAPOLEI, OAHU, HAWAII

FIGURE TITLE:
ADJACENT PROPERTY MAP

DATE:
MAY 2022

FIGURE NO.:
2

TRUE NORTH

SCALE: 1"=150'

LEGEND:

CONCRETE

BORING/MONITORING WELL

KALAELOA (JOHN RODGERS FIELD) AIRPORT
FORMER NAS BARBERS POINT
STATE OF HAWAII DEPARTMENT OF
TRANSPORTATION – AIRPORTS DIVISION
(1) 9-1-013:032
NAS PARCEL 13072

HAWAII COMM DEV AUTHORITY
(1) 9-1-013:068

FORMER NORTHERN TRAP AND
SKEET RANGE AND
MAGAZINE FUSE-DETONATOR
U.S.A.
(1) 9-1-013:039
NAS PARCEL 13058-D

HAWAII COMM DEV AUTHORITY
KALAELOA HERITAGE AND
LEGACY FOUNDATION PARK
(1) 9-1-013:067
NAS PARCEL 13073-B

HAWAII COMM DEV AUTHORITY
KALAELOA HERITAGE AND
LEGACY FOUNDATION PARK
(1) 9-1-013:069
NAS PARCEL 13073-D

HAWAIIAN HOMELANDS
FORMER KALAELOA RACEWAY PARK, THE
RANCH AT KALAELOA, AND
HIGH EXPLOSIVE MAGAZINE
(1) 9-1-013:040
NAS PARCEL 13058-E

BS-11/MW-7
BS-10/MW-6
BORING-1
ELEV=22.49
FORMER BLDG 174-A
QUONSET HUT BLDG 173
FORMER AST
FORMER BLDG 174
FORMER BP27 UST
FORMER BP28 UST
FORMER BP29-40 USTs
BS-4/MW-1
BS-9/MW-5
BS-3/MW-2
BORING-3
ELEV=21.16
FORMER BLDG 174-B
BS-12/MW-8
CORAL SEA ROAD
LONG ISLAND STREET

150' 0 150' 300'

SCALE: 1"=150'

element environmental llc
environmental · engineering · water resources

PROJECT TITLE:
HONOKEA PHASE I ENVIRONMENTAL SITE ASSESSMENT
TAX MAP KEY (1) 9-1-013: PARCEL 068
KAPOLEI, OAHU, HAWAII

FIGURE TITLE:
SITE LAYOUT

DATE:
MAY 2022

FIGURE NO.:
3

# Site Reconnaissance Photographs

| | | |
|---|---|---|
| **Photo 1** | **Description** | Overall view of the east boundary of the subject property. View facing south. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 2** | **Description** | Overall view of the east boundary of the subject property. View facing north. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 3** | **Description** | Overall view of the southeast portion of the subject property. View facing east. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 4** | **Description** | Overall view of the road intersection within the center portion of the subject property. View facing northeast. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 5** | **Description** | Overall view of the south portion of the subject property. View facing south. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 6** | **Description** | Overall view of the southwest portion of the subject property. View facing southwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 7** | **Description** | Overall view of the northwest boundary of the subject property. View facing northeast. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 8** | **Description** | Overall view of the northern central portion of the subject property. View facing southwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 9** | **Description** | Overall view of the west central portion of the subject property. View facing northeast. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 10** | **Description** | Overall view of the east central portion of the subject property. View facing northeast. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 11** | **Description** | A concrete-filled drywell is located within the southeast portion of the subject property. View facing southwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 12** | **Description** | A concrete-filled drywell and associated drainage piping were observed in the southwest portion of the subject property. View facing southwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 13** | **Description** | A chain-link fence located within the center portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 14** | **Description** | Bare utility poles are located in the southern portion of the subject property. View facing north. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 15** | **Description** | An unlabeled underground utility vault located in the central portion of the subject property. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 16** | **Description** | An unlabeled underground utility vault located in the central portion of the subject property. View facing northwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 17** | **Description** | A former underground utility pipe has been partially pulled from the ground in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 18** | **Description** | A concrete foundation associated with the former engine test cells in the southeast corner of the subject property. View facing southwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 19** | **Description** | Multiple concrete foundations associated with the former engine test cell were observed within the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 20** | **Description** | A large metal pipe is located within the southwest portion of the subject property. View facing northeast. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 21** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 22** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 23** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 24** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 25** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 26** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 27** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 28** | **Description** | Stockpiles of metal piping, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 29** | **Description** | Stockpiles of metal, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 30** | **Description** | Stockpiles of metal, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 31** | **Description** | Stockpiles of metal, rebar, and concrete are located in the southwest portion of the subject property. View facing west. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 32** | **Description** | Stockpiles of metal, rebar, and concrete are located in the southwest portion of the subject property. View facing east. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 33** | **Description** | Some of the piping within the waste stockpiles was concrete-filled. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 34** | **Description** | A concrete tank cradle located in the center portion of the subject property. View facing north. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 35** | **Description** | Piping associated with the above-ground storage tank cradle. View facing northeast. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 36** | **Description** | Concrete patches within a concrete foundation are located in the central portion of the subject property. View facing southwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 37** | **Description** | Multiple 275-gallon IBC totes of unknown contents are located within and along the south boundary of the subject property. View facing southwest. |
| **Photo Date**<br>2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.:**<br>**210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 38** | **Description** | Multiple 275-gallon IBC totes of unknown contents are located within and along the south boundary of the subject property. View facing southwest. |
| **Photo Date**<br>2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.:**<br>**210103** | **Client** | Group 70 International, Inc. |

| Photo 39 | Description | A floor drain is located in a concrete foundation in the central portion of the subject property. |
|---|---|---|
| Photo Date 2/3/2022 | Site Name | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| E2 Project No.: 210103 | Client | Group 70 International, Inc. |

| Photo 40 | Description | Rubber, aluminum, glass, and other evidence of an automobile fire is located within the central portion of the subject property. View facing west. |
|---|---|---|
| Photo Date 2/3/2022 | Site Name | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| E2 Project No.: 210103 | Client | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 41** | **Description** | A portion of a tire, melted aluminum, and automobile parts are located in the area of the historical automobile fire in the central portion of the subject property. |
| **Photo Date**<br>2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.:**<br>**210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 42** | **Description** | Green waste stockpiles are located throughout the south boundary area of the subject property. View facing southwest. |
| **Photo Date**<br>2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.:**<br>**210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 43** | **Description** | Stockpiles of green waste are located throughout the southern boundary area of the subject property. View facing south. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 44** | **Description** | A solid waste stockpile is located in the southern portion of the subject property. View facing northwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 45** | **Description** | A solid waste stockpile is located in the southern portion of the subject property. View facing south. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 46** | **Description** | A specialized railcar chassis is located near the east boundary within the subject property. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 47** | **Description** | Foam insulation within the center portion of the subject property. View facing north. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

| | | |
|---|---|---|
| **Photo 48** | **Description** | A US Navy-owned and operated sewer force main runs adjacent to the subject property to the southeast. View facing southwest. |
| **Photo Date** 2/3/2022 | **Site Name** | Phase I Environmental Site Assessment<br>19.36-Acre Undeveloped Parcel<br>Kapolei, Oahu, Hawaii; Tax Map Key (1) 9-1-013: Parcel 068 |
| **E2 Project No.: 210103** | **Client** | Group 70 International, Inc. |

# APPENDIX B

# EDR USER QUESTIONNAIRES

element environmental llc
environmental · engineering · water resources

## PHASE I ENVIRONMENTAL SITE ASSESSMENT USER QUESTIONNAIRE

In order to qualify for one of the Landowner Liability Protections offered by the Brownfields Amendments and pursuant to the User's responsibilities as described in Section 6 of ASTM E 1527-13, the User must provide the following information (if available) to the environmental professional. **Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.**

### COMPLETED BY:

Name: Steve Yuen

Title: Director of Planning

Company: Honokea Kalaeloa, LLC

Date: January 9, 2022

### SUBJECT PROPERTY NAME AND ADDRESS(ES): Lot 13073-C located Ewa side of Coral Sea Road mauka of the Kalaeloa Heritage Park, in Kalaeloa, Hawaii, and identified by Oahu Tax Map Key No. (1) 9-1-013-068

### USER KNOWLEDGE:

**1. Environmental Cleanup Liens**

Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law? NONE TO OUR KNOWLEDGE

*The User should engage a title company or title professional to undertake a review of reasonably ascertainable recorded land title records and lien records, including judicial records, for environmental liens or activity and use limitations.*

**2. Activity and Land Use Limitations**

Are you aware of any activity and use limitations, such as engineering controls, land use restrictions, or institutional controls, that are in place at the subject property and/or have been filed or recorded in a registry under federal, tribal, state, or local law? PROPERTY IS UNDER HCDA LAND USE JURISDICTION FOR ALLOWABLE USE AND DEVELOPMENT STANDARDS

**3. Specialized Knowledge or Experience**

As the User of this Phase I ESA, do you have any specialized knowledge or experience related to the property or nearby properties? (Are you involved in the same line of business as the current or former occupants of the property or adjoining properties so that you would have specialized knowledge of the chemicals and processes used by this type of business?) NO KNOWLEDGE OR EXPERIENCE

**4. Relationship of the Purchase Price to the Fair Market Value**

Does the purchase price being paid for this property reasonably reflect the fair market value of the property?If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property? NOT AWARE OF ANY REDUCTION IN VALUE DUE TO CONTAMINATION.

**5. Commonly Known or Reasonably Ascertainable Information**

Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases?

NOT AWARE OF ANY INFORMATION

Please provide the name(s) and contact information for the previous property owner.
LINDSEY DOI, ASSET MANAGER, HCDA

***547 Queen Street***
***Honolulu, HI 96813***
***Direct: (808) 594-0328 Cell: (808) 227-1418***
*lindseydoi.leaverton@hawaii.gov*

Do you know the past use(s) of the property?
GENERALLY, MILITARY USE–1930'S TO 1998. NO KNOWLEDGE OF SPECIFIC USES

Do you know of specific chemicals that are present or once were present at the property?
NOT AWARE OF ANY INFORMATION

Do you know of spills or other chemical releases that have taken place at the property?
NOT AWARE OF ANY INFORMATION

Other Issues, Comments, or Concerns?
NOT AWARE OF ANY INFORMATION

**6. Degree of Obviousness of Presence of Contamination**

As the User of this Phase I ESA, based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?

NOT AWARE OF ANY INDICATORS

**7. Reason for Conducting Phase I ESA:** PART OF ENVIRONMENTAL ASSESSMENT FOR PROPOSED LEASE AND DEVELOPMENT AS RECREATIONAL VILLAGE.

# APPENDIX C

# EDR REPORTS

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**Honokea Phase I ESA**
Not Reported
Kapolei, HI 96707

Inquiry Number: 6803000.2s
December 29, 2021

# The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# TABLE OF CONTENTS



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

## TARGET PROPERTY INFORMATION

### ADDRESS

NOT REPORTED
KAPOLEI, HI 96707

### COORDINATES

| | |
|---|---|
| Latitude (North): | 21.3108390 - 21ˆ 18' 39.02'' |
| Longitude (West): | 158.0573400 - 158ˆ 3' 26.42'' |
| Universal Tranverse Mercator: | Zone 4 |
| UTM X (Meters): | 597770.1 |
| UTM Y (Meters): | 2356703.2 |
| Elevation: | 23 ft. above sea level |

### USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

| | |
|---|---|
| Target Property Map: | 9757679 EWA, HI |
| Version Date: | 2017 |

## MAPPED SITES SUMMARY

Target Property Address:
NOT REPORTED
KAPOLEI, HI 96707

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| Reg | BARBERS POINT NAVAL | | DOD | Same | 1 ft. |
| A1 | NAVAL AIR STATION - | BLDG174TANKBP29,BP30 | FINDS | Lower | 1 ft. |
| A2 | NAVAL AIR STATION - | BLDG 174 TANK BP29, | LUST, UST | Lower | 1 ft. |
| B3 | NAVAL AIR STATION - | TANK BP93, BLDG 1863 | LUST, UST | Higher | 2210, 0.419, NNW |
| B4 | NAVAL AIR STATION BA | BLDG 1866 TANK BP94 | LUST, UST | Higher | 2497, 0.473, NNW |
| 5 | NAVAL AIR STATION - | TANK BP76, BLDG 1264 | LUST, UST | Higher | 2604, 0.493, NE |

# EXECUTIVE SUMMARY

## TARGET PROPERTY SEARCH RESULTS

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

## DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

## STANDARD ENVIRONMENTAL RECORDS

### *Lists of Federal NPL (Superfund) sites*

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

### *Lists of Federal Delisted NPL sites*

Delisted NPL ---------- National Priority List Deletions

### *Lists of Federal sites subject to CERCLA removals and CERCLA orders*

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

### *Lists of Federal CERCLA sites with NFRAP*

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

### *Lists of Federal RCRA facilities undergoing Corrective Action*

CORRACTS ---------- Corrective Action Report

### *Lists of Federal RCRA TSD facilities*

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

### *Lists of Federal RCRA generators*

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

### *Federal institutional controls / engineering controls registries*

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS Engineering Controls Sites List
US INST CONTROLS Institutional Controls Sites List

***Federal ERNS list***

ERNS Emergency Response Notification System

***Lists of state- and tribal hazardous waste facilities***

SHWS Sites List

***Lists of state and tribal landfills and solid waste disposal facilities***

SWF/LF Permitted Landfills in the State of Hawaii

***Lists of state and tribal leaking storage tanks***

INDIAN LUST Leaking Underground Storage Tanks on Indian Land

***Lists of state and tribal registered storage tanks***

FEMA UST Underground Storage Tank Listing
INDIAN UST Underground Storage Tanks on Indian Land

***State and tribal institutional control / engineering control registries***

ENG CONTROLS Engineering Control Sites
INST CONTROL Sites with Institutional Controls

***Lists of state and tribal voluntary cleanup sites***

VCP Voluntary Response Program Sites
INDIAN VCP Voluntary Cleanup Priority Listing

***Lists of state and tribal brownfield sites***

BROWNFIELDS Brownfields Sites

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Local Brownfield lists***

US BROWNFIELDS A Listing of Brownfields Sites

***Local Lists of Landfill / Solid Waste Disposal Sites***

SWRCY SWRCY
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
ODI Open Dump Inventory
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS Open Dumps on Indian Land

***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL Delisted National Clandestine Laboratory Register

| | |
|---|---|
| CDL | Clandestine Drug Lab Listing |
| US CDL | National Clandestine Laboratory Register |

***Local Land Records***

| | |
|---|---|
| LIENS 2 | CERCLA Lien Information |

***Records of Emergency Release Reports***

| | |
|---|---|
| HMIRS | Hazardous Materials Information Reporting System |
| SPILLS | Release Notifications |
| SPILLS 90 | SPILLS 90 data from FirstSearch |

***Other Ascertainable Records***

| | |
|---|---|
| RCRA NonGen / NLR | RCRA - Non Generators / No Longer Regulated |
| FUDS | Formerly Used Defense Sites |
| SCRD DRYCLEANERS | State Coalition for Remediation of Drycleaners Listing |
| US FIN ASSUR | Financial Assurance Information |
| EPA WATCH LIST | EPA WATCH LIST |
| 2020 COR ACTION | 2020 Corrective Action Program List |
| TSCA | Toxic Substances Control Act |
| TRIS | Toxic Chemical Release Inventory System |
| SSTS | Section 7 Tracking Systems |
| ROD | Records Of Decision |
| RMP | Risk Management Plans |
| RAATS | RCRA Administrative Action Tracking System |
| PRP | Potentially Responsible Parties |
| PADS | PCB Activity Database System |
| ICIS | Integrated Compliance Information System |
| FTTS | FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act) |
| MLTS | Material Licensing Tracking System |
| COAL ASH DOE | Steam-Electric Plant Operation Data |
| COAL ASH EPA | Coal Combustion Residues Surface Impoundments List |
| PCB TRANSFORMER | PCB Transformer Registration Database |
| RADINFO | Radiation Information Database |
| HIST FTTS | FIFRA/TSCA Tracking System Administrative Case Listing |
| DOT OPS | Incident and Accident Data |
| CONSENT | Superfund (CERCLA) Consent Decrees |
| INDIAN RESERV | Indian Reservations |
| FUSRAP | Formerly Utilized Sites Remedial Action Program |
| UMTRA | Uranium Mill Tailings Sites |
| LEAD SMELTERS | Lead Smelter Sites |
| US AIRS | Aerometric Information Retrieval System Facility Subsystem |
| US MINES | Mines Master Index File |
| ABANDONED MINES | Abandoned Mines |
| UXO | Unexploded Ordnance Sites |
| ECHO | Enforcement & Compliance History Information |
| DOCKET HWC | Hazardous Waste Compliance Docket Listing |
| FUELS PROGRAM | EPA Fuels Program Registered Listing |
| AIRS | List of Permitted Facilities |
| DRYCLEANERS | Permitted Drycleaner Facility Listing |
| Financial Assurance | Financial Assurance Information Listing |
| LEAD | LEAD |

UIC ..... Underground Injection Wells Listing
MINES MRDS ..... Mineral Resources Data System

**EDR HIGH RISK HISTORICAL RECORDS**

***EDR Exclusive Records***

EDR MGP ..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ..... EDR Exclusive Historical Cleaners

**EDR RECOVERED GOVERNMENT ARCHIVES**

***Exclusive Recovered Govt. Archives***

RGA HWS ..... Recovered Government Archive State Hazardous Waste Facilities List
RGA LF ..... Recovered Government Archive Solid Waste Facilities List
RGA LUST ..... Recovered Government Archive Leaking Underground Storage Tank

**SURROUNDING SITES: SEARCH RESULTS**

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

**STANDARD ENVIRONMENTAL RECORDS**

***Lists of state and tribal leaking storage tanks***

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Health's Active Leaking Underground Storage Tank Log Listing.

A review of the LUST list, as provided by EDR, and dated 06/01/2021 has revealed that there are 4 LUST sites within approximately 0.5 miles of the target property.

| Equal/Higher Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***NAVAL AIR STATION -*** | ***TANK BP93, BLDG 1863*** | ***NNW 1/4 - 1/2 (0.419 mi.)*** | ***B3*** | ***11*** |
| Release ID: 940115<br>Facility Id: 9-102915<br>Facility Status: Site Cleanup Completed (NFA) | | | | |
| ***NAVAL AIR STATION BA*** | ***BLDG 1866 TANK BP94*** | ***NNW 1/4 - 1/2 (0.473 mi.)*** | ***B4*** | ***12*** |
| Release ID: 010058 | | | | |

Facility Id: 9-103175
Facility Status: Site Cleanup Completed (NFA)

| | | | | |
|---|---|---|---|---|
| ***NAVAL AIR STATION -*** | ***TANK BP76, BLDG 1264*** | ***NE 1/4 - 1/2 (0.493 mi.)*** | ***5*** | ***12*** |

Release ID: 960105
Facility Id: 9-102236
Facility Status: Site Cleanup Completed (NFA)

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***NAVAL AIR STATION -*** | ***BLDG 174 TANK BP29,*** | ***0 - 1/8 (0.000 mi.)*** | ***A2*** | ***8*** |

Release ID: 070004
Facility Id: 9-103822
Facility Status: Site Cleanup Completed (NFA)

### *Lists of state and tribal registered storage tanks*

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Health's Listing of Underground Storage Tanks.

A review of the UST list, as provided by EDR, and dated 06/01/2021 has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| ***NAVAL AIR STATION -*** | ***BLDG 174 TANK BP29,*** | ***0 - 1/8 (0.000 mi.)*** | ***A2*** | ***8*** |

Tank Status: Permanently Out of Use
Facility Id: 9-103822
Date Closed: 04/07/1992
Date Closed: 04/08/1992
Date Closed: 04/09/1992

## ADDITIONAL ENVIRONMENTAL RECORDS

### *Other Ascertainable Records*

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

| Equal/Higher Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| BARBERS POINT NAVAL | | 0 - 1/8 (0.000 mi.) | 0 | 8 |

# EXECUTIVE SUMMARY

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 05/05/2021 has revealed that there is 1 FINDS site within approximately 0.001 miles of the target property.

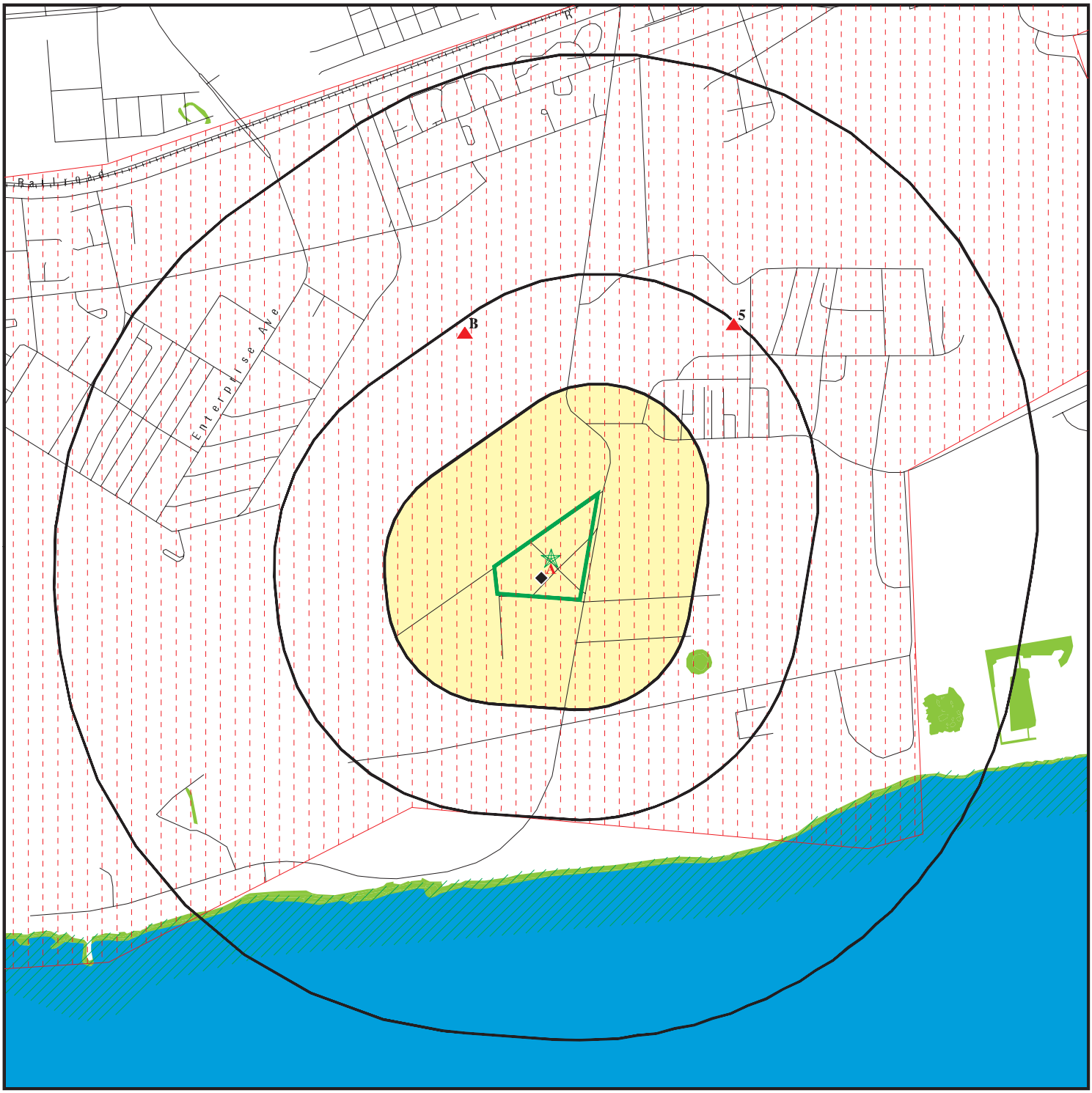
| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| NAVAL AIR STATION - Registry ID:: 110046221450 | BLDG174TANKBP29,BP30 | 0 - 1/8 (0.000 mi.) | A1 | 8 |

# EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 9 records.

| Site Name | Database(s) |
|---|---|
| BARBERS POINT NAS UST NABP-89 | SHWS, ENG CONTROLS, INST CONTROL |
| BARBERS POINT NAS STATION P | SHWS |
| STOCKPILE ON NAVY PARCEL | SHWS |
| HICKAM POL ST25, SPILL SITE 25 (FO | SHWS |
| HIARNG KALAELOA RELOCATION OF UNIT | SHWS |
| HIARNG KALAELOA AIRPORT ABANDON PI | SHWS |
| KALAELOA AIRPORT DAY TANK WAREHOUS | SHWS |
| KALAELOA REDEVELOPMENT PROGRAM | SHWS |
| HIANG 297TH AIR TRAFFIC CONTROL SQ | SHWS |

# OVERVIEW MAP - 6803000.2S




Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

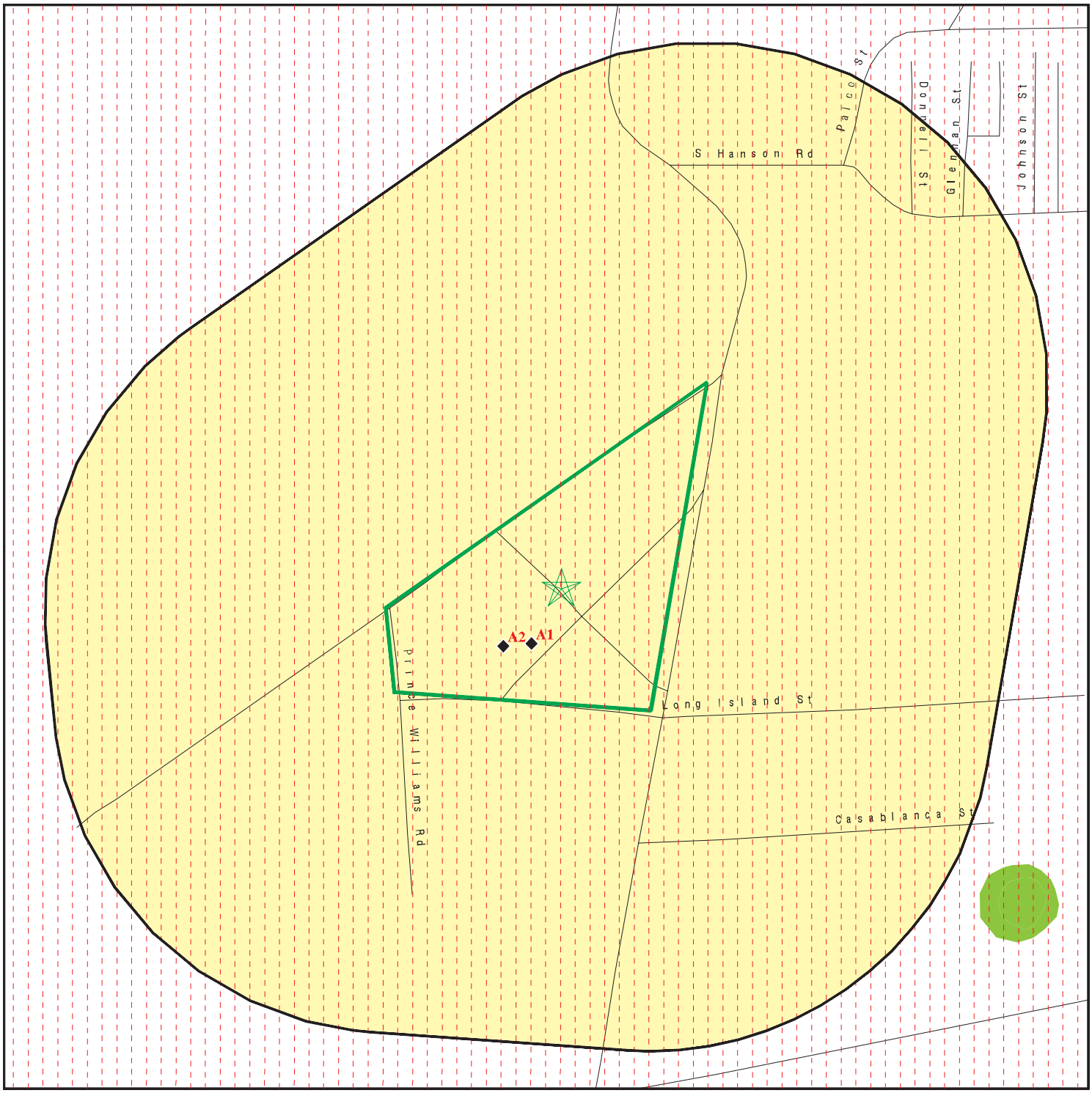
National Wetland Inventory

State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | | | |
|---|---|---|---|
| SITE NAME: | Honokea Phase I ESA | CLIENT: | Element Environmental , LLC |
| ADDRESS: | Not Reported<br>Kapolei HI 96707 | CONTACT: | Angela Peltier |
| | | INQUIRY #: | 6803000.2s |
| LAT/LONG: | 21.310839 / 158.05734 | DATE: | December 29, 2021 12:58 pm |

# DETAIL MAP - 6803000.2S




- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | |
|---|---|
| SITE NAME: Honokea Phase I ESA | CLIENT: Element Environmental , LLC |
| ADDRESS: Not Reported<br>Kapolei HI 96707 | CONTACT: Angela Peltier<br>INQUIRY #: 6803000.2s |
| LAT/LONG: 21.310839 / 158.05734 | DATE: December 29, 2021 12:58 pm |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| **STANDARD ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Lists of Federal NPL (Superfund) sites*** | | | | | | | | |
| NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| Proposed NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| NPL LIENS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Lists of Federal Delisted NPL sites*** | | | | | | | | |
| Delisted NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Lists of Federal sites subject to CERCLA removals and CERCLA orders*** | | | | | | | | |
| FEDERAL FACILITY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| SEMS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of Federal CERCLA sites with NFRAP*** | | | | | | | | |
| SEMS-ARCHIVE | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of Federal RCRA facilities undergoing Corrective Action*** | | | | | | | | |
| CORRACTS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Lists of Federal RCRA TSD facilities*** | | | | | | | | |
| RCRA-TSDF | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of Federal RCRA generators*** | | | | | | | | |
| RCRA-LQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| RCRA-SQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| RCRA-VSQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***Federal institutional controls / engineering controls registries*** | | | | | | | | |
| LUCIS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US ENG CONTROLS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US INST CONTROLS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal ERNS list*** | | | | | | | | |
| ERNS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Lists of state- and tribal hazardous waste facilities*** | | | | | | | | |
| SHWS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Lists of state and tribal landfills and solid waste disposal facilities*** | | | | | | | | |
| SWF/LF | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal leaking storage tanks*** | | | | | | | | |
| LUST | 0.500 | | 1 | 0 | 3 | NR | NR | 4 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| INDIAN LUST | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal registered storage tanks*** | | | | | | | | |
| FEMA UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| UST | 0.250 | | 1 | 0 | NR | NR | NR | 1 |
| INDIAN UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***State and tribal institutional control / engineering control registries*** | | | | | | | | |
| ENG CONTROLS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| INST CONTROL | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal voluntary cleanup sites*** | | | | | | | | |
| VCP | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| INDIAN VCP | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal brownfield sites*** | | | | | | | | |
| BROWNFIELDS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| **ADDITIONAL ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Local Brownfield lists*** | | | | | | | | |
| US BROWNFIELDS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Landfill / Solid Waste Disposal Sites*** | | | | | | | | |
| SWRCY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| INDIAN ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| DEBRIS REGION 9 | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| IHS OPEN DUMPS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Hazardous waste / Contaminated Sites*** | | | | | | | | |
| US HIST CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Local Land Records*** | | | | | | | | |
| LIENS 2 | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Records of Emergency Release Reports*** | | | | | | | | |
| HMIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SPILLS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SPILLS 90 | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Other Ascertainable Records*** | | | | | | | | |
| RCRA NonGen / NLR | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| FUDS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| DOD | 1.000 | | 1 | 0 | 0 | 0 | NR | 1 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| SCRD DRYCLEANERS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US FIN ASSUR | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| EPA WATCH LIST | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| 2020 COR ACTION | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| TSCA | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| TRIS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SSTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ROD | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| RMP | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RAATS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PRP | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PADS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ICIS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| FTTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| MLTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| COAL ASH DOE | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| COAL ASH EPA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| PCB TRANSFORMER | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RADINFO | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| HIST FTTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DOT OPS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CONSENT | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| INDIAN RESERV | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| FUSRAP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| UMTRA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| LEAD SMELTERS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US AIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ABANDONED MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| FINDS | 0.001 | | 1 | NR | NR | NR | NR | 1 |
| UXO | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ECHO | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DOCKET HWC | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| FUELS PROGRAM | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| AIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DRYCLEANERS | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| Financial Assurance | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| LEAD | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| UIC | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| MINES MRDS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| **EDR HIGH RISK HISTORICAL RECORDS** | | | | | | | | |
| ***EDR Exclusive Records*** | | | | | | | | |
| EDR MGP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| EDR Hist Auto | 0.125 | | 0 | NR | NR | NR | NR | 0 |
| EDR Hist Cleaner | 0.125 | | 0 | NR | NR | NR | NR | 0 |
| **EDR RECOVERED GOVERNMENT ARCHIVES** | | | | | | | | |
| ***Exclusive Recovered Govt. Archives*** | | | | | | | | |
| RGA HWS | 0.001 | | 0 | NR | NR | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| RGA LF | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RGA LUST | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| - Totals -- | | 0 | 4 | 0 | 3 | 0 | 0 | 7 |

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

**DOD** **BARBERS POINT NAVAL AIR STATION (CLOSED)** **DOD** **CUSA147755**
**Region** **N/A**
**BARBERS POINT NAVAL AIR S (County), HI**
**< 1/8**
**1 ft.**

DOD:
Feature 1: Navy DOD
Feature 2: Not reported
Feature 3: Not reported
URL: Not reported
Name 1: Barbers Point Naval Air Station (Closed)
Name 2: Not reported
Name 3: Not reported
State: HI
DOD Site: Yes
Tile name: HIHONOLULU

---

**A1** **NAVAL AIR STATION - BARBERS POINT** **FINDS** **1016369319**
**BLDG174TANKBP29,BP30,BP31,BP32,BP33,BP34,BP35,BP36** **N/A**
**< 1/8** **BARBERS POINT NAVAL AIR STATIO, HI 96862**
**1 ft.**

**Site 1 of 2 in cluster A**

**Relative:** FINDS:
**Lower** Registry ID: 110046221450

**Actual:** Click Here:
**21 ft.**

Environmental Interest/Information System:
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

---

**A2** **NAVAL AIR STATION - BARBERS POINT** **LUST** **U004109522**
**BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36** **UST** **N/A**
**< 1/8** **BARBERS POINT NAVAL AIR STATIO, HI 96862**
**1 ft.**

**Site 2 of 2 in cluster A**

**Relative:** LUST:
**Lower** Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40
**Actual:** City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862
**20 ft.** Facility ID: 9-103822
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 01/12/2007
Release ID: 070004
Project Officer: Shunsheng Fu

UST:
Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862
Facility ID: 9-103822
Owner: U.S. DEPT OF THE NAVY
Owner Address: Not reported
Owner City,St,Zip: Barbers Point Naval Air Station, 96862 96862

**NAVAL AIR STATION - BARBERS POINT (Continued)** **U004109522**

Latitude: 21.310229
Longitude: -158.05767900000001
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Map

Tank ID: R-BP29
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/08/1992
Tank Capacity: 25000
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP30
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/08/1992
Tank Capacity: 25000
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP31
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/08/1992
Tank Capacity: 5000
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP32
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/08/1992
Tank Capacity: 5000
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP33
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/07/1992
Tank Capacity: 5000
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT

**NAVAL AIR STATION - BARBERS POINT (Continued)** **U004109522**

Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP34
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/07/1992
Tank Capacity: 5000
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP35
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/09/1992
Tank Capacity: 260
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP36
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/09/1992
Tank Capacity: 260
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP37
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/09/1992
Tank Capacity: 260
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

Tank ID: R-BP38
Date Installed: 04/21/1945
**Tank Status:** **Permanently Out of Use**
Date Closed: 04/07/1992
Tank Capacity: 300
Substance: Other

Name: NAVAL AIR STATION - BARBERS POINT
Address: BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B
City,State,Zip: BARBERS POINT NAVAL AIR STATION, HI 96862

**NAVAL AIR STATION - BARBERS POINT (Continued)** **U004109522**

| | |
|---|---|
| Tank ID: | R-BP39 |
| Date Installed: | 04/21/1945 |
| **Tank Status:** | **Permanently Out of Use** |
| Date Closed: | 04/07/1992 |
| Tank Capacity: | 300 |
| Substance: | Other |
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, B |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Tank ID: | R-BP40 |
| Date Installed: | 04/21/1945 |
| **Tank Status:** | **Permanently Out of Use** |
| Date Closed: | 04/07/1992 |
| Tank Capacity: | 300 |
| Substance: | Other |

---

**B3** **NAVAL AIR STATION - BARBERS POINT** **LUST U003154715**
**NNW** **TANK BP93, BLDG 1863** **UST N/A**
**1/4-1/2** **BARBERS POINT NAVAL AIR STATIO, HI 96862**
**0.419 mi.**
**2210 ft.** **Site 1 of 2 in cluster B**

**Relative:**
**Higher**

**Actual:**
**36 ft.**

LUST:

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP93, BLDG 1863 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102915 |
| Facility Status: | Site Cleanup Completed (NFA) |
| Facility Status Date: | 04/01/2004 |
| Release ID: | 940115 |
| Project Officer: | Randall Heu |

UST:

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP93, BLDG 1863 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102915 |
| Owner: | U.S. DEPT OF THE NAVY |
| Owner Address: | Not reported |
| Owner City,St,Zip: | Barbers Point Naval Air Station, 96862 96862 |
| Latitude: | 21.317606999999999 |
| Longitude: | -158.060013 |
| Horizontal Reference Datum Name: | NAD83 |
| Horizontal Collection Method Name: | Map |
| Tank ID: | R-93 |
| Date Installed: | Not reported |
| **Tank Status:** | **Permanently Out of Use** |
| Date Closed: | 09/10/1996 |
| Tank Capacity: | 500 |
| Substance: | Used Oil |

**B4**
**NNW**
**1/4-1/2**
**0.473 mi.**
**2497 ft.**

**NAVAL AIR STATION BARBERS POINT**
**BLDG 1866 TANK BP94**
**PEARL HARBOR, HI 96860**

**Site 2 of 2 in cluster B**

**LUST U003832853**
**UST N/A**

**Relative:**
**Higher**

**Actual:**
**38 ft.**

LUST:

| | |
|---|---|
| Name: | NAVAL AIR STATION BARBERS POINT |
| Address: | BLDG 1866 TANK BP94 |
| City,State,Zip: | PEARL HARBOR, HI 96860 |
| Facility ID: | 9-103175 |
| Facility Status: | Site Cleanup Completed (NFA) |
| Facility Status Date: | 10/15/2001 |
| Release ID: | 010058 |
| Project Officer: | Shumin Liu |

UST:

| | |
|---|---|
| Name: | NAVAL AIR STATION BARBERS POINT |
| Address: | BLDG 1866 TANK BP94 |
| City,State,Zip: | PEARL HARBOR, HI 96860 |
| Facility ID: | 9-103175 |
| Owner: | U.S. DEPT OF THE NAVY |
| Owner Address: | Not reported |
| Owner City,St,Zip: | Pearl Harbor, 96860 96860 |
| Latitude: | 21.318328999999999 |
| Longitude: | -158.060382 |
| Horizontal Reference Datum Name: | NAD83 |
| Horizontal Collection Method Name: | Map |
| Tank ID: | R-BP94 |
| Date Installed: | Not reported |
| **Tank Status:** | **Permanently Out of Use** |
| Date Closed: | 09/10/1996 |
| Tank Capacity: | 500 |
| Substance: | Used Oil |

---

**5**
**NE**
**1/4-1/2**
**0.493 mi.**
**2604 ft.**

**NAVAL AIR STATION - BARBERS POINT**
**TANK BP76, BLDG 1264**
**BARBERS POINT NAVAL AIR STATIO, HI 96862**

**LUST U001235782**
**UST N/A**

**Relative:**
**Higher**

**Actual:**
**26 ft.**

LUST:

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP76, BLDG 1264 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102236 |
| Facility Status: | Site Cleanup Completed (NFA) |
| Facility Status Date: | 05/14/1998 |
| Release ID: | 960105 |
| Project Officer: | Jeffrey Ung |

UST:

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP76, BLDG 1264 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102236 |
| Owner: | U.S. DEPT OF THE NAVY |
| Owner Address: | Not reported |

**NAVAL AIR STATION - BARBERS POINT (Continued)** **U001235782**

| | |
|---|---|
| Owner City,St,Zip: | Barbers Point Naval Air Station, 96862 96862 |
| Latitude: | 21.318607 |
| Longitude: | -158.050915 |
| Horizontal Reference Datum Name: | NAD83 |
| Horizontal Collection Method Name: | Map |
| | |
| Tank ID: | r-BP76 |
| Date Installed: | Not reported |
| **Tank Status:** | **Permanently Out of Use** |
| Date Closed: | 09/09/1996 |
| Tank Capacity: | 25000 |
| Substance: | Gasoline |

Count: 9 records. ORPHAN SUMMARY

| City | EDR ID | Site Name | Site Address | Zip | Database(s) |
|---|---|---|---|---|---|
| BARBERS POINT NAS | S111704673 | BARBERS POINT NAS UST NABP-89 | 91-1110 ENTERPRISE AVE | 96707 | SHWS, ENG CONTROLS, INST CONT |
| BARBERS POINT NAS | S111704672 | BARBERS POINT NAS STATION P | MISSION ST | 96707 | SHWS |
| EWA BEACH | S123640231 | STOCKPILE ON NAVY PARCEL | 1569 CORREGIDOR ST | 96706 | SHWS |
| HONOLULU COUNTY | S110061559 | HICKAM POL ST25, SPILL SITE 25 (FO | CRESTVIEW COMMUNITY PARK | | SHWS |
| KAPOLEI | S126282642 | HIARNG KALAELOA RELOCATION OF UNIT | 91-1179 ENTERPRISE AVE | 96707 | SHWS |
| KAPOLEI | S126282641 | HIARNG KALAELOA AIRPORT ABANDON PI | MIDWAY STREET | | SHWS |
| KAPOLEI | S126282769 | KALAELOA AIRPORT DAY TANK WAREHOUS | 30 MIDWAY ROAD | | SHWS |
| KAPOLEI | S126282770 | KALAELOA REDEVELOPMENT PROGRAM | SARATOGA AVENUE, KALAELOA, HI | | SHWS |
| KAPOLEI | S126282637 | HIANG 297TH AIR TRAFFIC CONTROL SQ | SARATOGA AVE AND MIDWAY ST | 96707 | SHWS |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Number of Days to Update:** Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

**STANDARD ENVIRONMENTAL RECORDS**

***Lists of Federal NPL (Superfund) sites***

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

***Lists of Federal Delisted NPL sites***

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Quarterly

***Lists of Federal sites subject to CERCLA removals and CERCLA orders***

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/01/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Quarterly

***Lists of Federal CERCLA sites with NFRAP***

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Quarterly

***Lists of Federal RCRA facilities undergoing Corrective Action***

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

***Lists of Federal RCRA TSD facilities***

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

***Lists of Federal RCRA generators***

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

***Federal institutional controls / engineering controls registries***

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 07/12/2021
Date Data Arrived at EDR: 08/06/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 77

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/08/2021
Next Scheduled EDR Contact: 02/21/2022
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/23/2021
Date Data Arrived at EDR: 08/23/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/18/2021
Next Scheduled EDR Contact: 03/06/2022
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/23/2021
Date Data Arrived at EDR: 08/23/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/19/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

***Federal ERNS list***

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/21/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 85

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/16/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

***Lists of state- and tribal hazardous waste facilities***

SHWS: Sites List

Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 09/09/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 83

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 12/03/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Semi-Annually

***Lists of state and tribal landfills and solid waste disposal facilities***

SWF/LF: Permitted Landfills in the State of Hawaii

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/30/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 39

Source: Department of Health
Telephone: 808-586-4245
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

***Lists of state and tribal leaking storage tanks***

LUST: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 06/01/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/25/2021
Number of Days to Update: 83

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 11/19/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Semi-Annually

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 05/17/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 06/01/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

***Lists of state and tribal registered storage tanks***

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/29/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 11/01/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Varies

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 06/01/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/25/2021
Number of Days to Update: 83

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 11/19/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Semi-Annually

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 06/01/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/17/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

***State and tribal institutional control / engineering control registries***

ENG CONTROLS: Engineering Control Sites
A listing of sites with engineering controls in place.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9
Source: Department of Health
Telephone: 404-586-4249
Last EDR Contact: 12/03/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls
Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 12/03/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

***Lists of state and tribal voluntary cleanup sites***

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Response Program Sites
Sites participating in the Voluntary Response Program. The purpose of the VRP is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntarily cleanup properties.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 09/09/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 83
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 12/03/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

***Lists of state and tribal brownfield sites***

BROWNFIELDS: Brownfields Sites
With certain legal exclusions and additions, the term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Date of Government Version: 08/17/2020
Date Data Arrived at EDR: 09/09/2020
Date Made Active in Reports: 12/01/2020
Number of Days to Update: 83
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 12/03/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Local Brownfield lists***

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/10/2021
Date Data Arrived at EDR: 06/10/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 68
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/08/2021
Next Scheduled EDR Contact: 03/28/2022
Data Release Frequency: Semi-Annually

***Local Lists of Landfill / Solid Waste Disposal Sites***

SWRCY: SWRCY
A listing of recycling and drop-off facilities located in Hawaii.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/30/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 39
Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/22/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/14/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 10/28/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Varies

***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 05/18/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 77
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Lab Listing
A listing of clandestine drug lab site locations.

Date of Government Version: 08/04/2010
Date Data Arrived at EDR: 09/10/2010
Date Made Active in Reports: 10/22/2010
Number of Days to Update: 42
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 12/02/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 05/18/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 77
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Quarterly

***Local Land Records***

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Semi-Annually

***Records of Emergency Release Reports***

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/12/2021
Date Data Arrived at EDR: 09/13/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 15
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/16/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

SPILLS: Release Notifications
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 03/25/2021
Date Data Arrived at EDR: 03/25/2021
Date Made Active in Reports: 06/15/2021
Number of Days to Update: 82
Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 03/10/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/11/2013
Number of Days to Update: 39

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

***Other Ascertainable Records***

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 08/10/2021
Date Data Arrived at EDR: 08/17/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 66

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/15/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/05/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/08/2021
Next Scheduled EDR Contact: 02/21/2022
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 13
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/01/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/05/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 03/28/2022
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 07/19/2021
Date Data Arrived at EDR: 07/19/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 85

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/20/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/18/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 40
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/19/2020
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/08/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 09/30/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/29/2021
Date Data Arrived at EDR: 08/24/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 87
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/18/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 70
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 12/02/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/05/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/27/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/26/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 07/14/2021
Date Made Active in Reports: 07/16/2021
Number of Days to Update: 2

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/30/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 90

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/05/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/01/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 12/09/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/09/2021
Date Data Arrived at EDR: 08/24/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 87

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 89

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/14/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 91

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 05/05/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 91

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 06/26/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 10/05/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77
Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/07/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/13/2021
Date Data Arrived at EDR: 08/13/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 70
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Quarterly

AIRS: List of Permitted Facilities
A listing of permitted facilities in the state.

Date of Government Version: 03/31/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/22/2021
Number of Days to Update: 82
Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Varies

DRYCLEANERS: Permitted Drycleaner Facility Listing
A listing of permitted drycleaner facilities in the state.

Date of Government Version: 03/31/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/22/2021
Number of Days to Update: 82
Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Varies

Financial Assurance: Financial Assurance Information Listing
A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 09/01/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 12/10/2021
Number of Days to Update: 86
Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

LEAD: Lead Inspection Listing
Lead inspections

Date of Government Version: 09/14/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 09/22/2021
Number of Days to Update: 7

Source: Department of Health
Telephone: 808-586-5800
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

UIC: Underground Injection Wells Listing
A listing of underground injection well locations.

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/12/2013
Date Made Active in Reports: 04/09/2013
Number of Days to Update: 56

Source: Department of Health
Telephone: 808-586-4258
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 09/30/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Semi-Annually

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 09/30/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/30/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Semi-Annually

**EDR HIGH RISK HISTORICAL RECORDS**

***EDR Exclusive Records***

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

**EDR RECOVERED GOVERNMENT ARCHIVES**

***Exclusive Recovered Govt. Archives***

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/08/2014
Number of Days to Update: 191

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/17/2014
Number of Days to Update: 200

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

**OTHER DATABASE(S)**

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines

Source: Endeavor Business Media

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data

Source: Endeavor Business Media

This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes

Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools

Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools

Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory

Source: Office of Planning
Telephone: 808-587-2895

Current USGS 7.5 Minute Topographic Map

Source: U.S. Geological Survey

**STREET AND ADDRESS INFORMATION**

# GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

**TARGET PROPERTY ADDRESS**

HONOKEA PHASE I ESA
NOT REPORTED
KAPOLEI, HI 96707

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 21.310839 - 21ˆ 18’ 39.02’’ |
| Longitude (West): | 158.05734 - 158ˆ 3’ 26.42’’ |
| Universal Tranverse Mercator: | Zone 4 |
| UTM X (Meters): | 597770.1 |
| UTM Y (Meters): | 2356703.2 |
| Elevation: | 23 ft. above sea level |

**USGS TOPOGRAPHIC MAP**

| | |
|---|---|
| Target Property Map: | 9757679 EWA, HI |
| Version Date: | 2017 |

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**GROUNDWATER FLOW DIRECTION INFORMATION**

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

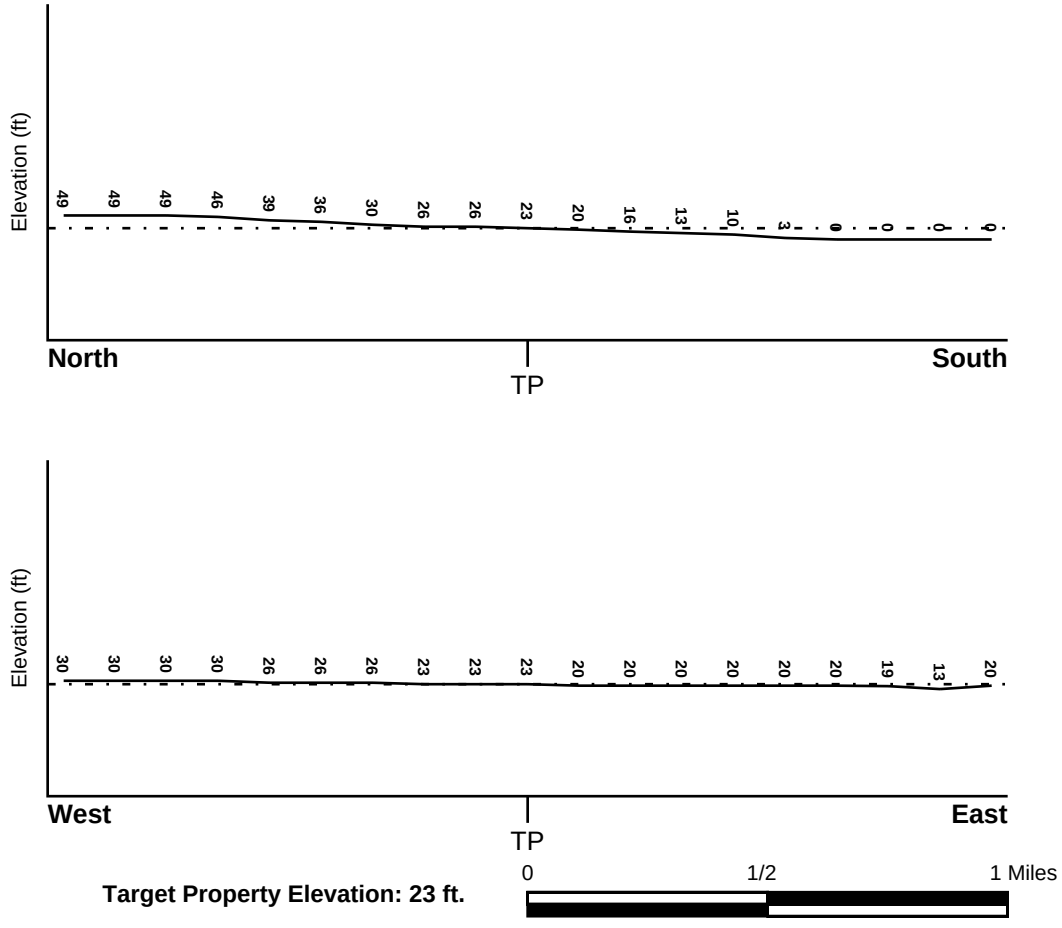
**TOPOGRAPHIC INFORMATION**

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

**TARGET PROPERTY TOPOGRAPHY**

General Topographic Gradient: General SSE

**SURROUNDING TOPOGRAPHY: ELEVATION PROFILES**




**Target Property Elevation: 23 ft.**

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**HYDROLOGIC INFORMATION**

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

**FEMA FLOOD ZONE**

| Flood Plain Panel at Target Property | FEMA Source Type |
|---|---|
| 15003C0316H | FEMA FIRM Flood data |

| Additional Panels in search area: | FEMA Source Type |
|---|---|
| 15003C0310G | FEMA FIRM Flood data |
| 15003C0317G | FEMA FIRM Flood data |

**NATIONAL WETLAND INVENTORY**

| NWI Quad at Target Property | NWI Electronic Data Coverage |
|---|---|
| EWA | YES - refer to the Overview Map and Detail Map |

**HYDROGEOLOGIC INFORMATION**

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

**AQUIFLOW®**

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

| MAP ID | LOCATION FROM TP | GENERAL DIRECTION GROUNDWATER FLOW |
|---|---|---|
| Not Reported | | |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**GROUNDWATER FLOW VELOCITY INFORMATION**

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

**GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY**

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

**ROCK STRATIGRAPHIC UNIT**

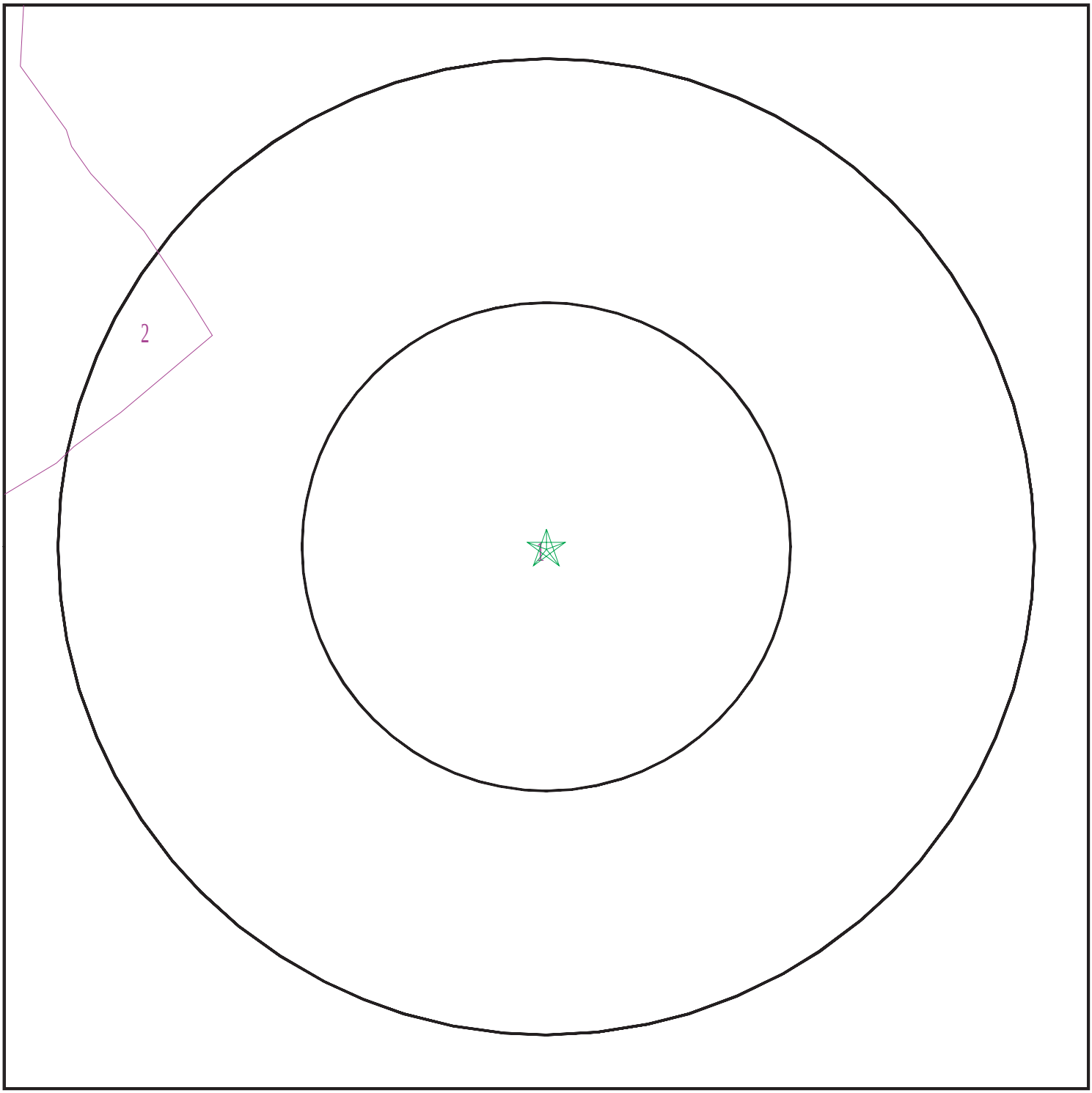
| | |
|---|---|
| Era: | - |
| System: | - |
| Series: | - |
| Code: | N/A *(decoded above as Era, System & Series)* |

**GEOLOGIC AGE IDENTIFICATION**

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

# SSURGO SOIL MAP - 6803000.2s




Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

| | | | |
|---|---|---|---|
| SITE NAME: | Honokea Phase I ESA | CLIENT: | Element Environmental , LLC |
| ADDRESS: | Not Reported<br>Kapolei HI 96707 | CONTACT: | Angela Peltier |
| LAT/LONG: | 21.310839 / 158.05734 | INQUIRY #: | 6803000.2s |
| | | DATE: | December 29, 2021 12:58 pm |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY**

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

---

**Soil Map ID: 1**

Soil Component Name: Coral outcrop

Soil Surface Texture: bedrock

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 59 inches | bedrock | Not reported | Not reported | Max: 42<br>Min: 1.41 | Max: Min: |

---

**Soil Map ID: 2**

Soil Component Name: Fill land, mixed

Soil Surface Texture: gravelly sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 152 inches

Depth to Watertable Min: > 0 inches

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 5 inches | gravelly sandy loam | Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils. | Not reported | Max: 0.42 Min: 0.02 | Max: Min: |
| 2 | 5 inches | 59 inches | fine sandy loam | Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils. | Not reported | Max: 0.42 Min: 0.02 | Max: Min: |
| 3 | 59 inches | 70 inches | bedrock | Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils. | Not reported | Max: 0.42 Min: 0.02 | Max: Min: |

**LOCAL / REGIONAL WATER AGENCY RECORDS**

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

**WELL SEARCH DISTANCE INFORMATION**

| DATABASE | SEARCH DISTANCE (miles) |
|---|---|
| Federal USGS | 1.000 |
| Federal FRDS PWS | Nearest PWS within 1 mile |
| State Database | 1.000 |

**FEDERAL USGS WELL INFORMATION**

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No Wells Found | | |

**FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION**

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No PWS System Found | | |

Note: PWS System location is not always the same as well location.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**STATE DATABASE WELL INFORMATION**

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No Wells Found | | |

# PHYSICAL SETTING SOURCE MAP - 6803000.2s


County Boundary
Major Roads
Contour Lines
Airports
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location

N

| | | | |
|---|---|---|---|
| SITE NAME: | Honokea Phase I ESA | CLIENT: | Element Environmental , LLC |
| ADDRESS: | Not Reported<br>Kapolei HI 96707 | CONTACT: | Angela Peltier |
| LAT/LONG: | 21.310839 / 158.05734 | INQUIRY #: | 6803000.2s |
| | | DATE: | December 29, 2021 12:58 pm |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
# RADON

**AREA RADON INFORMATION**

Federal EPA Radon Zone for HONOLULU County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

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Federal Area Radon Information for Zip Code: 96707

Number of sites tested: 7

| Area | Average Activity | % <4 pCi/L | % 4-20 pCi/L | % >20 pCi/L |
|---|---|---|---|---|
| Living Area - 1st Floor | 0.143 pCi/L | 100% | 0% | 0% |
| Living Area - 2nd Floor | Not Reported | Not Reported | Not Reported | Not Reported |
| Basement | Not Reported | Not Reported | Not Reported | Not Reported |

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

## HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Office of Planning
Telephone: 808-587-2895

## HYDROGEOLOGIC INFORMATION

AQUIFLOW$^{R}$ Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Well Index Database
Source: Commission on Water Resource Management
Telephone: 808-587-0214
CWRM maintains a Well Index Database to track specific information pertaining to the construction and installation of production wells in Hawaii.

## OTHER STATE DATABASE INFORMATION

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

**STREET AND ADDRESS INFORMATION**

# EDR Environmental Lien and AUL Search

**HONOKEA PHASE I ESA**
NOT REPORTED
KAPOLEI, HI 96707

**Inquiry Number: 6803000.7S**
JANUARY 4, 2022

# EDR Environmental Lien and AUL Search

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# EDR Environmental Lien and AUL Search

The EDR Environmental Lien Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

**Thank you for your business.**
Please contact EDR at 1-800-352-0050
with any questions or comments.

# EDR Environmental Lien and AUL Search

## TARGET PROPERTY INFORMATION

### ADDRESS

HONOKEA PHASE I ESA
NOT REPORTED
KAPOLEI, HI 96707

### RESEARCH SOURCE

Source 1: HONOLULU COUNTY RECORDER'S OFFICE

Source 2: HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

### PROPERTY INFORMATION

| | |
|---|---|
| **Legal Description:** | LOT 13073-C MAP 971 LCAPP 1069 19.361 AC |
| **Current Owner:** | HAWAII COMMUNITY DEVELOPMENT |
| **Property Identifiers:** | 910130680000 |
| **Comments:** | NA |

**Deed 1**

| | |
|---|---|
| Type of Deed: | QUIT CLAIM DEED |
| Title is vested in: | HAWAII COMMUNITY DEVELOPMENT |
| Title received from: | THE UNITED STATES OF AMERICA |
| Date Executed: | 10/06/2011 |
| Date Recorded: | 11/22/2011 |
| Book: | NA |
| Page: | NA |
| Volume: | NA |
| Instrument#: | 4113681 |
| Docket: | NA |
| Land Record Comments: | NA |
| Miscellaneous Comments: | NA |

# EDR Environmental Lien and AUL Search

**ENVIRONMENTAL LIEN**

Environmental Lien: Found ☐ Not Found ☒

Comments: NONE IDENTIFIED.

**OTHER ACTIVITY AND USE LIMITATIONS (AULS)**

Other AUL's: Found ☐ Not Found ☒

Comments: NONE IDENTIFIED.

# EDR Environmental Lien and AUL Search

**MISCELLANEOUS**

Comments: NONE IDENTIFIED.

NC
Issue
1

L-481 STATE OF HAWAII
OFFICE OF ASSISTANT REGISTRAR
RECORDED
NOV 22, 2011 02:00 PM
Doc No(s) 4113681
on Cert(s) 529,664
Issuance of Cert(s) 1,035,007

/s/ NICKI ANN THOMPSON
ASSISTANT REGISTRAR

20 1/1 Z10

LAND COURT | REGULAR SYSTEM

AFTER RECORDATION, RETURN TO: RETURN BY: MAIL ☒ PICKUP ☐

Hawaii Community Development Authority
461 Cooke Street
Honolulu, Hawaii 96813
Attention: Anthony J.H. Ching

THIS DOCUMENT COMPRISES ___ PAGES

Tax Map Key No.

# QUITCLAIM DEED

This Quitclaim Deed ("Deed") is made this 6th day of October, 2011, by and between the **UNITED STATES OF AMERICA ("GRANTOR"),** acting by and through the Department of the Navy, with a principal office at 1455 Frazee Road, Suite 900, San Diego, Califomia 92108, and the **HAWAII COMMUNITY DEVELOPMENT AUTHORITY, a body corporate and a public instrumentality of the State of Hawaii ("GRANTEE")** whose address is 461 Cooke Street, Honolulu, Hawaii 96813.

## RECITALS

**WHEREAS**, by authority contained in Section 2855 of the FY 2010 National Defense Authorization Act, (Public Law 111-84), the Secretary of the Navy is authorized to convey all right, title, and interest of the Unites States to certain portions of the former Naval Air Station, Barbers Point to the GRANTEE and such conveyance shall be without monetary consideration if the conveyed real property is to be used for public benefit,; and

**WHEREAS**, GRANTEE, has requested conveyance, without consideration, of portions of the former Naval Air Station Barbers Point, described below, totaling approximately 69.772 acres of land, more or less, together with certain improvements thereon and adjacent thereto (the "Property").

**WHEREAS**, The Property at the former Naval Air Station, Barbers Point, was identified for closure through the base closure process pursuant to Public Law 101-510, the 1990 Defense Base Closure and Realignment Act, 10 U.S.C. 2687 note, and the 1993 Base Closure and Realignment Commission recommendations which were approved by President Clinton and Congress. The Parcels that comprise this Property were declared Surplus to the Federal Government and noticed in the Federal Register on October 11, 1995, or on July 15, 2002.

**WHEREAS,** on August 16, 2002, GRANTOR executed a Finding of Suitability to Transfer (FOST) for Lots 13073-C, 13073-E and 13074-A, and on March 2, 2010, GRANTOR executed a FOST Addendum for the Lots. These documents set forth the basis for GRANTOR's determination that the Property is suitable for transfer pursuant to 42 U.S.C. Section 9620(h)(3).

**NOW, THEREFORE,** GRANTOR, in consideration of the foregoing, the covenants, conditions and restrictions hereinafter contained and other good and valuable consideration, the receipt of which is hereby acknowledged, does hereby remise, release and forever quitclaim to GRANTEE all of GRANTOR's right, title and interest in the Property, more particularly described as:

I. Lot 13073-C consisting of an area of 19.361 acres more or less, as shown on Map 971, as set forth in Land Court Order No. 135167, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 1069, being a portion of the property covered by Transfer Certificate of Title No. 529,664, issued to GRANTOR, hereinafter referred to as the "Property", along with rights of ingress and egress as noted on Land Court Order No. 135167.

II. Lot 13073-E consisting of an area of 44.280 acres more or less, as shown on Map 971, as set forth in Land Court Order No. 135167, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 1069, being a portion of the property covered by Transfer Certificate of Title No. 529,664, issued to GRANTOR, hereinafter referred to as the "Property", along with rights of ingress and egress as noted on Land Court Order No. 135167.

III. Lot 13074-A consisting of an area of 6.131 acres more or less, as shown on Map 972, as set forth in Land Court Order No. 135470, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 1069, being a portion of the property covered by Transfer Certificate of Title No. 529,664, issued to GRANTOR, hereinafter referred to as the "Property", along with rights of ingress and egress as noted on Land Court Order No. 135470.

**IV. TOGETHER WITH:**

All of GRANTOR's right, title and interest in and to buildings, improvements, and utilities located on the Property and all rights, tenements, hereditaments, and appurtenances thereonto belonging, excepting those improvements and interests hereinafter specifically excluded, excepted or reserved, all as set forth in Section IX below.

**V. EXCEPTING AND RESERVING to GRANTOR, its successors and assigns:**

A. Those certain wastewater utility facilities, which are located within the PROPERTY and are utilized to provide wastewater service for lots other than the PROPERTY, location of said wastewater utility facilities being within the following easements:

i. Easement 7051 (Lot 13073-E), as shown on Map 1016, as set forth as Land Court Order No. 138544, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application 1069, as to a portion of the property covered by Certificate of Title No. 529,664 issued to GRANTOR.

ii. Together with perpetual easements and rights-of-way over, across, under and through Easement 7051, for the operation, maintenance, repair, replacement and removal of all said existing wastewater facilities; and further reserving to the GRANTOR, the right to transfer such easements, to any governmental agency, or to any public, quasi-public or private utility service company, upon notice to, but without requirement for joinder or consent of, GRANTEE or any person holding under or through GRANTEE.

B. Those certain electric utility facilities, that are located within the PROPERTY and are utilized to provide electric service for lots other than the PROPERTY, location of said electric utility facilities being within the following easements:

i. Easement 10071 (Lot 13073-E), as shown on Map 1454, as set forth in and Order No. 178424, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application 1069, as to a portion of the property covered by Certificate of Title No. 529,664 issued to GRANTOR.

ii. Together with perpetual easements and rights-of-way over, across, under and through Easement 10071, for the operation, maintenance, repair, replacement and removal of all said existing electric facilities; and further reserving to the GRANTOR, the right to transfer such easements, to any governmental agency, or to any public, quasi-public or private utility service company, upon notice to, but without requirement for joinder or consent of, GRANTEE or any person holding under or through GRANTEE.

**VI. IN ADDITION, EXCEPTING AND RESERVING** unto GRANTOR, its successors and assigns, all of the following utility facilities, easements, rights-of-way and other rights and entitlements:

A. Those certain existing electrical transformers (excluding transformer pads and fencing), poles, wire lines, guy wires, anchors and/or underground wire lines, ducts, manholes, and such other appliances and equipment located within the Property, providing electrical service to GRANTEE, which extend from the boundaries of the Property up to the appropriate electrical metering point of each building located on the Property, as said "metering point" is defined in the Hawaiian Electric Company, Inc. ("HECO") "Electric Service Installation Manual" effective on the date of this conveyance and regardless of whether or not those meters have actually been installed; TOGETHER WITH perpetual easements and rights-of-way over, across, under, and through the Property for the operation, maintenance, repair, replacement, and/or removal of said existing electric facilities located on the Property. GRANTOR reserves the right to unilaterally relinquish said perpetual easements, with notice to GRANTEE.

B. Those certain electrical transformers (excluding transformer pads and fencing), poles, wire lines, guy wires, anchors and/or underground wire lines, ducts, manholes, and other appliances and equipment located within the Property that are utilized to provide electrical service for lots other than the Property, the locations of which are approximately shown on HECO Drawing No. C4633, dated July 7, 1999, entitled "Barbers Point NAS Electrical Easements, Quad 7, 46KV, 12KV & 4KV Lines", on file at HECO's office at 900 Richards Street, Honolulu, Hawaii 96813, and identified as "Easements for Existing Electrical Facilities", (hereinafter referred to collectively as "existing electric utility facilities"); TOGETHER WITH perpetual easements and rights-of-way over, across, under, and through the Property for the operation, maintenance, repair, replacement, and/or removal of said existing electric utility facilities located on the Property; and GRANTOR further hereby reserves for itself or any person or entity designated by GRANTOR, including HECO, the right to survey the land areas beneath said existing electric utility facilities as may be considered by GRANTOR to be reasonably necessary for the transmission and distribution of electricity for light, power and/or communications and control circuits for the use of occupants of the Property and other lots. GRANTOR's right to survey said land areas includes the right to create metes and bounds maps and/or descriptions of specifically delineated easement areas and the right to designate said easements on Land Court map(s) over, across, under and through the Property for electric utility purposes, upon notice to, but without requirement for joinder or consent of, GRANTEE or any person holding under or through GRANTEE. Said consent should not be unreasonably withheld or delayed. GRANTOR further reserves the right to cancel the perpetual easements and rights-of-way reserved hereunder in this paragraph and to grant new specifically delineated easements to HECO or any other entity, through the execution of a grant of easement document, upon notice to but without requirement for joinder or consent of GRANTEE so long as it does not unreasonably inhibit GRANTEE's use of the property or good faith efforts have otherwise been made by GRANTOR to locate the easement in a place that will not unreasonably inhibit GRANTEE's use of the property. Notwithstanding the foregoing, if the Land Court or another court of competent jurisdiction requires a

document to be executed by GRANTEE in order for GRANTOR to file Land Court petitions to designate said easements, to file the Cancellation and Grant of Easement, or to otherwise effectuate the grant of said easements, GRANTEE hereby appoints GRANTOR as GRANTEE's attorney-in-fact solely for the purpose of (1) filing all Land Court petitions necessary or appropriate to designate said easements on any Land Court map(s), (2) granting such easements, and (3) doing all other things necessary to effectuate such grants. This power-of-attorney is coupled with an interest and is irrevocable.

C. In addition, if the Land Court or another court of competent jurisdiction, notwithstanding the rights above, still requires GRANTEE to execute a document in order for GRANTOR to file Land Court petitions to designate easements, to file such grant of easements or otherwise to effectuate said grant, then by acquiring any interest in the Property, GRANTEE and each person holding under or through GRANTEE, agrees to cooperate, join in and/or consent to GRANTOR's exercise of its rights hereunder if so requested by GRANTOR, which cooperation, joinder(s) or consent(s) shall not be unreasonably withheld, conditioned or delayed. Such persons further agree that if the requested cooperation, joinder or consent is not forthcoming within a reasonable period of time not to exceed forty-five (45) days, GRANTEE and such persons holding under or through GRANTEE shall be deemed to have irrevocably waived any right to consent to and/or join in the matter for which the consent or joinder was sought so long as the easement does not unreasonably inhibit GRANTEE's use of the property or good faith efforts have otherwise been made by GRANTOR to locate the easement in a place that will not unreasonably inhibit GRANTEE's use of the property.

**VII FURTHER EXPRESSLY RESERVING AND EXCEPTING**, all right, title, and interest in and to the following items, including without limitation, the exclusive right to transfer, sell, convey, grant, modify, cancel or terminate the same. Notwithstanding anything herein to the contrary, the following items are expressly excluded from any conveyance effected under this instrument, and GRANTEE shall have no right to own, use or enjoy any of the following items:

A. Easement "3697," affecting Lot 2488-A-2, as shown on Map 632 of Land Court Application No. 1069, and as set forth by Land Court Order No. 110870, filed March 9, 1993, designated for the purpose of a runway safety clear zone, and granted to GRANTOR, acting through the Department of the Navy, as set forth in that certain Grant dated April 30, 1993, filed as Land Court Document No. 2020854, and noted on Certificate of Title No. 504,038.

B. Easement "1360," affecting Lots 425-C-1, 2488-A, 2489-A, 2529, and 3168, as shown on Map 373 of Land Court Application No. 1069, and as set forth by Land Court Order No. 72368, filed January 11, 1985, designated for the purpose of flight clearance glide plane, and as set forth in that certain Declaration of Taking, dated August 23, 1979, filed as Land Court Document No. 1270954 and noted on Certificate of Title No. 504,038.

C. Easement "540," affecting Lot 1136-D-1 and Lot 1909, and Easement "541," affecting Lots 1136-D-1, 247, 1170, 1172, and Lot 1909, as shown on Map 185 of Land Court Application 1069, and as set forth by Land Court Order No. 27855, filed December 6, 1967, designated for the purpose of aircraft flight clearance purposes, and granted to GRANTOR, as set forth in that certain Grant dated May 7, 1968, filed as Land Court Document No. 449065 and noted on Certificate of Title No. 85,671.

D. Easement "2263," affecting Lots 1909-B and 3805-A, as shown on Map 487 of Land Court Application 1069, and as set forth by Land Court Order No. 95131, filed September 18, 1989, and granted to GRANTOR, as set forth in that certain Grant dated June 8, 1989, filed as Land Court Document No. 1685726 and noted on Certificate of Title No. 85,671.

E. Easement "2277," affecting Lots 220-A, 221, and 298, as shown on Map 496 of Land Court Application 1069, and as set forth by Land Court Order No. 95854, filed November 14, 1989, and granted to GRANTOR, as set forth in that certain Grant dated June 8, 1989, filed as Land Court Document No. 1685727, and noted on Certificate of Title No. 15,790.

F. Easement "2280," affecting Lot 298, as shown on Map 496 and Easement "2281," affecting Lots 178, 316, 317, 318, and 319, as shown on Map 496, of Land Court Application 1069, and as set forth by Land Court Order No. 95854, filed November 14, 1989, and granted to GRANTOR, as set forth in that certain Grant dated June 8, 1989, filed as Land Court Document No. 1685728, and noted on Certificate of Title No. 15,790.

G. Easement "2279," affecting Lot 298, as shown on Map 496 of Land Court Application 1069, and as set forth by Land Court Order No. 95854, filed November 14, 1989, and granted to GRANTOR, as set forth in that certain Grant dated June 8, 1989, filed as Land Court Document No. 1685737, and noted on Certificate of Title No. 15,790.

H. Easement "2262," affecting Lots 237-A and 2695, as shown on Map 486 of Land Court Application 1069, and as set forth by Land Court Order No. 95159, filed September 18, 1989, and granted to GRANTOR, as set forth in that certain Grant dated June 8, 1989, filed as Land Court Document No. 1685738, and noted on Certificate of Title No. 15,790.

I. Easement "2278," affecting Lot 298, as shown on Map 496 of Land Court Application 1069, and as set forth by Land Court Order No. 95854, filed November 14, 1989, and granted to GRANTOR, as set forth in that certain Grant dated June 8, 1989, filed as Land Court Document No. 1685739, and noted on Certificate of Title No. 15,790.

J. Perpetual flight clearance easement, in, over, and above Lot 204-A-2-A-2, as shown on Map 217 of Land Court Application 1069, as set forth by Land Court Order No. 35554, filed July 19, 1972, and Lot 208, as shown on Map 34 of Land Court Application 1069, as set forth by Land Court Order No. 5852, filed July 3, 1944, reserved to GRANTOR in that certain Quitclaim Deed dated August 1, 1974, filed as Land Court Document No. 693093, and noted on Certificate of Title No. 170,393.

K. Right of access, including but not limited to, right to transport, haul and tow aircraft over and along the existing road in Lot 208, as shown on Map 34 of Land Court Application 1069, as set forth by Land Court Order No. 5852, filed July 3, 19944, reserved to GRANTOR in that certain Quitclaim Deed dated August 1, 1974, filed as Land Court Document No. 693093, and noted on Certificate of Title No. 170,393, and the right to control public and private vehicular traffic on said road during these aircraft transport operations.

**VIII. SUBJECT TO THE FOLLOWING RESERVATIONS, EXCEPTIONS, RESTRICTIONS AND CONDITIONS:**

A. Easement 6786, affecting Lot 13073-E was designated, and recorded as Land Court Order No. 135167 on Transfer Certificate of Title 529,664 on May 20, 1999 as shown on Land Court Application 1069 Map 971.

**IX. SUBJECT TO THE FOLLOWING NOTICES, COVENANTS, CONDITIONS AND RESTRICTIONS, which shall be binding upon and enforceable against GRANTEE, its successors and assigns, in perpetuity:**

**A.** GRANTEE hereby accepts conveyance of the Property subject to all covenants, conditions and restrictions, easements, rights-of-way, reservations, rights, agreements, encumbrances of record pertaining to the PROPERTY.

**B.** GRANTEE covenants for itself, its successors and assigns, that the PROPERTY will be used for public benefit as required for a conveyance made without consideration under Section 2855 of the FY 2010 National Defense Authorization Act, (Public Law 111-84).

**C. FOST RESTRICTIONS AND NOTIFICATIONS**

i. The FOST's and FOST Addendum reference environmental conditions on the Property and on other properties not subject to this Deed. The FOST sets forth the basis for GRANTOR's determination that the PROPERTY is suitable for transfer. GRANTEE acknowledges that it has been made aware of the notifications contained in the FOST's and FOST Addendum, that GRANTEE has received copies of the FOST's and FOST Addendum, and that all documents referenced therein have been made available to GRANTEE for inspection and reproduction.

ii. GRANTEE is hereby notified that arsenic, atrazine, bis(2-ethylhexyl) phthalate, 4,4'-DDE (commonly, "dichlorodiphenyldichloroethylene," or 1,1-

bis-(4-chlorophenyl)-2,2-dichloroethene), 4,4'-DDT (commonly, "dichlorodiphenyl-trichloroethane" or 1,1-bis-(4-chlorophenyl)-2,2,2-trichloroethane), lead, lindane, and thallium were released in the Regional Groundwater System (POI-49), which lies beneath the property. The chemicals detected were at concentrations that did not require a response action.

iii. GRANTEE is hereby notified that petroleum hydrocarbons are present in the groundwater beneath Lot 13073-C.

iv. GRANTEE covenants and agrees for itself, its successors and assigns that any soil removed from Lot 13073-C during excavation into the water table shall be tested and disposed of in accordance with applicable laws and regulations.

v. GRANTEE covenants and agrees for itself, its successors and assigns, to apply with the State of Hawaii Department of Health within 90 days of the conveyance of the property for underground injection control (UIC) permits for the existing dry wells located on Lot 13073-C. GRANTEE further covenants and agrees for itself, its successors and assigns that it shall be responsible for complying with all requirements of the UIC permits held by the GRANTOR until GRANTEE receives new UIC permits in its own name.

vi. In the event that any sediment is removed from the dry wells on Lot 13073-C, transferee shall dispose of the sediment off site in an appropriate facility in accordance with applicable laws and regulations.

**D. Property Covered by Notice, Description, Access Rights, and Covenants Made Pursuant to Section 120(h)(3)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)):** For the Property, the GRANTOR provides the following notice, description, and covenants and retains the following access rights:

i. **Notices Pursuant to Section 120(h)(3)(A)(i)(I) and (II) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)(i)(I) and (II)):** Pursuant to section 120(h)(3)(A)(i)(I) and (II) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)(i)(I) and (II)), available information regarding the type, quantity, and location of hazardous substances and the time at which such substances were stored, released, or disposed of, as defined in section 120(h), is provided in Exhibit A, attached hereto and made a part hereof.

ii. **Description of Remedial Action Taken, If Any, Pursuant to Section 120(h)(3)(A)(i)(III) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)(i)(III)):** Pursuant to section 120(h)(3)(A)(i)(III) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)(i)(III)), a description

of the remedial action taken, if any, on the Property is provided in Exhibit A, attached hereto and made a part hereof.

iii. **Covenant Pursuant to Section 120(h)(3)(A)(ii) and (B) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)(ii) and (B)):** Pursuant to section 120(h)(3)(A)(ii) and (B) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)(ii) and (B)), GRANTOR warrants that:

(a) all remedial action necessary to protect human health and the environment with respect to any hazardous substance identified pursuant to section 120(h)(3)(A)(i)(I) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 remaining on the Property has been taken before the date of this Deed; and

(b) any additional remedial action found to be necessary after the date of this Deed shall be conducted by GRANTOR.

iv. **Access Rights Pursuant to Section 120(h)(3)(A)(iii) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9620(h)(3)(A)(iii)):**

(a) GRANTOR retains and reserves a perpetual and assignable easement and right of access on, over, and through the Property, to enter upon the Property in any case in which a remedial action or corrective action is found to be necessary on the part of GRANTOR, without regard to whether such remedial action or corrective action is on the Property or on adjoining or nearby lands. Such easement and right of access includes, without limitation, the right to perform any environmental investigation, survey, monitoring, sampling, testing, drilling, boring, coring, testpitting, installing monitoring or pumping wells or other treatment facilities, response action, corrective action, or any other action necessary for GRANTOR to meet its responsibilities under applicable laws and as provided for in this instrument. Such easement and right of access shall be binding on the GRANTEE and its successors and assigns and shall run with the land.

(b) In exercising such easement and right of access, GRANTOR shall provide the GRANTEE or its successors or assigns, as the case may be, with reasonable notice of its intent to enter upon the Property and exercise its rights under this clause, which notice may be severely curtailed or even eliminated in emergency situations. GRANTOR shall use reasonable means to avoid and to minimize interference with the GRANTEE's and the grantee's successors' and assigns' quiet enjoyment of the Property. At the completion of work, the work site shall be reasonably restored. Such easement and right of access includes the right to obtain and use utility services, including water, gas, electricity, sewer, and communications services available on the Property at a reasonable charge to GRANTOR. Excluding the reasonable charges for such utility services, no fee, charge, or compensation will be due the

GRANTEE, nor its successors and assigns, for the exercise of the easement and right of access hereby retained and reserved by GRANTOR.

(c) In exercising such easement and right of access, neither the GRANTEE nor its successors and assigns, as the case may be, shall have any claim at law or equity against GRANTOR or any officer or employee of GRANTOR based on actions taken by GRANTOR or its officers, employees, agents, contractors of any tier, or servants pursuant to and in accordance with this clause: Provided, however, that nothing in this paragraph shall be considered as a waiver by GRANTEE and its successors and assigns of any remedy available to them under the Federal Tort Claims Act.

**E. Floodplain Notification.** To the extent that any portion of the Property lies within a floodplain as defined in section 6(c) of Executive Order No. 11988, Floodplain Management, dated May 24, 1977, construction, development and other uses of that portion of the Property could be restricted by the standards and criteria of the National Flood Insurance Program of the Federal Emergency Management Agency, or other applicable regulations.

**F. No Hazard to Air Navigation.** GRANTEE covenants for itself, its successors and assigns, that prior to any construction or alteration on the Property, GRANTEE will obtain a determination of no hazard to air navigation from the Federal Aviation Administration in accordance with Code of Federal Regulations, title 14, part 77, entitled "Objects Affecting Navigable Airspace," or under the authority of the Federal Aviation Act of 1958, as amended.

**G. Non-Discrimination.** GRANTEE covenants for itself, its heirs, successors and assigns, and every successor in interest to the Property, or any part thereof, that GRANTEE and such heirs, successors and assigns shall not discriminate upon the basis of race, color, religion, or national origin in the use, occupancy, sale or lease of the Property or in such parties' employment practices conducted thereon. This covenant shall not apply, however, to the lease, or rental of a room or rooms within a family dwelling unit; nor shall it apply with respect to religion to premises primarily used for religious purposes. GRANTOR shall be deemed a beneficiary of this covenant without regard to whether it remains an owner of any land or interest therein in the locality of the Property and shall have the sole right to enforce this covenant in any court of competent jurisdiction.

**H. Historic Preservation Covenant**. GRANTEE hereby covenants on behalf of itself, its successors and assigns, and every successor in interest to the property hereby conveyed, to protect and maintain the historic properties on Lots 13073-E and 13074-A, described in the attached Exhibit "B" and depicted in the map attached as Exhibit "C" and are hereinafter referred to as the "Historic Properties", in a manner that preserves the attributes that contribute to the eligibility of the said historic properties for the National Register of Historic Places. Such attributes include association with significant events, information potential, design, setting, feeling, and

views from, to, and across the historic properties. GRANTEE, its successors or assigns further agrees to the following:

i. Construction, alteration, rehabilitation, renovation, demolition, disturbance of the ground surface, including but not limited to vegetation clearance, grading, or excavation, or other action to be undertaken on any portion of Lots 13073-E and 13074-A that would materially affect the integrity or the appearance of the attributes of the Historic Properties described in Exhibit "B" shall only be undertaken or permitted after consultation with the Hawaii State Historic Preservation Division (SHPD) as provided by Hawaii Revised Statutes Chapter 6E (§ 6E-8). Actions that have potential to affect Historic Properties either materially or visually would require SHPD review. The GRANTEE shall afford SHPD an opportunity to review ALL proposed projects and provide recommendations regarding the treatment of known and potential subsurface historic properties.

ii. Kapolei Hawaiian Civic Club (KHCC) has offered to partner with the GRANTEE for the protection and maintenance of cultural properties on the parcel. In addition, KHCC has requested status as an interested party to be included in consultations, along with SHPD, for proposed undertakings on the property.

iii. The GRANTEE shall take prompt action to secure the Historic Properties from vandalism and will be responsible for any stabilization that may be required to prevent further deterioration from human disturbance or exposure to natural elements. However, stabilization methods and materials must be approved by the SHPD prior to implementation.

iv. The GRANTEE shall allow the SHPD access at all reasonable times and upon reasonable advanced notice to GRANTEE to inspect the said Historic Properties in order to ascertain whether the GRANTEE is complying with the conditions of this historic preservation covenant.

v. Failure of the United States of America to exercise any right of remedy granted under this covenant shall not have the effect of waiving or limiting the exercise by the United States of America of any other right or remedy or the invocation of such right or remedy at any other time.

vi. In the event of a violation of this covenant, and in addition to any remedy now or hereafter provided by law, the United States of America or the SHPD may, following reasonable notice to GRANTEE, institute any action to enjoin said violation or to require the restoration of the Historic Properties.

vii. This covenant is binding on the GRANTEE in perpetuity. The restrictions, stipulations, and covenants contained herein shall be inserted by GRANTEE verbatim or by express reference in any deed or other legal instrument by which a fee simple interest or any lesser estate is conveyed in said Historic Properties or any part thereof.

I. **Uniform Environmental Covenant Agreement (UECA).** GRANTEE covenants that it shall execute the restrictive covenants specified in Paragraph VIII, C. "iv" , "v" and "vi" above, and record such covenants on the title of the property, in accordance with the Hawai'i Uniform Environmental Covenants Act, if required by, and in a form acceptable to, the Hawai'i Department of Health.

**X. THE CONDITIONS, RESTRICTIONS, RESERVATIONS, AND COVENANTS** set forth herein are a binding servitude on the Property, shall inure to the benefit of GRANTOR and GRANTEE and their respective successors and assigns, and will be deemed to run with the land in perpetuity.

**XI.** The term "GRANTOR" shall mean GRANTOR and its successors and assigns. The term GRANTEE shall mean GRANTEE and its successors and assigns.

**XIII.** Except as otherwise provided herein, or as otherwise provided by law, GRANTEE acknowledges that it has inspected, is aware of, and accepts the condition and state of repair of the Property, and that the Property is conveyed "as is" and "where is" without any representation, promise, agreement, or warranty on the part of GRANTOR regarding such condition and state of repair, or regarding the making of any alterations, improvements, repairs or additions. Except for the environmental remediation which may be required to be undertaken by GRANTOR pursuant to Section VI(D)(iii)(b) above, GRANTEE further acknowledges that GRANTOR shall not be liable for any latent or patent defects in the property except to the extent required by applicable law.

**XIII. LIST OF EXHIBITS.** The following exhibits are attached hereto and made a part hereof.

**A.** Exhibit "A" Notice of Hazardous Substances

**B.** Exhibit "B" Listing of Historic Properties

**C.** Exhibit "C" Map of Historic Properties

**[SIGNATURE & NOTARY PAGES FOLLOW]**

**IN WITNESS WHEREOF,** GRANTOR has caused this Deed to be executed in the name and on behalf of GRANTOR by its duly authorized officer on the day first above written.

**UNITED STATES OF AMERICA**
Acting by and through the Department of the Navy

BY: _____
WILLIAM R. CARSILLO
Real Estate Contracting Officer
Base Realignment & Closure Program Management Office West

**ACCEPTANCE AND ACKNOWLEDGMENT:**

GRANTEE hereby accepts this Deed, acknowledges receipt of the documents described herein and agrees to be bound by all the agreements, covenants, conditions and restrictions contained herein.

**HAWAII COMMUNITY DEVELOPMENT AUTHORITY**

BY: _____
ANTHONY J.H. CHING
Executive Director

Date: ____, 2011

Approved as to form for GRANTEE by the Department of the Attorney General, State of Hawaii

BY: _____
Diane Taira
Deputy Attorney General

# CALIFORNIA ALL-PURPOSE CERTIFICATE OF ACKNOWLEDGMENT

State of California

County of San Francisco

On 10/6/2011 before me, Thom O'Brien, Notary Public
(Here insert name and title of the officer)

personally appeared William R. Carrillo

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

THOM O'BRIEN
COMM. #1782116
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Dec. 25, 2011

Signature of Notary Public

(Notary Seal)

## ADDITIONAL OPTIONAL INFORMATION

DESCRIPTION OF THE ATTACHED DOCUMENT

(Title or description of attached document)

(Title or description of attached document continued)

Number of Pages _____ Document Date _____

(Additional information)

CAPACITY CLAIMED BY THE SIGNER

- ☐ Individual (s)
- ☐ Corporate Officer

(Title)

- ☐ Partner(s)
- ☐ Attorney-in-Fact
- ☐ Trustee(s)
- ☐ Other _____

INSTRUCTIONS FOR COMPLETING THIS FORM

*Any acknowledgment completed in California must contain verbiage exactly as appears above in the notary section or a separate acknowledgment form must be properly completed and attached to that document. The only exception is if a document is to be recorded outside of California. In such instances, any alternative acknowledgment verbiage as may be printed on such a document so long as the verbiage does not require the notary to do something that is illegal for a notary in California (i.e. certifying the authorized capacity of the signer). Please check the document carefully for proper notarial wording and attach this form if required.*

- State and County information must be the State and County where the document signer(s) personally appeared before the notary public for acknowledgment.
- Date of notarization must be the date that the signer(s) personally appeared which must also be the same date the acknowledgment is completed.
- The notary public must print his or her name as it appears within his or her commission followed by a comma and then your title (notary public).
- Print the name(s) of document signer(s) who personally appear at the time of notarization.
- Indicate the correct singular or plural forms by crossing off incorrect forms (i.e. ~~he~~/she/~~they,~~ is /~~are~~ ) or circling the correct forms. Failure to correctly indicate this information may lead to rejection of document recording.
- The notary seal impression must be clear and photographically reproducible. Impression must not cover text or lines. If seal impression smudges, re-seal if a sufficient area permits, otherwise complete a different acknowledgment form.
- Signature of the notary public must match the signature on file with the office of the county clerk.
  - Additional information is not required but could help to ensure this acknowledgment is not misused or attached to a different document.
  - Indicate title or type of attached document, number of pages and date.
  - Indicate the capacity claimed by the signer. If the claimed capacity is a corporate officer, indicate the title (i.e. CEO, CFO, Secretary).
- Securely attach this document to the signed document

**Table A-1: Hazardous Substances Stored, Released, or Disposed of (Continued)**

Exhibit "A"

| Building, POI Site, or Location | Hazardous Substance | CAS Number | Regulatory Synonym | RCRA Waste | Reportable Quantity (kg) | Estimated Quantity | Units | Dates of Storage, Disposal, or Release (if known)[1] | Stored (S), Disposed of (D), or Released (R) | Action Taken |
|---|---|---|---|---|---|---|---|---|---|---|
| POI-42: Old Engine Test Cells Area (Lot 13073-C) | Asbestos-containing material | 1332-21-4 | Asbestos (friable) | No | 0.454 (friable only) | Unknown | NA | 1981 | R | A removal action was conducted at the Old Engine Test Cells Area from November 2000 to February 2001. Approximately 9,000 cy of soil mixed with ACM was excavated from 5 acres of the site. The soil mixed with ACM was disposed of in the CU.<br>No further response action is necessary and a no-further-action ROD was signed for the site in 2001 (Navy 2001a). |
| POI-49 Regional Groundwater System | Arsenic | 7440-38-2 | None | No | 0.454 | Unknown | NA | Unknown | R | No action required.<br>A no-further-action decision was concurred with by EPA and DOH in 1999 as presented in the ROD (Navy 1999). |
| | Atrazine | 1912-24-9 | NA | No | NA | | | | | |
| | bis(2-ethylhexyl)phthalate | 117-81-7 | 1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester; DEHP; Diethylhexyl phthalate | No | 45.4 | | | | | |
| | 4,4'-DDE (dichlorodiphenyldichloro-ethylene) | 72-55-9 | DDE; 4,4(prime)-DDE | No | 0.454 | | | | | |
| | 4,4'-DDT (dichlorodiphenyltrichloro-ethane) | 50-29-3 | Benzene, 1,1'-(2,2,2-trichloroethylidene)bis (4) chloro-DDT; 4,4(prime)-DDT. | No | 0.454 | | | | | |

**Table A-1: Hazardous Substances Stored, Released, or Disposed of (Continued)**

| Building, POI Site, or Location | Substance/ Description of Use Hazardous Substance | CAS Number | Regulatory Synonym | RCRA Waste | Reportable Quantity (kg) | Estimated Quantity | Units | Dates of Storage, Disposal, or Release (If known) | Stored (S), Disposed of (D), or Released (R) | Action Taken |
|---|---|---|---|---|---|---|---|---|---|---|
| POI-49 Regional Groundwater System | Arsenic | 7440-38-2 | None | No | 0.454 | Unknown | NA | Unknown | R | No action required. A NFA decision was concurred with by EPA and DOH in 1999 as presented in the Record of Decision (Navy 1999a). |
| | Atrazine | 1912-24-9 | NA | No | NA | Unknown | NA | Unknown | R | |
| | bis(2-ethylhexyl)phthalate | 117-81-7 | 1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl)ester; DEHP; Diethylhexyl phthalate | No | 45.4 | Unknown | NA | Unknown | R | |
| | 4,4'-DDE (dichlorodiphenyldichloro-ethylene) | 72-55-9 | DDE; 4,4(prime)-DDE | No | 0.454 | Unknown | NA | Unknown | R | |
| | 4,4'-DDT (dichlorodiphenyltrichloro-ethane) | 50-29-3 | Benzene, 1,1'-(2,2,2-trichloroethylidene)bis (4) chloro-DDT; 4,4(prime)-DDT. | No | 0.454 | Unknown | NA | Unknown | R | |
| | Lead | 7439-92-1 | None | No | 4.54 | Unknown | NA | Unknown | R | |
| | Lindane | 58-89-9 | γ-BHC; Cyclohexane,1,2,3,4,5,6-hexachloro-(1α,2α,3β,4α,5α,6β)-; Lindane(all isomers) | No | 0.454 | Unknown | NA | Unknown | R | |
| | Thallium | 7440-28-0 | None | No | 454 | Unknown | NA | Unknown | R | |

Sources:

Department of Navy (Navy). 1999a. *Record of Decision for No Action and Restricted Land Use Sites, Naval Air Station, Barbers Point, Oahu, Hawaii.* April.
Navy. 1999b. *Record of Decision Amendment, Coral Pit 3 and NEX Service Station – Building 129 AST, Former Naval Air Station, Barbers Point, Oahu, Hawaii.* August
Navy. 2007b. *Decision Document. Former Northern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.* February.
Navy. 2007c. *Decision Document, Former Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.* February.
Navy. 2007d. *Land Use Control Work Plan, Former Southern Trap and Skeet Range, Former Naval Air Station, Barbers Point, Oahu, Hawaii.* February.

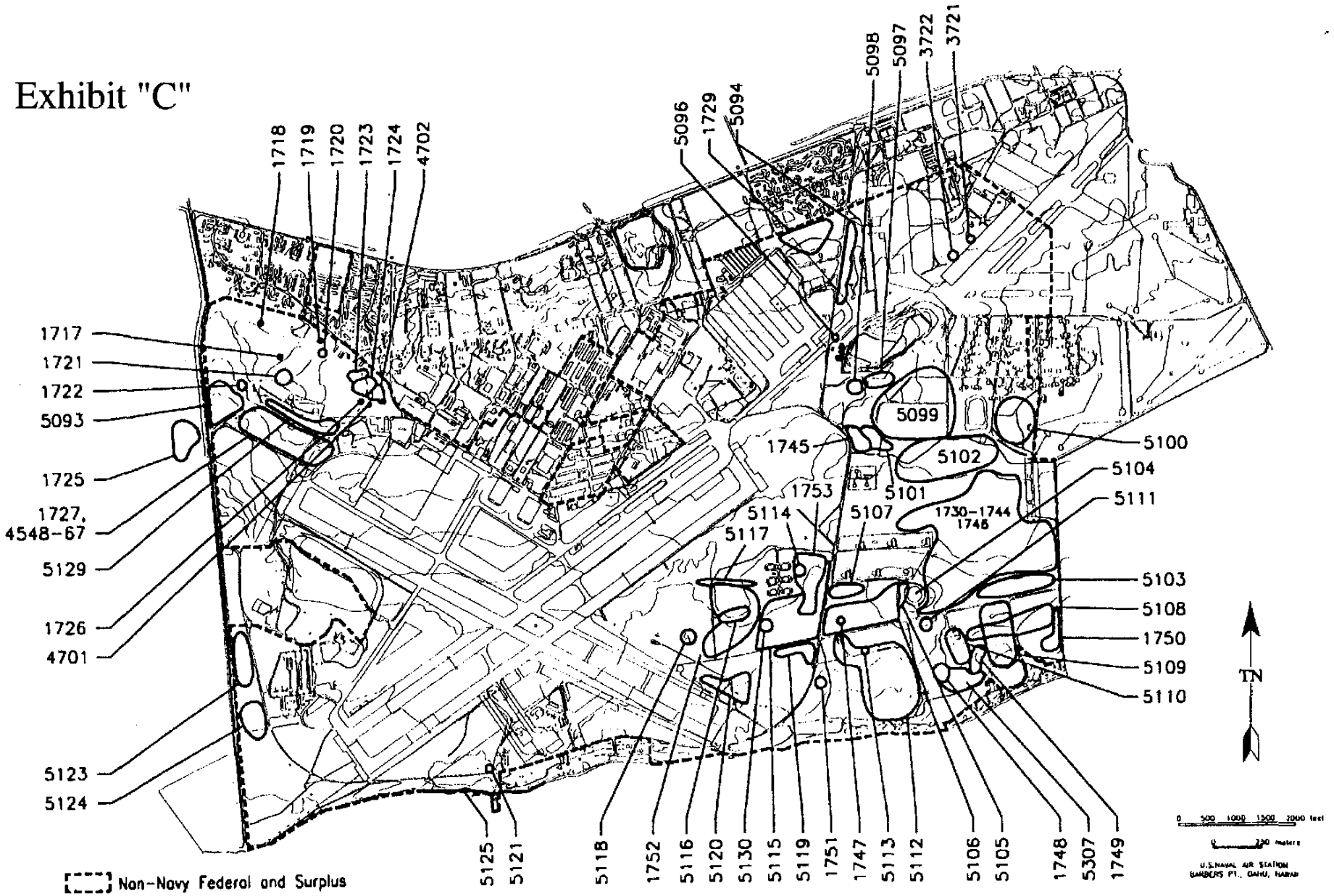
Notes:

As = arsenic
BHC = benzene hexachloride
CAS = Chemical Abstracts Service
DDE = dichlorodiphenyldichloroethylene
DEHP = diethylhexylphthalate
DOH = State of Hawaii Department of Health
EPA = U.S. Environmental Protection Agency
kg = kilogram
NA = not available
Navy = Department of the Navy
NFA = no further action
PAH = polynuclear aromatic hydrocarbon
Pb = lead
POI = point of interest
RCRA = Resource Conservation and Recovery Act

# Exhibit "B"

| Site No | Parcel | No. Features | Description | NRHP Criteria |
|---|---|---|---|---|
| 5119 | 13073-E | 7 | Hawaiian agricultural complex | NE |
| 5120 | 13073-E | 10+ | WWII military complex with bivouac area and several concrete defensive structures including gun batteries, a sentry post, and a portable pillbox, plane crash | Disturbed |
| 5125 | 13074-A | 5 | WWII pillboxes | A, D |

# Exhibit "C"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5114
5117
5107
1730-1744
1748
5100
5104
5111
5103
5108
1750
5109
5110
TN
Non-Navy Federal and Surplus

**BARBERS POINT NAS UST NABP-89**
91-1110 ENTERPRISE AVE
BARBERS POINT NAS, HI 96707

Inquiry Number:
February 15, 2022

# EDR Site Report™

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# SECTION 1: FACILITY DETAIL REPORTS

BARBERS POINT NAS UST NABP-89
91-1110 ENTERPRISE AVE
BARBERS POINT NAS, HI 96707
EDR ID #S111704673

Databases:
ENG CONTROLS: Engineering Control Sites
INST CONTROL: Sites with Institutional Controls
HWS: Sites List

ENG CONTROLS:

| | |
|---|---|
| Supplemental Location Text: | Outside of Building 19 |
| Zip Suffix: | Not reported |
| Island: | Oahu |
| Potential Hazards And Controls: | Hazard Managed With Controls |
| Engineering Control: | Engineering Control Required |

INST CONTROL:

| | |
|---|---|
| Potential hazards and controls: | Hazard Managed With Controls |
| Supplemental Location: | Outside of Building 19 |
| Zip Suffix: | Not reported |
| Island: | Oahu |
| Institutional Control: | Government - Hawaii Dept. of Health Letter Issued |

SHWS:

| | |
|---|---|
| Name: | BARBERS POINT NAS UST NABP-89 |
| Address: | 91-1110 ENTERPRISE AVE |
| City,State,Zip: | BARBERS POINT NAS, HI 96707 |
| Supplemental Location: | Outside of Building 19 |
| Island: | Not reported |
| Environmental Interest: | Barbers Point NAS UST NABP-89 |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | DOD-IRP |
| Project Manager: | Steve Mow |
| Hazard Priority: | NFA |
| Potential Hazards And Controls: | Hazard Managed With Controls |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Barbers Point NAS UST NABP-89 |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | Hazard Managed With Controls |
| Priority: | NFA |
| Assessment: | Response Necessary |
| Response: | Response Complete |
| Nature of Contamination: | Found: TPH |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | Controls Required to Manage Contamination |
| Engineering Control: | Engineering Control Required |
| Description of Restrictions: | Not reported |
| Institutional Control: | Government - Hawaii Dept. of Health Letter Issued |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | No Further Action Letter - Restricted Use |
| Document Date: | 03/19/2010 |
| Document Number: | 2010-180-SPM |
| Document Subject: | No Further Action (NFA) with Institutional Controls (ICs) Determination at Former UST NABP-89, NAS Barbers Point |
| Project Manager: | Steve Mow |
| Contact Information: | (808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782 |
| Facility ID: | 655 |
| Location Description: | 91-1110 Enterprise Ave |
| Is Public: | False |
| Update On: | 2020-07-10 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

**Elapsed ASTM days:** Provides confirmation that this report meets or exceeds the 90-day updating requirement of the ASTM standard.

## DATABASES FOUND IN THIS REPORT

**HI ENG CONTROLS: Engineering Control Sites**
Source: Department of Health
Telephone: 404-586-4249
A listing of sites with engineering controls in place.

Date of Government Version: 04/17/2019
Database Release Frequency: Varies
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**HI INST CONTROL: Sites with Institutional Controls**
Source: Department of Health
Telephone: 808-586-4249
Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 04/17/2019
Database Release Frequency: Varies
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**BARBERS POINT NAS STATION P**
MISSION ST
BARBERS POINT NAS, HI 96707

Inquiry Number:
February 15, 2022

# EDR Site Report™

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# SECTION 1: FACILITY DETAIL REPORTS

BARBERS POINT NAS STATION P
MISSION ST
BARBERS POINT NAS, HI 96707
EDR ID #S111704672

Databases:
HWS: Sites List

SHWS:

| | |
|---|---|
| Name: | BARBERS POINT NAS STATION P |
| Address: | MISSION ST |
| City,State,Zip: | BARBERS POINT NAS, HI 96707 |
| Supplemental Location: | Not reported |
| Island: | Not reported |
| Environmental Interest: | Barbers Point NAS Station P |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | DOD-IRP |
| Project Manager: | Eric Sadoyama |
| Hazard Priority: | NFA |
| Potential Hazards And Controls: | No Hazard |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Barbers Point NAS Station P |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | No Hazard |
| Priority: | NFA |
| Assessment: | Response Necessary |
| Response: | Response Complete |
| Nature of Contamination: | Found: PCB in soil |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | No Hazard Present For Unrestricted Residential Use |
| Engineering Control: | Not reported |
| Description of Restrictions: | Not reported |
| Institutional Control: | Not reported |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | No Further Action Letter - Unrestricted Residential Use |
| Document Date: | 11/19/2014 |
| Document Number: | 2014-577-ES |
| Document Subject: | No Further Action Determination for Barbers Point NAS Station P based on review of Final Removal Verification Report, Removal Action at Station P (Oct 2014) |
| Project Manager: | Eric Sadoyama |
| Contact Information: | (808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782 |
| Facility ID: | 1153 |
| Location Description: | Mission St, Building 91 |
| Is Public: | False |
| Update On: | 2020-07-14 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

**Elapsed ASTM days:** Provides confirmation that this report meets or exceeds the 90-day updating requirement of the ASTM standard.

## DATABASES FOUND IN THIS REPORT

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**STOCKPILE ON NAVY PARCEL**
1569 CORREGIDOR ST
EWA BEACH, HI 96706

Inquiry Number:
February 15, 2022

# EDR Site Report™

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The EDR-Site Report™ is a comprehensive presentation of government filings on a facility identified in a search of federal, state and local environmental databases.



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# SECTION 1: FACILITY DETAIL REPORTS

STOCKPILE ON NAVY PARCEL
1569 CORREGIDOR ST
EWA BEACH, HI 96706
EDR ID #S123640231

Databases:
HWS: Sites List

SHWS:

| | |
|---|---|
| Name: | STOCKPILE ON NAVY PARCEL |
| Address: | 1569 CORREGIDOR ST |
| City,State,Zip: | EWA BEACH, HI 96706 |
| Supplemental Location: | Not reported |
| Island: | Not reported |
| Environmental Interest: | Stockpile on Navy Parcel |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | State |
| Project Manager: | Not reported |
| Hazard Priority: | Low |
| Potential Hazards And Controls: | Hazard Undetermined |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Stockpile on Navy Parcel |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | Hazard Undetermined |
| Priority: | Low |
| Assessment: | Assessment Ongoing |
| Response: | Not reported |
| Nature of Contamination: | Not reported |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | Undetermined |
| Engineering Control: | Not reported |
| Description of Restrictions: | Not reported |
| Institutional Control: | Not reported |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | Not reported |
| Document Date: | Not reported |
| Document Number: | Not reported |
| Document Subject: | Not reported |
| Project Manager: | Not reported |
| Contact Information: | (808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782 |
| Facility ID: | 2519 |
| Location Description: | 1569 Corregidor St |
| Is Public: | False |
| Update On: | 2020-07-14 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

**Elapsed ASTM days:** Provides confirmation that this report meets or exceeds the 90-day updating requirement of the ASTM standard.

## DATABASES FOUND IN THIS REPORT

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**HICKAM POL ST25, SPILL SITE 25 (**
CRESTVIEW COMMUNITY PARK
HI

Inquiry Number:
February 15, 2022

# EDR Site Report™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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The EDR-Site Report™ is a comprehensive presentation of government filings on a facility identified in a search of federal, state and local environmental databases.



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# SECTION 1: FACILITY DETAIL REPORTS

HICKAM POL ST25, SPILL SITE 25 (FORMERLY EA02)
CRESTVIEW COMMUNITY PARK
HI
EDR ID #S110061559

Databases:
HWS: Sites List

SHWS:

| | |
|---|---|
| Name: | HICKAM POL ST25, SPILL SITE 25 (FORMERLY EA02) |
| Address: | CRESTVIEW COMMUNITY PARK |
| City,State,Zip: | HI |
| Supplemental Location: | Not reported |
| Island: | Not reported |
| Environmental Interest: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | DOD-IRP |
| Project Manager: | Not reported |
| Hazard Priority: | Not reported |
| Potential Hazards And Controls: | Not reported |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | Not reported |
| Priority: | Not reported |
| Assessment: | Not reported |
| Response: | Not reported |
| Nature of Contamination: | Not reported |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | Not reported |
| Engineering Control: | Not reported |
| Description of Restrictions: | Not reported |
| Institutional Control: | Not reported |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | Not reported |
| Document Date: | Not reported |
| Document Number: | Not reported |
| Document Subject: | Not reported |
| Project Manager: | Not reported |
| Contact Information: | Not reported |
| Facility ID: | 210 |
| Location Description: | Crestview Community Park |
| Is Public: | False |
| Update On: | 2020-07-14 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

**Elapsed ASTM days:** Provides confirmation that this report meets or exceeds the 90-day updating requirement of the ASTM standard.

## DATABASES FOUND IN THIS REPORT

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**HIARNG KALAELOA RELOCATION OF UN**
91-1179 ENTERPRISE AVE
KAPOLEI, HI 96707

Inquiry Number:
February 15, 2022

# EDR Site Report™

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***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# SECTION 1: FACILITY DETAIL REPORTS

HIARNG KALAELOA RELOCATION OF UNITS AND CONSTRUCTION PROJECT
91-1179 ENTERPRISE AVE
KAPOLEI, HI 96707
EDR ID #S126282642

Databases:
HWS: Sites List

SHWS:

| | |
|---|---|
| Name: | HIARNG KALAELOA RELOCATION OF UNITS AND CONSTRUCTION PROJECTS |
| Address: | 91-1179 ENTERPRISE AVE |
| City,State,Zip: | KAPOLEI, HI 96707 |
| Supplemental Location: | Not reported |
| Island: | Not reported |
| Environmental Interest: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | NEPA |
| Project Manager: | Not reported |
| Hazard Priority: | Not reported |
| Potential Hazards And Controls: | Not reported |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | Not reported |
| Priority: | Not reported |
| Assessment: | Not reported |
| Response: | Not reported |
| Nature of Contamination: | Not reported |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | Not reported |
| Engineering Control: | Not reported |
| Description of Restrictions: | Not reported |
| Institutional Control: | Not reported |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | Not reported |
| Document Date: | Not reported |
| Document Number: | Not reported |
| Document Subject: | Not reported |
| Project Manager: | Not reported |
| Contact Information: | Not reported |
| Facility ID: | 1991 |
| Location Description: | 91-1179 Enterprise Ave, Building 1788 |
| Is Public: | True |
| Update On: | 2020-07-11 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

**Elapsed ASTM days:** Provides confirmation that this report meets or exceeds the 90-day updating requirement of the ASTM standard.

## DATABASES FOUND IN THIS REPORT

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**HIARNG KALAELOA AIRPORT ABANDON**
MIDWAY STREET
KAPOLEI, HI

Inquiry Number:
February 15, 2022

# EDR Site Report™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
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The EDR-Site Report™ is a comprehensive presentation of government filings on a facility identified in a search of federal, state and local environmental databases.



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# SECTION 1: FACILITY DETAIL REPORTS

HIARNG KALAELOA AIRPORT ABANDON PIPELINE INCIDENT
MIDWAY STREET
KAPOLEI, HI
EDR ID #S126282641

Databases:
HWS: Sites List

SHWS:

| | |
|---|---|
| Name: | HIARNG KALAELOA AIRPORT ABANDON PIPELINE INCIDENT |
| Address: | MIDWAY STREET |
| City,State,Zip: | KAPOLEI, HI |
| Supplemental Location: | Not reported |
| Island: | Not reported |
| Environmental Interest: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | State |
| Project Manager: | Not reported |
| Hazard Priority: | Not reported |
| Potential Hazards And Controls: | Not reported |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | Not reported |
| Priority: | Not reported |
| Assessment: | Not reported |
| Response: | Not reported |
| Nature of Contamination: | Not reported |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | Not reported |
| Engineering Control: | Not reported |
| Description of Restrictions: | Not reported |
| Institutional Control: | Not reported |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | Not reported |
| Document Date: | Not reported |
| Document Number: | Not reported |
| Document Subject: | Not reported |
| Project Manager: | Not reported |
| Contact Information: | Not reported |
| Facility ID: | 2376 |
| Location Description: | Midway Street, Wright Street |
| Is Public: | True |
| Update On: | 2020-06-22 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

**Elapsed ASTM days:** Provides confirmation that this report meets or exceeds the 90-day updating requirement of the ASTM standard.

## DATABASES FOUND IN THIS REPORT

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**KALAELOA AIRPORT DAY TANK WAREHO**
30 MIDWAY ROAD
KAPOLEI, HI

Inquiry Number:
February 15, 2022

# EDR Site Report™

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The EDR-Site Report™ is a comprehensive presentation of government filings on a facility identified in a search of federal, state and local environmental databases.



***Thank you for your business.***
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with any questions or comments.

# SECTION 1: FACILITY DETAIL REPORTS

KALAELOA AIRPORT DAY TANK WAREHOUSE
30 MIDWAY ROAD
KAPOLEI, HI
EDR ID #S126282769

Databases:
HWS: Sites List

SHWS:

| | |
|---|---|
| Name: | KALAELOA AIRPORT DAY TANK WAREHOUSE |
| Address: | 30 MIDWAY ROAD |
| City,State,Zip: | KAPOLEI, HI |
| Supplemental Location: | Not reported |
| Island: | Not reported |
| Environmental Interest: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | State |
| Project Manager: | Not reported |
| Hazard Priority: | Not reported |
| Potential Hazards And Controls: | Not reported |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | Not reported |
| Priority: | Not reported |
| Assessment: | Not reported |
| Response: | Not reported |
| Nature of Contamination: | Not reported |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | Not reported |
| Engineering Control: | Not reported |
| Description of Restrictions: | Not reported |
| Institutional Control: | Not reported |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | Not reported |
| Document Date: | Not reported |
| Document Number: | Not reported |
| Document Subject: | Not reported |
| Project Manager: | Not reported |
| Contact Information: | Not reported |
| Facility ID: | 2893 |
| Location Description: | Not reported |
| Is Public: | True |
| Update On: | 2020-01-07 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

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## DATABASES FOUND IN THIS REPORT

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

**HIANG 297TH AIR TRAFFIC CONTROL**
SARATOGA AVE AND MIDWAY ST
KAPOLEI, HI 96707

Inquiry Number:
February 15, 2022

# EDR Site Report™

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# SECTION 1: FACILITY DETAIL REPORTS

HIANG 297TH AIR TRAFFIC CONTROL SQUADRON
SARATOGA AVE AND MIDWAY ST
KAPOLEI, HI 96707
EDR ID #S126282637

Databases:
HWS: Sites List

SHWS:

| | |
|---|---|
| Name: | HIANG 297TH AIR TRAFFIC CONTROL SQUADRON |
| Address: | SARATOGA AVE AND MIDWAY ST |
| City,State,Zip: | KAPOLEI, HI 96707 |
| Supplemental Location: | Not reported |
| Island: | Not reported |
| Environmental Interest: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Program: | DOD-IRP |
| Project Manager: | Not reported |
| Hazard Priority: | Not reported |
| Potential Hazards And Controls: | Not reported |
| Island: | Not reported |
| SDAR Environmental Interest Name: | Not reported |
| HID Number: | Not reported |
| Facility Registry Identifier: | Not reported |
| Lead Agency: | HEER Office |
| Potential Hazard And Controls: | Not reported |
| Priority: | Not reported |
| Assessment: | Not reported |
| Response: | Not reported |
| Nature of Contamination: | Not reported |
| Nature of Residual Contamination: | Not reported |
| Use Restrictions: | Not reported |
| Engineering Control: | Not reported |
| Description of Restrictions: | Not reported |
| Institutional Control: | Not reported |
| Within Designated Areawide Contamination: | Not reported |
| Site Closure Type: | Not reported |
| Document Date: | Not reported |
| Document Number: | Not reported |
| Document Subject: | Not reported |
| Project Manager: | Not reported |
| Contact Information: | Not reported |
| Facility ID: | 721 |
| Location Description: | Saratoga Ave and Midway St, Kapolei, HI 96707 |
| Is Public: | True |
| Update On: | 2020-06-22 00:00:00 |

# SECTION 2: DATABASES AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

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## DATABASES FOUND IN THIS REPORT

**HI HWS: Sites List**
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 08/17/2020
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 12/03/2021
Date of Next Scheduled Update: 03/21/2022

# The EDR Property Tax Report

**Honokea Phase I ESA**
Not Reported
Kapolei, HI 96707

Inquiry Number: 6803000.6
December 29, 2021

# The EDR Property Tax Map Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

# EDR Property Tax Map Report

Environmental Data Resources, Inc.'s EDR Property Tax Map Report is designed to assist environmental professionals in evaluating potential environmental conditions on a target property by understanding property boundaries and other characteristics. The report includes a search of available property tax maps, which include information on boundaries for the target property and neighboring properties, addresses, parcel identification numbers, as well as other data typically used in property location and identification.

# NO COVERAGE

***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# The EDR Aerial Photo Decade Package

**Honokea Phase I ESA**

Not Reported

Kapolei, HI 96707

Inquiry Number: 6803000.11

December 29, 2021

# The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# EDR Aerial Photo Decade Package

12/29/21

**Site Name:**

Honokea Phase I ESA
Not Reported
Kapolei, HI 96707
EDR Inquiry # 6803000.11

**Client Name:**

Element Environmental , LLC
98-030 Hekaha Street
Aiea, HI 96701-0000
Contact: Angela Peltier

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

***Search Results:***

| Year | Scale | Details | Source |
|---|---|---|---|
| 2008 | 1"=500' | Flight Date: April 08, 2008 | USGS |
| 2001 | 1"=500' | Acquisition Date: January 01, 2001 | USGS/DOQQ |
| 2000 | 1"=500' | Acquisition Date: January 01, 2000 | USGS/DOQQ |
| 1992 | 1"=500' | Flight Date: September 25, 1992 | USGS |
| 1985 | 1"=500' | Flight Date: May 02, 1985 | USGS |
| 1976 | 1"=500' | Flight Date: December 18, 1976 | USGS |
| 1951 | 1"=500' | Flight Date: May 14, 1951 | USGS |

**When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.**


22
22
INQUIRY #: 6803000.11
YEAR: 2008
= 500'
N
EDR



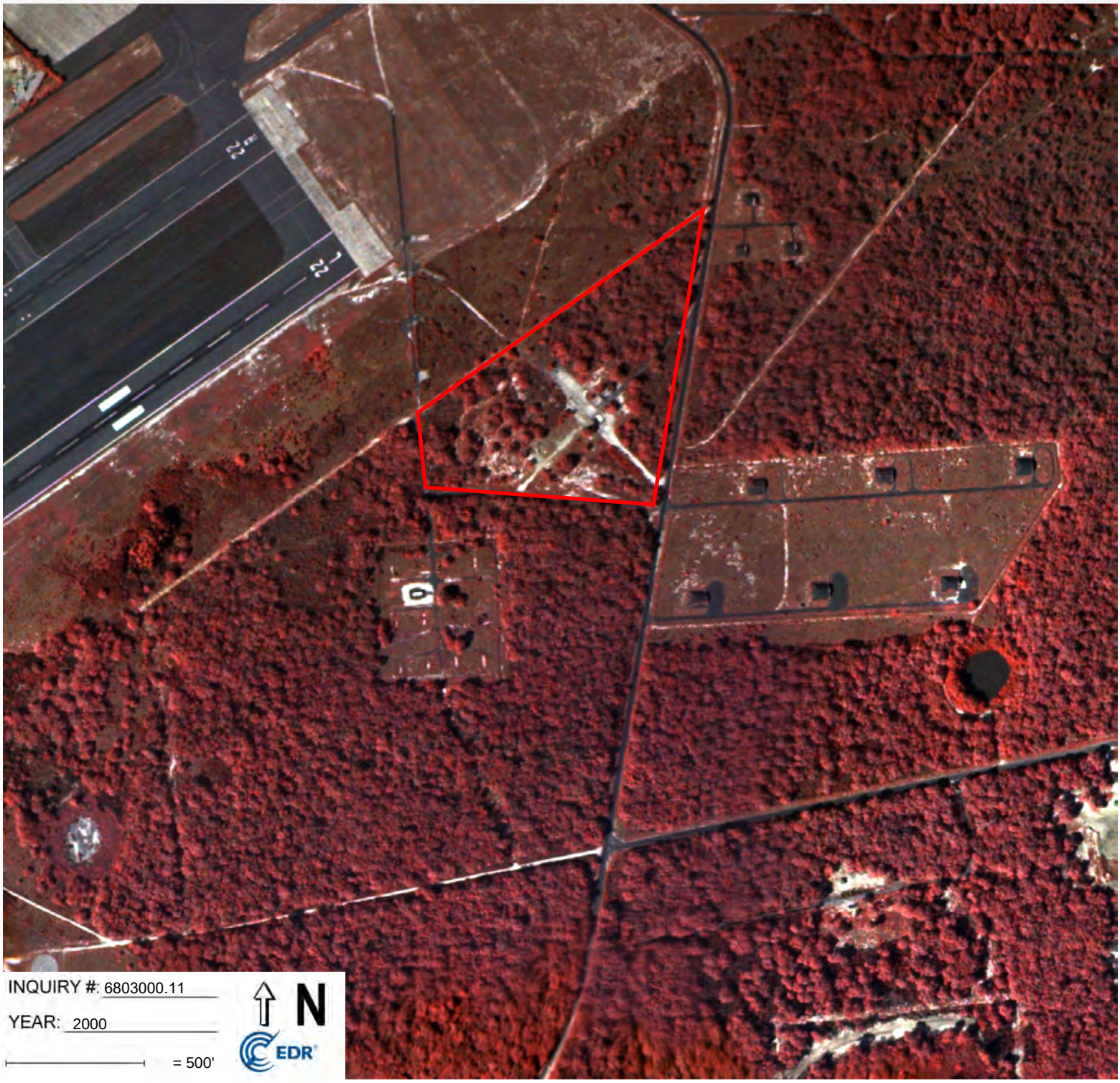
INQUIRY #: 6803000.11

YEAR: 2001

= 500'

N

EDR



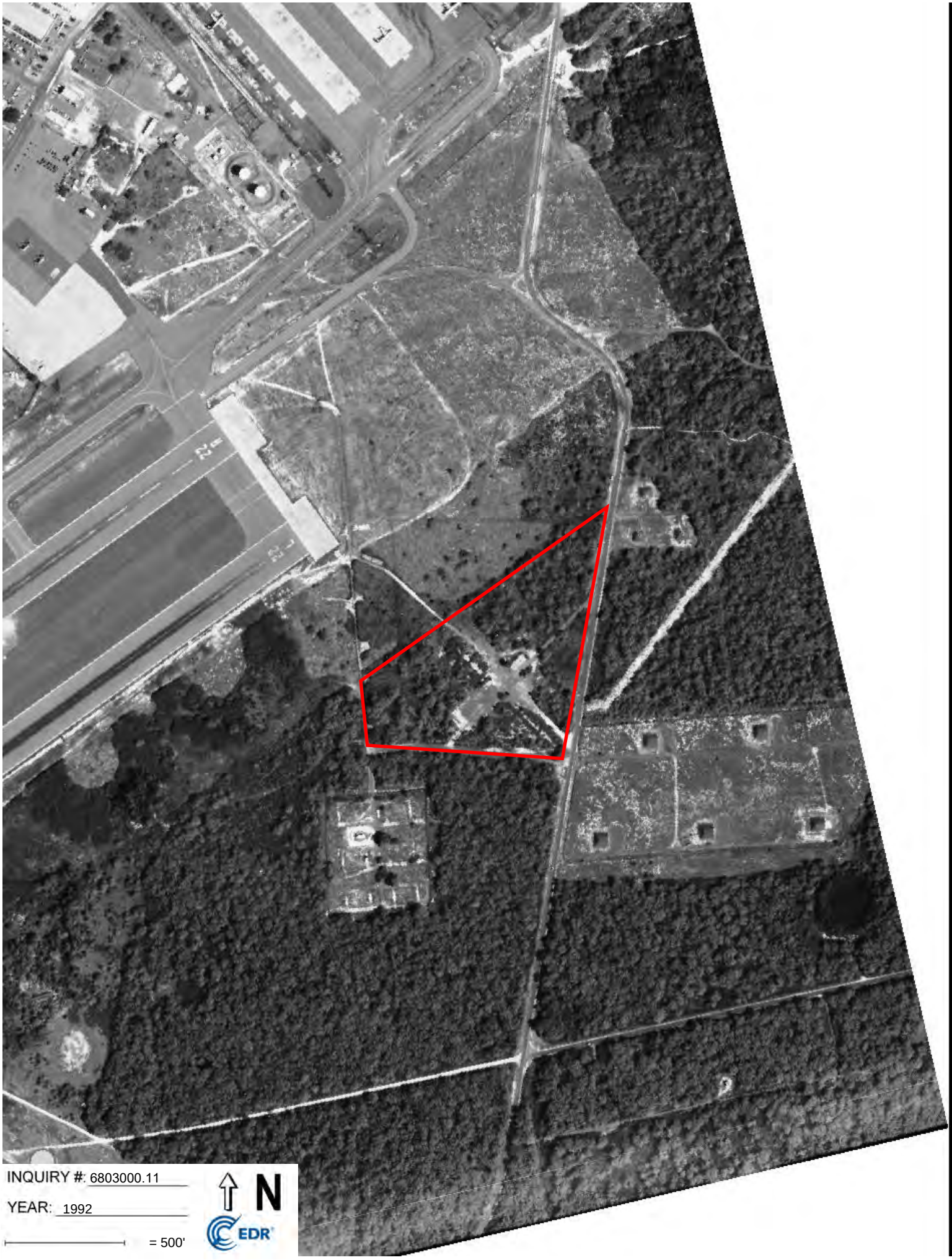
INQUIRY #: 6803000.11

YEAR: 2000

= 500'

N

EDR



INQUIRY #: 6803000.11

YEAR: 1992

= 500'

N

EDR

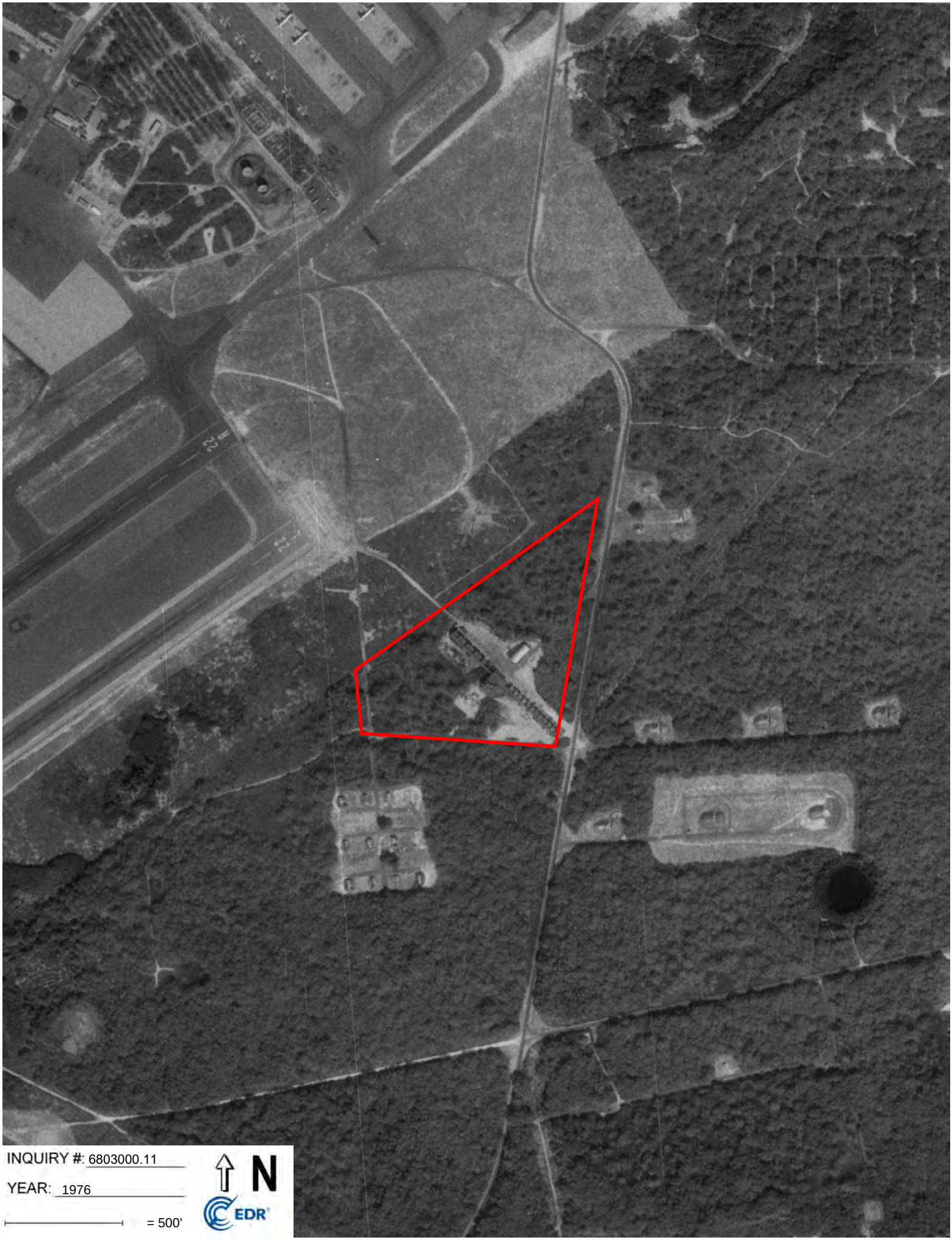
INQUIRY #: 6803000.11

YEAR: 1985

= 500'

N

EDR



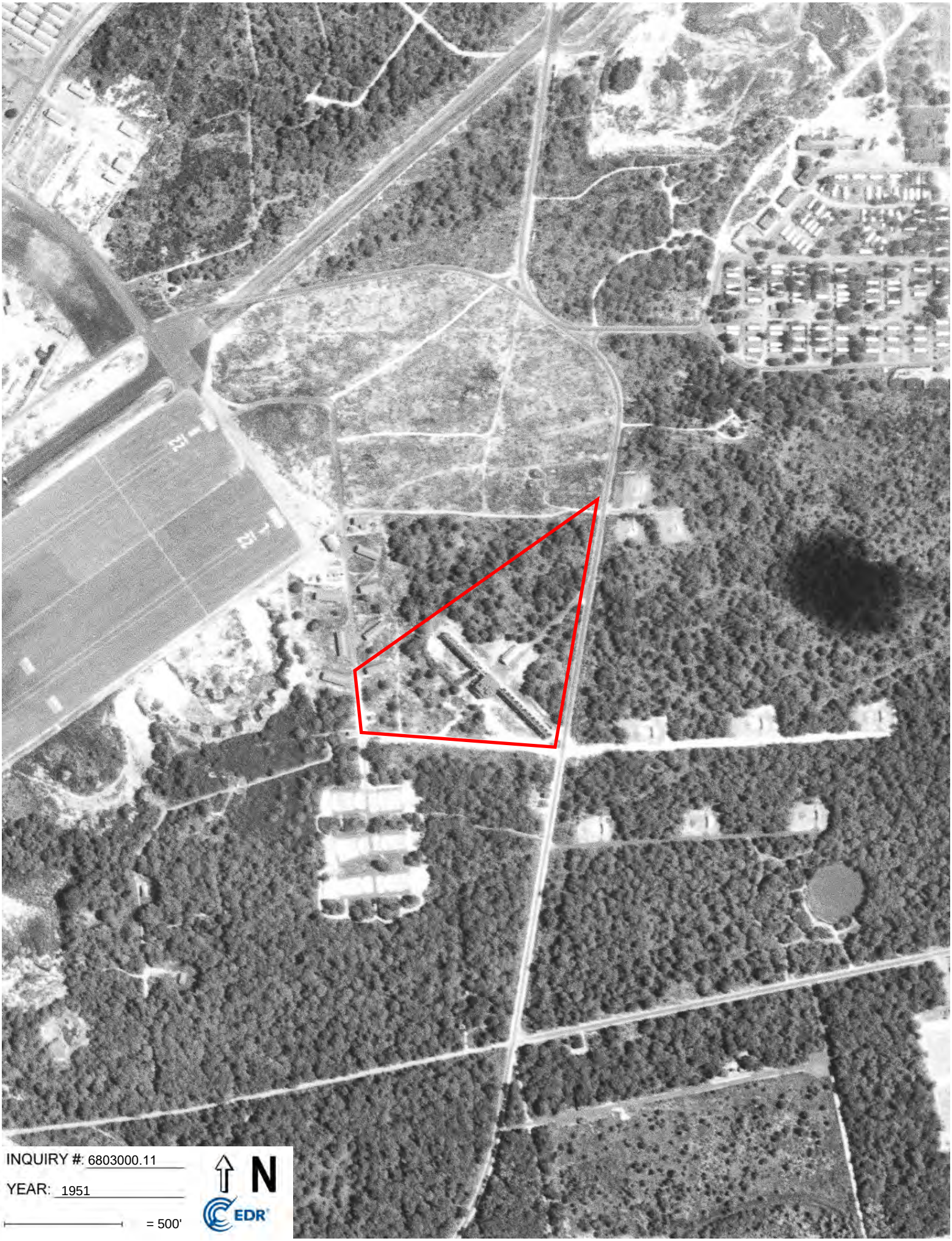
INQUIRY #: 6803000.11

YEAR: 1976

= 500'

N

EDR


INQUIRY #: 6803000.11
YEAR: 1951
= 500'
N
EDR

# EDR Certified Sanborn Map Report

Honokea Phase I ESA

Not Reported

Kapolei, HI 96707

Inquiry Number: 6803000.3

December 29, 2021

# Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# Certified Sanborn® Map Report

12/29/21

| Site Name: | Client Name: |
|---|---|
| Honokea Phase I ESA | Element Environmental , LLC |
| Not Reported | 98-030 Hekaha Street |
| Kapolei, HI 96707 | Aiea, HI 96701-0000 |
| EDR Inquiry # 6803000.3 | Contact: Angela Peltier |

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Element Environmental , LLC were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

## *Certified Sanborn Results:*

**Certification #** B2E4-47CF-83BD

**PO #** 210103

**Project** 210103 Honokea Phase I ESA

### UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: B2E4-47CF-83BD

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

*The Sanborn Library LLC Since 1866™*

### Limited Permission To Make Copies

Element Environmental , LLC (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

# EDR Historical Topo Map Report with QuadMatch™

Honokea Phase I ESA

Not Reported

Kapolei, HI 96707

Inquiry Number: 6803000.4

December 29, 2021

# EDR Historical Topo Map Report

## with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# EDR Historical Topo Map Report

12/29/21

| Site Name: | Client Name: |
|---|---|
| Honokea Phase I ESA | Element Environmental , LLC |
| Not Reported | 98-030 Hekaha Street |
| Kapolei, HI 96707 | Aiea, HI 96701-0000 |
| EDR Inquiry # 6803000.4 | Contact: Angela Peltier |

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Element Environmental , LLC were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

| *Search Results:* | | *Coordinates:* | |
|---|---|---|---|
| **P.O.#** | 210103 | **Latitude:** | 21.310839 21° 18' 39" North |
| **Project:** | 210103 Honokea Phase I ESA | **Longitude:** | -158.05734 -158° 3' 26" West |
| | | **UTM Zone:** | Zone 4 North |
| | | **UTM X Meters:** | 597768.53 |
| | | **UTM Y Meters:** | 2356841.98 |
| | | **Elevation:** | 23.00' above sea level |

**Maps Provided:**

| | |
|---|---|
| 2017 | 1953 |
| 2013 | 1928, 1930 |
| 1998 | |
| 1983 | |
| 1977 | |
| 1970 | |
| 1968 | |
| 1962 | |

## *Topo Sheet Key*

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

### 2017 Source Sheets

Ewa
2017
7.5-minute, 24000

### 2013 Source Sheets

Ewa
2013
7.5-minute, 24000

### 1998 Source Sheets

Ewa
1998
7.5-minute, 24000
Aerial Photo Revised 1998

### 1983 Source Sheets

Ewa
1983
7.5-minute, 24000
Aerial Photo Revised 1977

## *Topo Sheet Key*

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

### 1977 Source Sheets

Ewa
1977
7.5-minute, 24000
Aerial Photo Revised 1977

### 1970 Source Sheets

OAHU
1970
15-minute, 62500

### 1968 Source Sheets

Ewa
1968
7.5-minute, 24000
Aerial Photo Revised 1968

### 1962 Source Sheets

Ewa
1962
7.5-minute, 24000
Aerial Photo Revised 1952

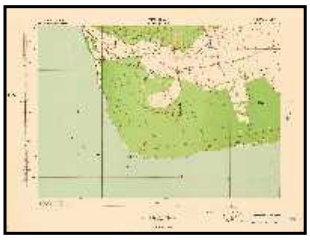
## *Topo Sheet Key*

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

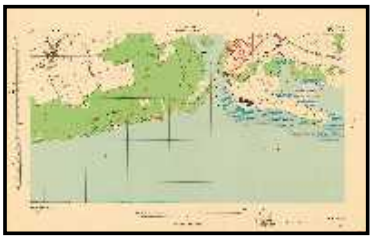
### 1953 Source Sheets

Ewa
1953
7.5-minute, 24000
Aerial Photo Revised 1952

### 1928, 1930 Source Sheets



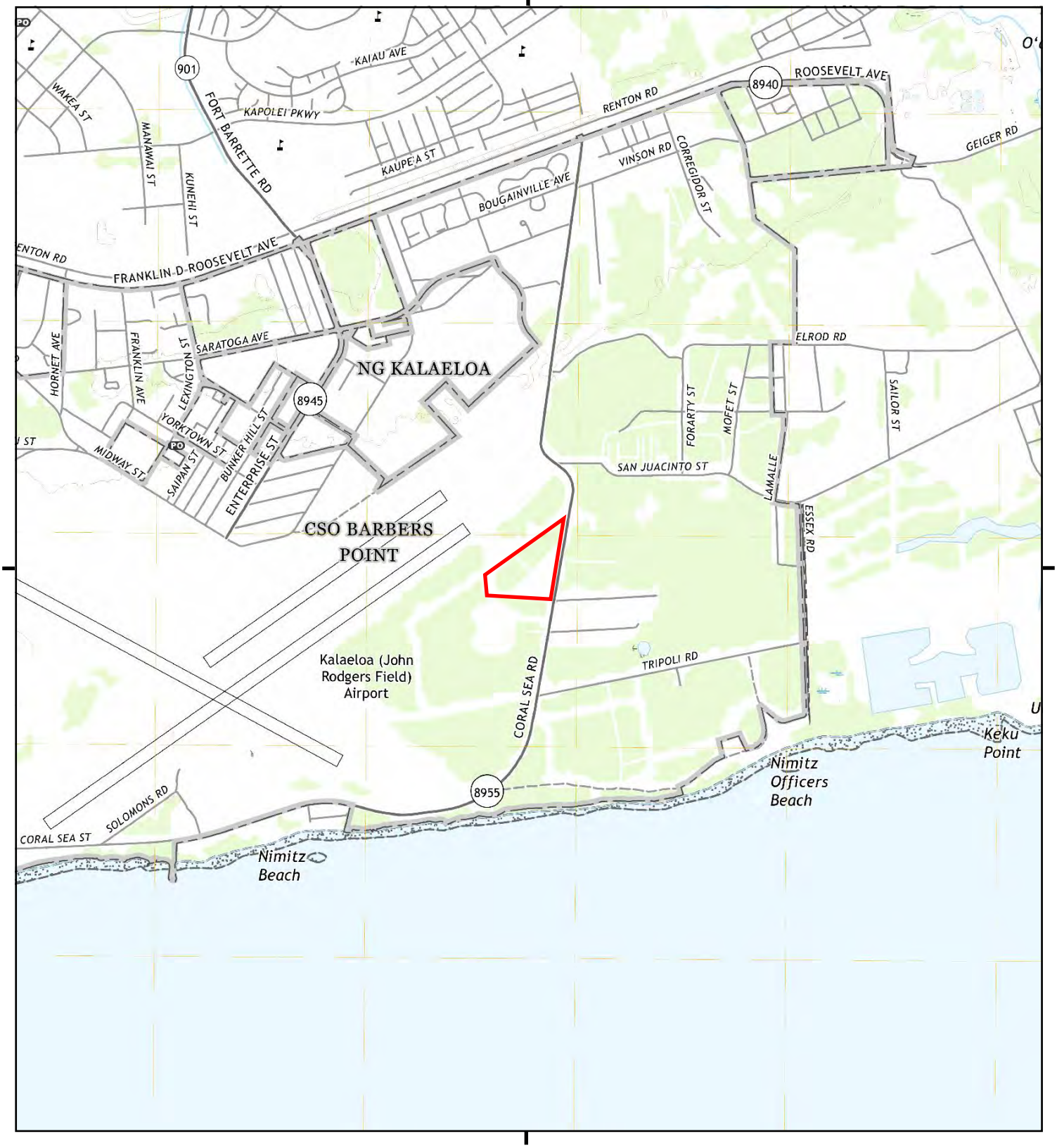
BARBERSPOINT
1928
7.5-minute, 20000



EWA
1930
7.5-minute, 20000

# Historical Topo Map

2017




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

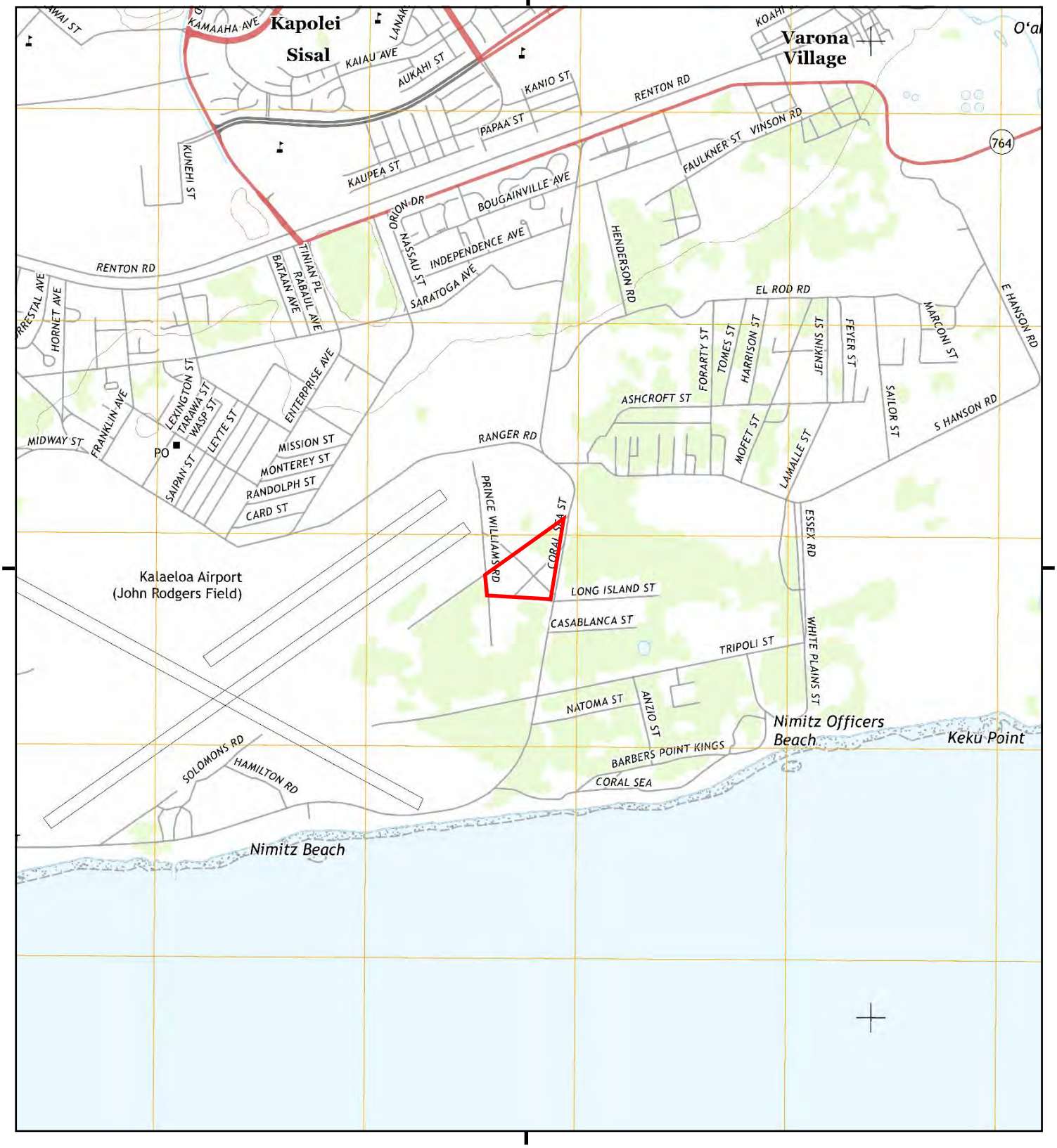
TP, Ewa, 2017, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N

# Historical Topo Map

2013




This report includes information from the following map sheet(s).

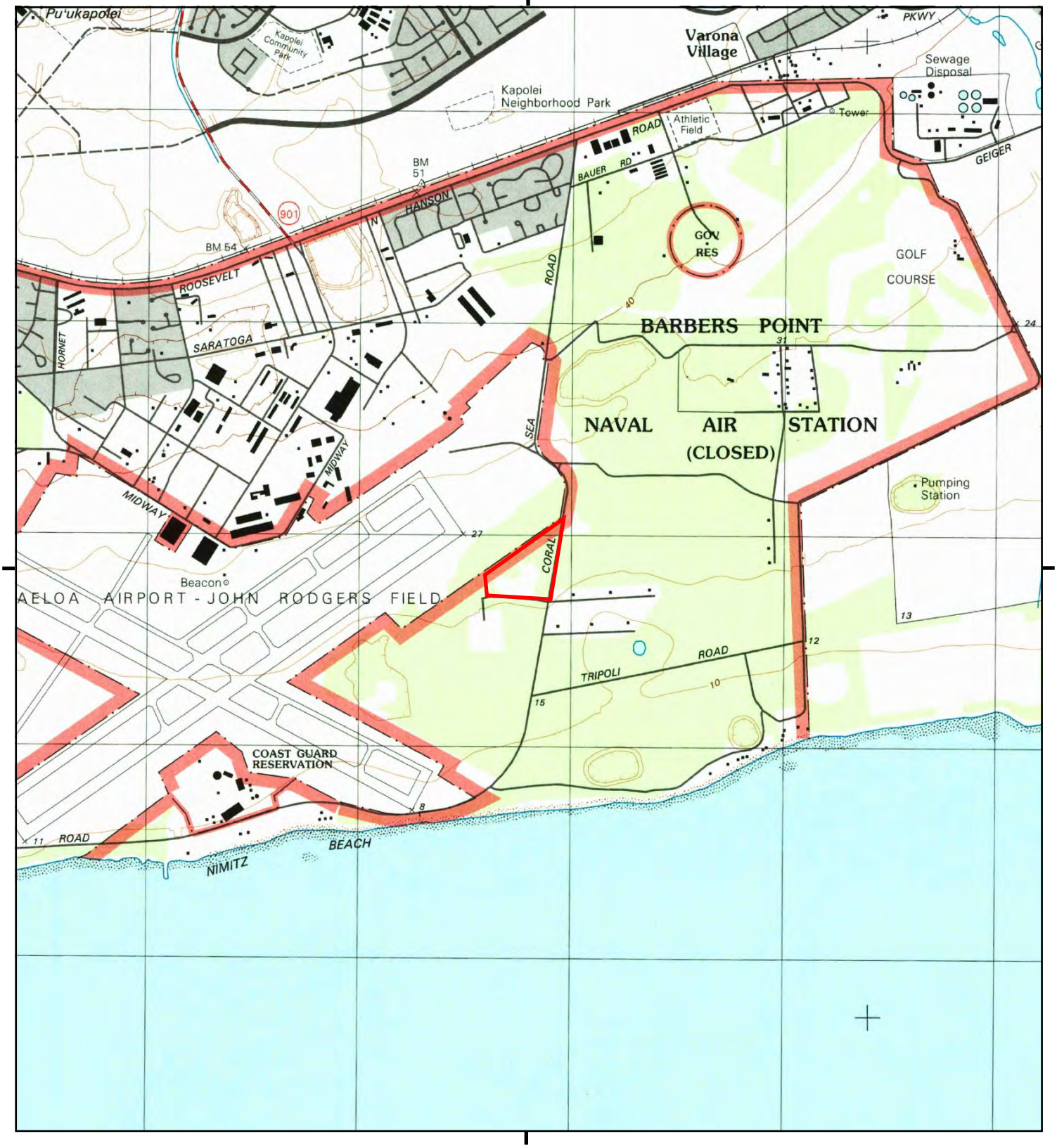
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Ewa, 2013, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

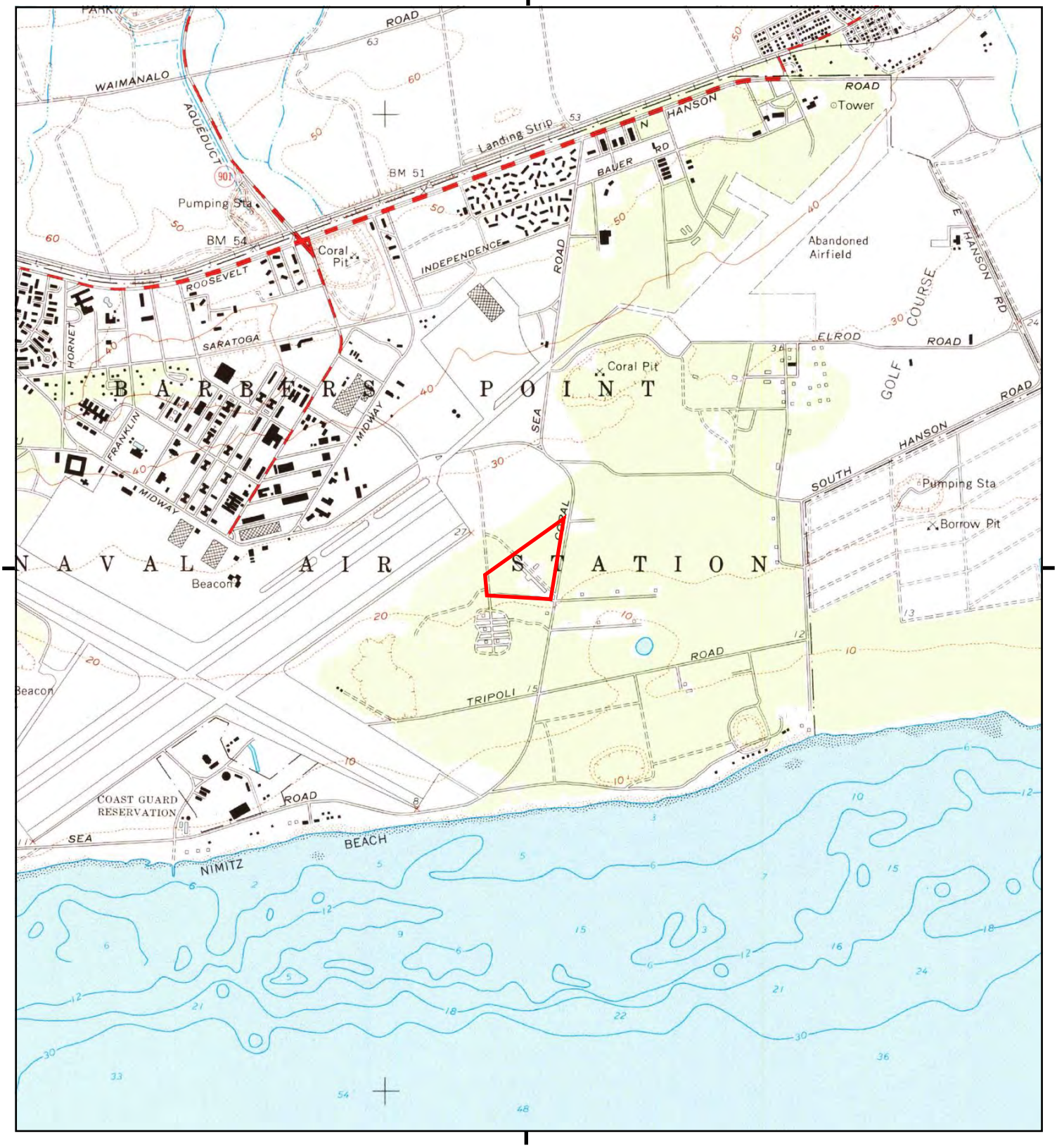
TP, Ewa, 1998, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N

# Historical Topo Map

1983




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Ewa, 1983, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N

# Historical Topo Map

1977

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Ewa, 1977, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N

# Historical Topo Map

1970


This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

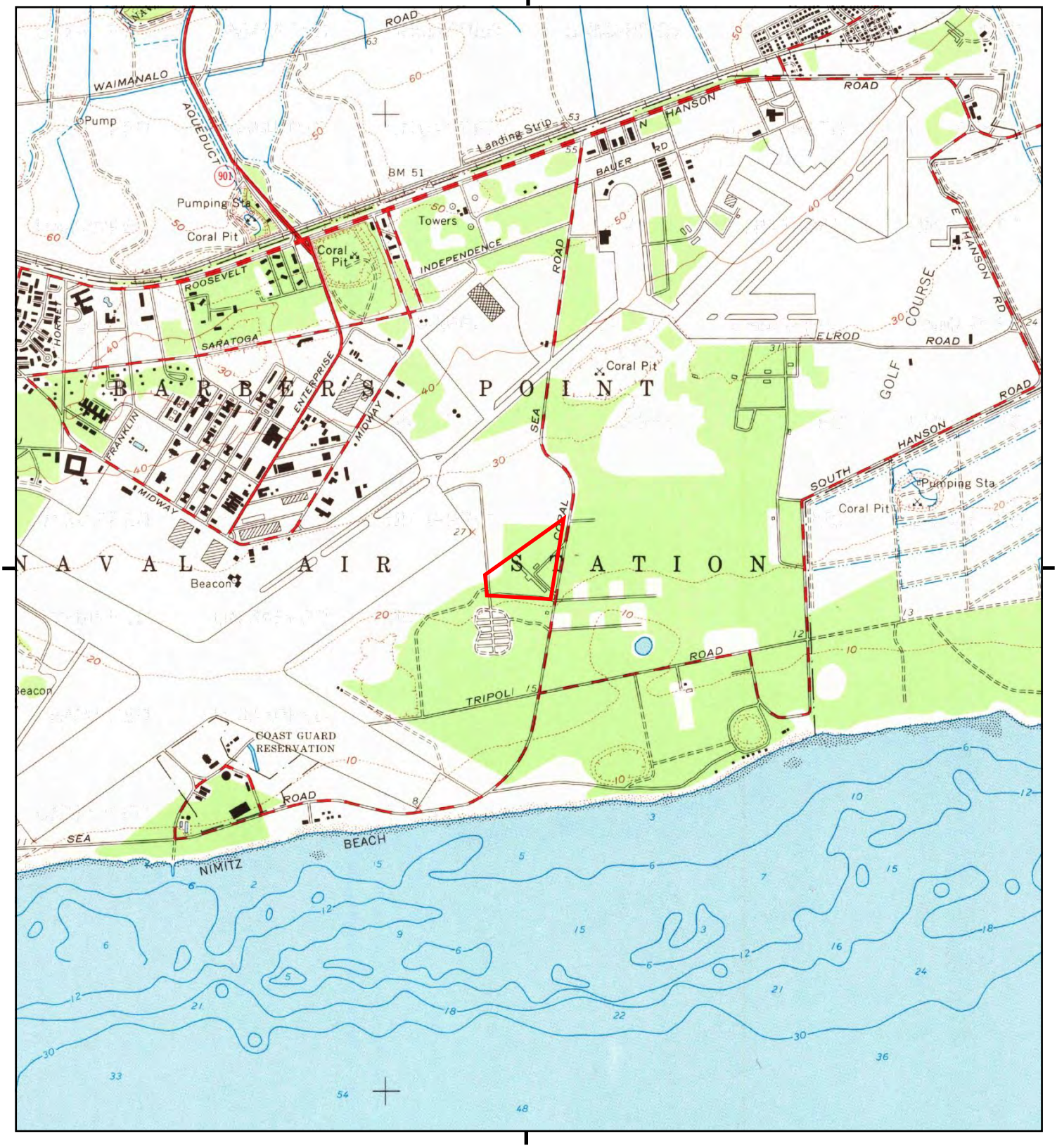
TP, OAHU, 1970, 15-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N

# Historical Topo Map

1968




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

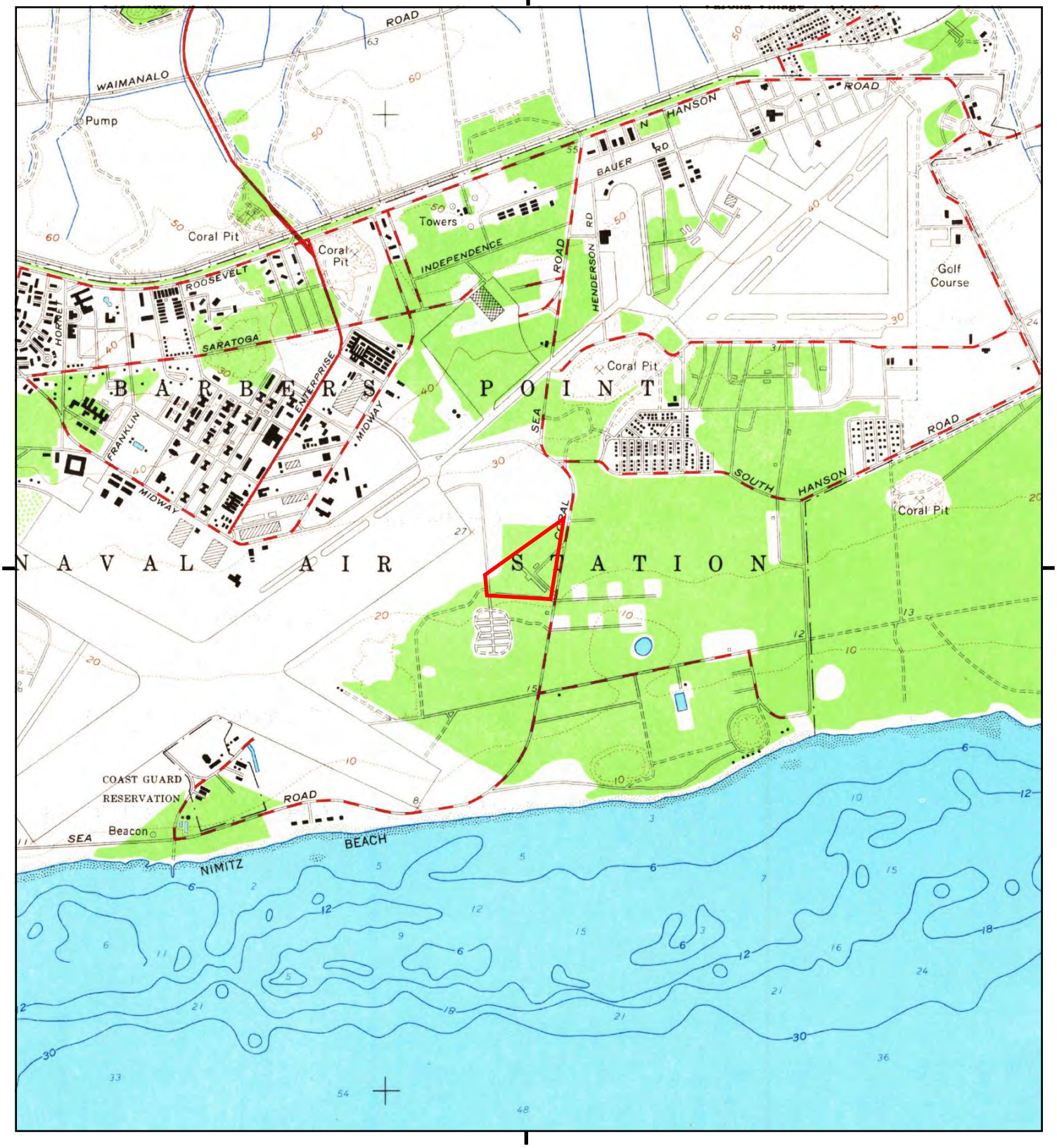
TP, Ewa, 1968, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N

# Historical Topo Map

1962




This report includes information from the following map sheet(s).

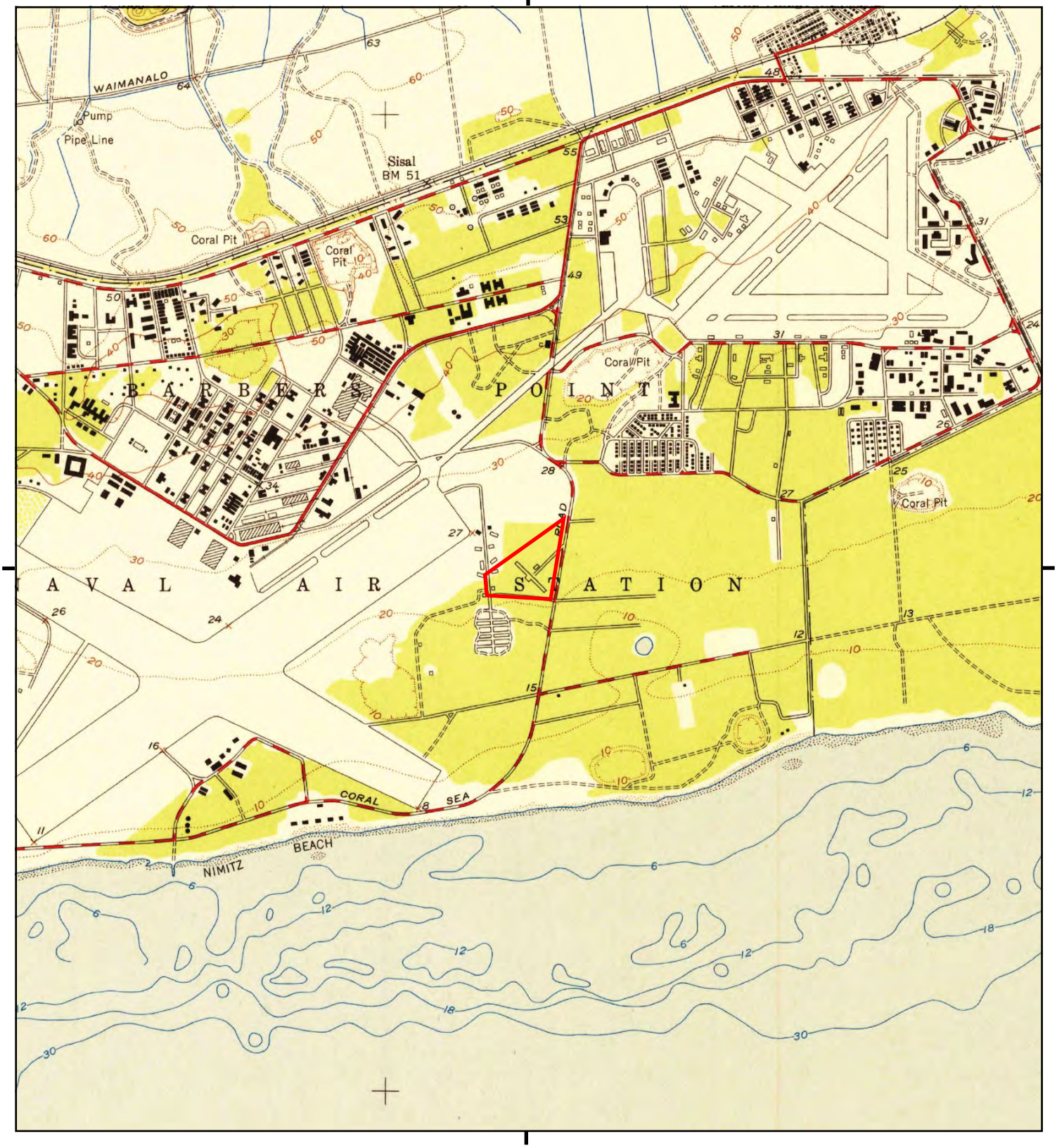
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Ewa, 1962, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Ewa, 1953, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N


This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, BARBERSPOINT, 1928, 7.5-minute
E, EWA, 1930, 7.5-minute

SITE NAME: Honokea Phase I ESA
ADDRESS: Not Reported
Kapolei, HI 96707
CLIENT: Element Environmental , LLC

N

# The EDR-City Directory Image Report

**Honokea Phase I ESA**
Not Reported
Kapolei, HI 96707

Inquiry Number: 6803000.5
December 29, 2021

# The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

# TABLE OF CONTENTS

## SECTION



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# EXECUTIVE SUMMARY

## DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

## RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

Data by
infoUSA®


## RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

| Year | Target Street | Cross Street | Source |
|---|---|---|---|
| 2017 | ☐ | ☐ | EDR Digital Archive |
| 2014 | ☐ | ☐ | EDR Digital Archive |
| 2010 | ☐ | ☑ | EDR Digital Archive |
| 2005 | ☐ | ☑ | EDR Digital Archive |
| 2000 | ☐ | ☐ | EDR Digital Archive |
| 1995 | ☐ | ☐ | EDR Digital Archive |
| 1992 | ☐ | ☐ | EDR Digital Archive |

# FINDINGS

**TARGET PROPERTY STREET**

Not Reported
Kapolei, HI 96707

No Addresses Found

# FINDINGS

## CROSS STREETS

| *Year* | *CD Image* | *Source* | |
|---|---|---|---|
| **BARBERS POINT NAS** | | | |
| 2017 | - | EDR Digital Archive | Street not listed in Source |
| 2014 | - | EDR Digital Archive | Street not listed in Source |
| 2010 | - | EDR Digital Archive | Street not listed in Source |
| 2005 | - | EDR Digital Archive | Street not listed in Source |
| 2000 | - | EDR Digital Archive | Street not listed in Source |
| 1995 | - | EDR Digital Archive | Street not listed in Source |
| 1992 | - | EDR Digital Archive | Street not listed in Source |
| **CORAL SEA ST** | | | |
| 2017 | - | EDR Digital Archive | Street not listed in Source |
| 2014 | - | EDR Digital Archive | Street not listed in Source |
| 2010 | pg. A1 | EDR Digital Archive | |
| 2005 | pg. A2 | EDR Digital Archive | |
| 2000 | - | EDR Digital Archive | Street not listed in Source |
| 1995 | - | EDR Digital Archive | Street not listed in Source |
| 1992 | - | EDR Digital Archive | Street not listed in Source |

# City Directory Images

| Target Street | Cross Street | Source |
| --- | --- | --- |
| - | ✓ | EDR Digital Archive |

# CORAL SEA ST 2010

1 US COAST GUARD
USCGAS HIDEAWAY CLUB

| Target Street | Cross Street | Source |
| --- | --- | --- |
| - | ✓ | EDR Digital Archive |

## CORAL SEA ST 2005

1 UNITED STATES COAST GUARD

# EDR Building Permit Report

**Honokea Phase I ESA**
Not Reported
Kapolei, HI 96707

Inquiry Number: 6803000.8
December 29, 2021

# EDR Building Permit Report

## Target Property and Adjoining Properties

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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**SECTION**



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# EDR BUILDING PERMIT REPORT

## About This Report

The EDR Building Permit Report provides a practical and efficient method to search building department records for indications of environmental conditions. Generated via a search of municipal building permit records gathered from more than 1,600 cities nationwide, this report will assist you in meeting the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

Building permit data can be used to identify current and/or former operations and structures/features of environmental concern. The data can provide information on a target property and adjoining properties such as the presence of underground storage tanks, pump islands, sumps, drywells, etc., as well as information regarding water, sewer, natural gas, electrical connection dates, and current/former septic tanks.

## ASTM and EPA Requirements

ASTM E 1527-13 lists building department records as a "standard historical source," as detailed in § 8.3.4.7: "Building Department Records - The term building department records means those records of the local government in which the property is located indicating permission of the local government to construct, alter, or demolish improvements on the property." ASTM also states that "Uses in the area surrounding the property shall be identified in the report, but this task is required only to the extent that this information is revealed in the course of researching the property itself."

EPA's Standards and Practices for All Appropriate Inquires (AAI) states: "§312.24: Reviews of historical sources of information. (a) Historical documents and records must be reviewed for the purposes of achieving the objectives and performance factors of §312.20(e) and (f). Historical documents and records may include, but are not limited to, aerial photographs, fire insurance maps, building department records, chain of title documents, and land use records."

## Methodology

EDR has developed the EDR Building Permit Report through our partnership with BuildFax, the nation's largest repository of building department records. BuildFax collects, updates, and manages building department records from local municipal governments. The database now includes 30 million permits, on more than 10 million properties across 1,600 cities in the United States.

The EDR Building Permit Report comprises local municipal building permit records, gathered directly from local jurisdictions, including both target property and adjoining properties. Years of coverage vary by municipality. Data reported includes (where available): date of permit, permit type, permit number, status, valuation, contractor company, contractor name, and description.

Incoming permit data is checked at seven stages in a regimented quality control process, from initial data source interview, to data preparation, through final auditing. To ensure the building department is accurate, each of the seven quality control stages contains, on average, 15 additional quality checks, resulting in a process of approximately 105 quality control "touch points."

For more information about the EDR Building Permit Report, please contact your EDR Account Executive at (800) 352-0050.

EDR® Environmental Data Resources Inc

BUILD FAX PROPERTY HISTORY

# EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

A search of building department records was conducted by Environmental Data Resources, Inc (EDR) on behalf of Element Environmental , LLC on Dec 29, 2021.

**TARGET PROPERTY**

Not Reported
Kapolei, HI 96707

**SEARCH METHODS**

EDR searches available lists for both the Target Property and Surrounding Properties.

**RESEARCH SUMMARY**

Building permits identified: **NO PERMITS IDENTIFIED**

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Name: JurisdictionName
Years: Years
Source: Source
Phone: Phone

**BUILDING DEPARTMENT RECORDS SEARCHED**

Name: Honolulu County
Years: 1961-2021
Source: Honolulu County, Planning and Permitting, Honolulu, HI
Phone: (808) 768-8259

# TARGET PROPERTY FINDINGS

**TARGET PROPERTY DETAIL**

**Not Reported**
**Kapolei, HI 96707**

No Permits Found

# ADJOINING PROPERTY FINDINGS

## ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

No Permits Found

# GLOSSARY

**General Building Department concepts**

- **ICC:** The International Code Council. The governing body for the building/development codes used by all jurisdictions who've adopted the ICC guidelines. MOST of the US has done this. Canada, Mexico, and other countries use ICC codes books and guides as well. There are a few states who have added guidelines to the ICC codes to better fit their needs. For example, California has added seismic retrofit requirements for most commercial structures.
- **Building Department (Permitting Authority, Building Codes, Inspections Department, Building and Inspections):** This is the department in a jurisdiction where an owner or contractor goes to obtain permits and inspections for building, tearing down, remodeling, adding to, re-roofing, moving or otherwise making changes to any structure, Residential or Commercial.
- **Jurisdiction:** This is the geographic area representing the properties over which a Permitting Authority has responsibility.
- **GC:** General Contractor. Usually the primary contractor hired for any Residential or Commercial construction work.
- **Sub:** Subordinate contracting companies or subcontractors. Usually a "trades" contractor working for the GC. These contractors generally have an area of expertise in which they are licensed like Plumbing, Electrical, Heating and Air systems, Gas Systems, Pools etc. (called "trades").
- **Journeymen:** Sub contractors who have their own personal licenses in one or more trades and work for different contracting companies, wherever they are needed or there is work.
- **HVAC (Mechanical, Heating & Air companies):** HVAC = Heating, Ventilation, and Air Conditioning.
- **ELEC (Electrical, TempPole, TPole, TPower, Temporary Power, Panel, AMP Change, Power Release):** Electrical permits can be pulled for many reasons. The most common reason is to increase the AMPs of power in an electrical power panel. This requires a permit in almost every jurisdiction. Other commons reason for Electrical permits is to insert a temporary power pole at a new construction site. Construction requires electricity, and in a new development, power has yet to be run to the lot. The temporary power pole is usually the very first permit pulled for new development. The power is released to the home owner when construction is complete and this sometimes takes the form of a Power Release permit or inspection.
- **"Pull" a permit:** To obtain and pay for a building permit.
- **CBO:** Chief Building Official
- **Planning Department:** The department in the development process where the building /structural plans are reviewed for their completeness and compliance with building codes
- **Zoning Department:** The department in the development process where the site plans are reviewed for their compliance with the regulations associated with the zoning district in which they are situated.
- **Zoning District:** A pre-determined geographic boundary within a jurisdiction where certain types of structures are permitted / prohibited. Examples are Residential structure, Commercial/Retail structures, Industrial/Manufacturing structures etc. Each zoning district has regulations associated with it like the sizes of the lots, the density of the structures on the lots, the number of parking spaces required for certain types of structures on the lots etc.
- **PIN (TMS, GIS ID, Parcel#):** Property Identification Number and Tax Map System number.
- **State Card (Business license):** A license card issued to a contractor to conduct business.
- **Building Inspector (Inspector):** The inspector is a building department employee that inspects building construction for compliance to codes.
- **C.O.:** Certificate of Occupancy. This is the end of the construction process and designates that the owners now have permission to occupy a structure after its building is complete. Sometimes also referred to as a Certificate of Compliance.

# GLOSSARY

**Permit Content Definitions**

- Permit Number: The alphanumerical designation assigned to a permit for tracking within the building department system. Sometimes the permit number gives clues to its role, e.g. a "PL" prefix may designate a plumbing permit.
- Description: A field on the permit form that allows the building department to give a brief description of the work being done. More often than not, this is the most important field for EP's to find clues to the prior use (s) of the property.
- Permit Type: Generally a brief designation of the type of job being done. For example BLDG-RES, BLDG-COM, ELEC, MECH etc.

**Sample Building Permit Data**

Date: Nov 09, 2000
Permit Type: Bldg -
New Permit Number: 101000000405
Status: Valuation: $1,000,000.00
Contractor Company: OWNER-BUILDER
Contractor Name:

Description: New one store retail (SAV-ON) with drive-thru pharmacy. Certificate of Occupancy.

# APPENDIX D

# VAPOR ENCROACHMENT SCREENING

# VAPOR ENCROACHMENT SCREEN

## Prepared by: Element Environmental , LLC

**2/22/2022**

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## EXECUTIVE SUMMARY

| | |
|---|---|
| **BARBERS POINT NAVAL AIR STATION (CLOSED)**<br>**Not Reported, , HI,** | CUSA147755 |
| Impact on Target Property: VEC does not exist | |

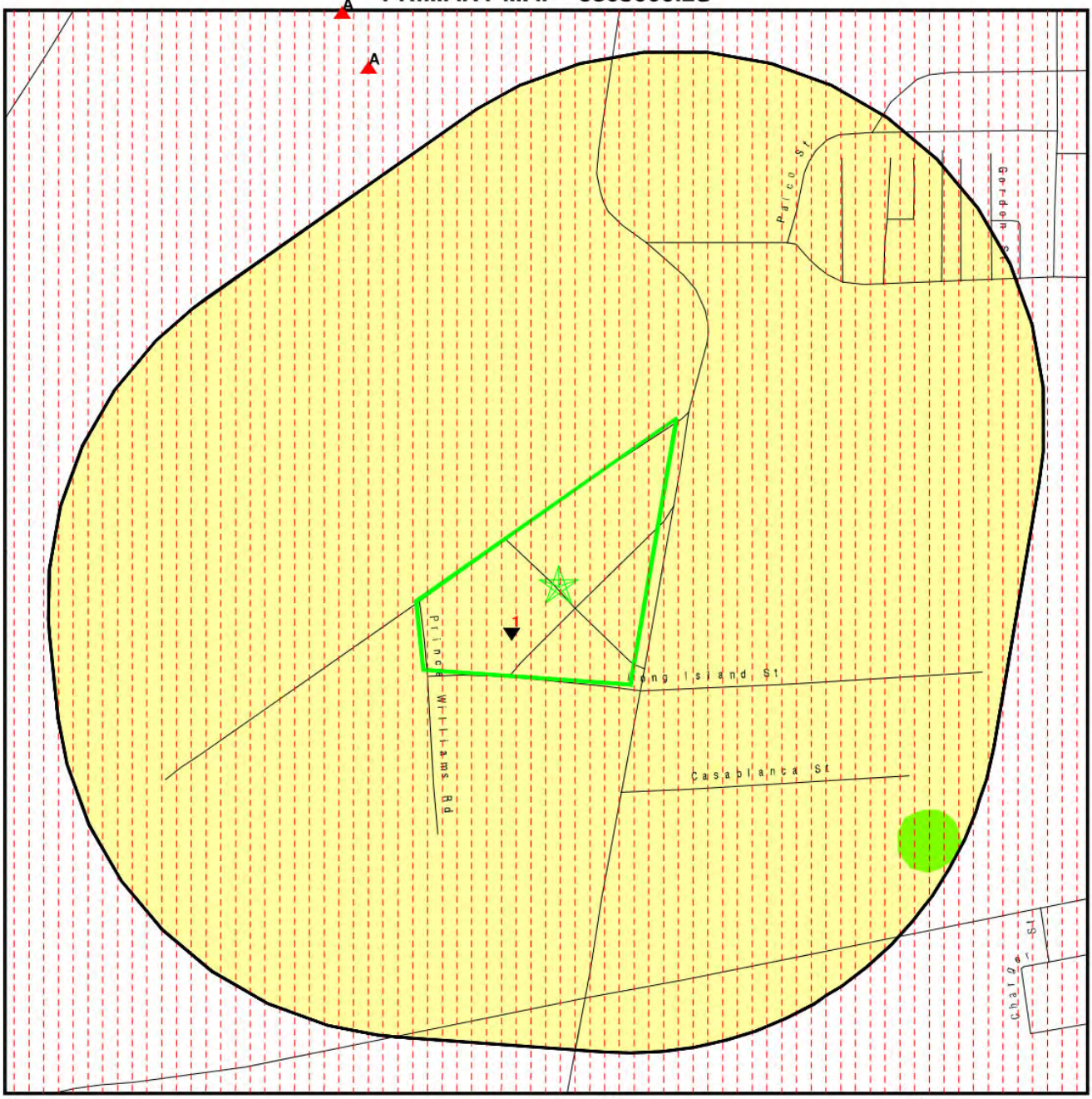
| | |
|---|---|
| **NAVAL AIR STATION - BARBERS POINT**<br>**BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36,**<br>**BARBERS POINT NAVAL AIR STATIO, HI, 96862** | U004109522 |
| Impact on Target Property: VEC does not exist as site cleanup has been completed, tanks removed, and contaminated soil removed. | |

| | |
|---|---|
| **NAVAL AIR STATION - BARBERS POINT**<br>**TANK BP93, BLDG 1863, BARBERS POINT NAVAL AIR STATIO, HI, 96862** | U003154715 |
| Impact on Target Property: VEC does not exist | |

| | |
|---|---|
| **NAVAL AIR STATION BARBERS POINT**<br>**BLDG 1866 TANK BP94, PEARL HARBOR, HI, 96860** | U003832853 |
| Impact on Target Property: VEC does not exist | |

| | |
|---|---|
| **NAVAL AIR STATION - BARBERS POINT**<br>**TANK BP76, BLDG 1264, BARBERS POINT NAVAL AIR STATIO, HI, 96862** | U001235782 |
| Impact on Target Property: VEC does not exist | |

# PRIMARY MAP - 6803000.2S




0 300 1/3 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | |
|---|---|
| SITE NAME: Honokea Phase I ESA | CLIENT: Element Environmental , LLC |
| ADDRESS: Not Reported<br>Kapolei HI 96707 | CONTACT: Angela Peltier<br>INQUIRY #: 6803000.2s |
| LAT/LONG: 21.310839 / 158.05734 | DATE: December 29, 2021 12:58 pm |

## MAP FINDINGS

| **BARBERS POINT NAVAL AIR STATION (CLOSED)**<br>**Not Reported, , HI,** | | | CUSA147755 |
|---|---|---|---|
| **Map ID: Region** | Distance:<br>N <1/10<br>(0 ft. / 0 mi.) | Elevation: | Other Ascertainable Records |

**Worksheet:**

Impact on Target Property: VEC does not exist

Conditions:
Not Applicable: YES

**Database Details:**

DOD: Other Ascertainable Records

| | |
|---|---|
| Feature 1: | Navy DOD |
| Feature 2: | Not Reported |
| Feature 3: | Not Reported |
| URL: | Not Reported |
| Name 1: | Barbers Point Naval Air Station (Closed) |
| Name 2: | Not Reported |
| Name 3: | Not Reported |
| State: | HI |
| DOD Site: | Yes |
| Tile name: | HIHONOLULU |

## MAP FINDINGS

| NAVAL AIR STATION - BARBERS POINT<br>BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36,<br>BARBERS POINT NAVAL AIR STATIO, HI, 96862 | | | U004109522 |
|---|---|---|---|
| **Map ID: 1** | Distance:<br>SW <1/10<br>(0 ft. / 0 mi.) | Elevation:<br>3 ft. Lower Elevation<br>20 ft. Above Sea Level | Lists of state and tribal leaking storage tanks<br>Lists of state and tribal registered storage tanks |

**Worksheet:**

Impact on Target Property: VEC Does Not Exist

**Database Details:**

LUST: Lists of state and tribal leaking storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-103822 |
| Facility Status: | Site Cleanup Completed (NFA) |
| Facility Status Date: | 01/12/2007 |
| Release ID: | 070004 |
| Project Officer: | Shunsheng Fu |

UST: Lists of state and tribal registered storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-103822 |
| Owner: | U.S. DEPT OF THE NAVY |
| Owner Address: | Not Reported |
| Owner City,St,Zip: | Barbers Point Naval Air Station, 96862 96862 |
| Latitude: | 21.310229 |
| Longitude: | -158.05767900000001 |
| Horizontal Reference Datum Name: | NAD83 |
| Horizontal Collection Method Name: | Map |

| | |
|---|---|
| Tank ID: | R-BP29 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/08/1992 |
| Tank Capacity: | 25000 |

**NAVAL AIR STATION - BARBERS POINT, BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BARBERS POINT NAVAL AIR STATIO, HI, 96862 (Continued)**

| | |
|---|---|
| Substance: | Other |
| | |
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| | |
| Tank ID: | R-BP30 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/08/1992 |
| Tank Capacity: | 25000 |
| Substance: | Other |
| | |
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| | |
| Tank ID: | R-BP31 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/08/1992 |
| Tank Capacity: | 5000 |
| Substance: | Other |
| | |
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| | |
| Tank ID: | R-BP32 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/08/1992 |
| Tank Capacity: | 5000 |
| Substance: | Other |
| | |
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| | |
| Tank ID: | R-BP33 |
| Date Installed: | 04/21/1945 |

**NAVAL AIR STATION - BARBERS POINT, BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BARBERS POINT NAVAL AIR STATIO, HI, 96862 (Continued)**

| | |
|---|---|
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/07/1992 |
| Tank Capacity: | 5000 |
| Substance: | Other |

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |

| | |
|---|---|
| Tank ID: | R-BP34 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/07/1992 |
| Tank Capacity: | 5000 |
| Substance: | Other |

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |

| | |
|---|---|
| Tank ID: | R-BP35 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/09/1992 |
| Tank Capacity: | 260 |
| Substance: | Other |

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |

| | |
|---|---|
| Tank ID: | R-BP36 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/09/1992 |
| Tank Capacity: | 260 |
| Substance: | Other |

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |

**NAVAL AIR STATION - BARBERS POINT, BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BARBERS POINT NAVAL AIR STATIO, HI, 96862 (Continued)**

| | |
|---|---|
| Tank ID: | R-BP37 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/09/1992 |
| Tank Capacity: | 260 |
| Substance: | Other |

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |

| | |
|---|---|
| Tank ID: | R-BP38 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/07/1992 |
| Tank Capacity: | 300 |
| Substance: | Other |

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |

| | |
|---|---|
| Tank ID: | R-BP39 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/07/1992 |
| Tank Capacity: | 300 |
| Substance: | Other |

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | BLDG 174 TANK BP29, BP30, BP31, BP32, BP33, BP34, BP35, BP36, BP37, BP38, BP39, BP40 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |

| | |
|---|---|
| Tank ID: | R-BP40 |
| Date Installed: | 04/21/1945 |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 04/07/1992 |
| Tank Capacity: | 300 |
| Substance: | Other |

## MAP FINDINGS

| NAVAL AIR STATION - BARBERS POINT<br>TANK BP93, BLDG 1863, BARBERS POINT NAVAL AIR STATIO, HI, 96862 | | | U003154715 |
|---|---|---|---|
| **Map ID: A2** | Distance:<br>NNW 1/3 - 1/2<br>(2210 ft. / 0.419 mi.) | Elevation:<br>13 ft. Higher Elevation<br>36 ft. Above Sea Level | Lists of state and tribal leaking storage tanks<br>Lists of state and tribal registered storage tanks |

**Worksheet:**

Impact on Target Property: VEC does not exist

**Database Details:**

LUST: Lists of state and tribal leaking storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP93, BLDG 1863 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102915 |
| Facility Status: | Site Cleanup Completed (NFA) |
| Facility Status Date: | 04/01/2004 |
| Release ID: | 940115 |
| Project Officer: | Randall Heu |

UST: Lists of state and tribal registered storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP93, BLDG 1863 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102915 |
| Owner: | U.S. DEPT OF THE NAVY |
| Owner Address: | Not Reported |
| Owner City,St,Zip: | Barbers Point Naval Air Station, 96862 96862 |
| Latitude: | 21.317606999999999 |
| Longitude: | -158.060013 |
| Horizontal Reference Datum Name: | NAD83 |
| Horizontal Collection Method Name: | Map |

| | |
|---|---|
| Tank ID: | R-93 |
| Date Installed: | Not Reported |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 09/10/1996 |
| Tank Capacity: | 500 |
| Substance: | Used Oil |

**NAVAL AIR STATION - BARBERS POINT, TANK BP93, BLDG 1863, BARBERS POINT NAVAL AIR STATIO, HI, 96862 (Continued)**

## MAP FINDINGS

| NAVAL AIR STATION BARBERS POINT<br>BLDG 1866 TANK BP94, PEARL HARBOR, HI, 96860 | | | U003832853 |
|---|---|---|---|
| **Map ID: A3** | Distance:<br>NNW 1/3 - 1/2<br>(2497 ft. / 0.473 mi.) | Elevation:<br>15 ft. Higher Elevation<br>38 ft. Above Sea Level | Lists of state and tribal leaking storage tanks<br>Lists of state and tribal registered storage tanks |

**Worksheet:**

Impact on Target Property: VEC does not exist

**Database Details:**

LUST: Lists of state and tribal leaking storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION BARBERS POINT |
| Address: | BLDG 1866 TANK BP94 |
| City,State,Zip: | PEARL HARBOR, HI 96860 |
| Facility ID: | 9-103175 |
| Facility Status: | Site Cleanup Completed (NFA) |
| Facility Status Date: | 10/15/2001 |
| Release ID: | 010058 |
| Project Officer: | Shumin Liu |

UST: Lists of state and tribal registered storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION BARBERS POINT |
| Address: | BLDG 1866 TANK BP94 |
| City,State,Zip: | PEARL HARBOR, HI 96860 |
| Facility ID: | 9-103175 |
| Owner: | U.S. DEPT OF THE NAVY |
| Owner Address: | Not Reported |
| Owner City,St,Zip: | Pearl Harbor, 96860 96860 |
| Latitude: | 21.318328999999999 |
| Longitude: | -158.060382 |
| Horizontal Reference Datum Name: | NAD83 |
| Horizontal Collection Method Name: | Map |

| | |
|---|---|
| Tank ID: | R-BP94 |
| Date Installed: | Not Reported |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 09/10/1996 |
| Tank Capacity: | 500 |
| Substance: | Used Oil |

## MAP FINDINGS

| NAVAL AIR STATION - BARBERS POINT<br>TANK BP76, BLDG 1264, BARBERS POINT NAVAL AIR STATIO, HI, 96862 | | | U001235782 |
|---|---|---|---|
| **Map ID: 4** | Distance:<br>NE 1/3 - 1/2<br>(2604 ft. / 0.493 mi.) | Elevation:<br>3 ft. Higher Elevation<br>26 ft. Above Sea Level | Lists of state and tribal leaking storage tanks<br>Lists of state and tribal registered storage tanks |

**Worksheet:**

Impact on Target Property: VEC does not exist

**Database Details:**

LUST: Lists of state and tribal leaking storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP76, BLDG 1264 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102236 |
| Facility Status: | Site Cleanup Completed (NFA) |
| Facility Status Date: | 05/14/1998 |
| Release ID: | 960105 |
| Project Officer: | Jeffrey Ung |

UST: Lists of state and tribal registered storage tanks

| | |
|---|---|
| Name: | NAVAL AIR STATION - BARBERS POINT |
| Address: | TANK BP76, BLDG 1264 |
| City,State,Zip: | BARBERS POINT NAVAL AIR STATION, HI 96862 |
| Facility ID: | 9-102236 |
| Owner: | U.S. DEPT OF THE NAVY |
| Owner Address: | Not Reported |
| Owner City,St,Zip: | Barbers Point Naval Air Station, 96862 96862 |
| Latitude: | 21.318607 |
| Longitude: | -158.050915 |
| Horizontal Reference Datum Name: | NAD83 |
| Horizontal Collection Method Name: | Map |

| | |
|---|---|
| Tank ID: | r-BP76 |
| Date Installed: | Not Reported |
| Tank Status: | Permanently Out of Use |
| Date Closed: | 09/09/1996 |
| Tank Capacity: | 25000 |
| Substance: | Gasoline |

**NAVAL AIR STATION - BARBERS POINT, TANK BP76, BLDG 1264, BARBERS POINT NAVAL AIR STATIO, HI, 96862 (Continued)**

# APPENDIX E

# QUALIFICATIONS OF THE ENVIRONMENTAL PROFESSIONALS

**John A. Ellis, Field Technician**

element environmental llc
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**John A. Ellis**
Field Technician

**EDUCATION:**

**B.S.,** Oregon State University, In progress

**SPECIALIZED TRAINING:**

OSHA 40-hour Initial HAZWOPER Training
C4 HAZWOPER Supervisor
OSHA 30-hour Construction Safety
40-hour Construction Safety Hazard Awareness
ASTM E1527 Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process Certification
Asbestos Worker Certification
Asbestos Inspector Certification
Lead-Based Paint Activities Certification
XRF Safety Training Certification
First Aid and CPR AED
Bloodborne Pathogens
Maritime Security Awareness Course Certification
Medical Examiner's Certification
Level I Antiterrorism Awareness Training
Operations Security Training
PHNSY and IMF Code 106 Occupational Health, Safety, and Environmental Brief Certification
SERE 100.2 Level A SERE Education and Training in Code of Conduct Certification

**SUMMARY OF EXPERIENCE:**

Mr. Ellis is an Environmental Technician at Element Environmental, LLC (E2). Mr. Ellis joined E2 in November 2015. He has over 5 years of experience in Hawaii, Guam, Japan, and Singapore in the environmental consulting field. His specific expertise includes site assessment, characterization, and remediation; hazardous materials survey; and storm water monitoring.

Mr. Ellis has assisted in many environmental projects involving Phase I Environmental Site Assessments (ESAs), Phase II ESAs, remediation activities, and Construction Environmental Hazard Management Plan (C-EHMP) monitoring and implementation during construction at contaminated sites. He has been the field supervisor for surface and subsurface investigations and groundwater monitoring projects and has assisted with various underground structure closures, including USTs, hoists, oil/water separators, and sumps. He has also assisted with the management and operations and maintenance for remediation systems; hazardous materials assessments/surveys and reporting, industrial waste water and illicit discharge inspections, and AMAP monitoring.

Mr. Ellis has completed training for the ASTM E1527 Standard Practice for ESA and attends periodic training and update presentations to stay current with Phase I ESA trends and upcoming 2021 revisions to the practice.

**Angela K. Peltier, Geologist**

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**Angela K. Peltier**
Geologist

**EDUCATION:**

**B.S., Geology and Geophysics** – University of Hawaii, 2004

**SPECIALIZED TRAINING:**

OSHA 40-hour Initial HAZWOPER Training

ASTM E1527 Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process Certification

**SUMMARY OF EXPERIENCE:**

Ms. Peltier is a Geologist at Element Environmental, LLC (E2). Ms. Peltier joined E2 on July 1, 2006, when E2 merged with Mountain Edge Environmental, Inc. She has 17 years of experience in Hawaii in the environmental consulting field. Her specific expertise includes site assessment, characterization, and remediation.

Ms. Peltier has assisted in many environmental projects involving Phase I Environmental Site Assessments (ESAs), Phase II ESAs, Environmental Hazard Evaluations (EHEs), Environmental Hazard Management Plans (EHMPs), Environmental Condition of Property (ECP) evaluations, preliminary assessments, emergency spill response, subsurface investigation, groundwater monitoring, assessment of fate and transport of surface and groundwater contaminants, soil and groundwater remediation, risk assessment, groundwater monitoring, and explosive gas monitoring. She has also assisted in underground storage tank (UST) removal projects which included preparation of plans and specifications for UST removal, UST removal monitoring, release response activities such as over-excavation, installation of soil borings and groundwater monitoring wells, long-term remediation design and implementation, and report preparation.

Ms. Peltier has also performed Phase I ESAs and has assisted with the preparation of environmental impact statements and environmental assessments. She has also performed environmental and hydrogeological investigations and has conducted remediation activities for several illegal landfill sites.

Ms. Peltier has been involved in several water quality related projects, including preparation of National Pollutant Discharge Elimination System (NPDES) permit applications for an auto recycling facility, an aquarium, and a well drilling operation, preparation of Storm Water Pollution Control Plans for an auto recycling facility and a solid waste transfer station; storm water and industrial discharge monitoring at various sites.

Ms. Peltier has completed training for the ASTM E1527 Standard Practice for ESA and attends periodic training and update presentations to stay current with Phase I ESA trends and upcoming 2021 revisions to the practice.

**Arlene H. Campbell, L.G., Senior Geologist**

element environmental llc
environmental · engineering · water resources

**Arlene H. Campbell, L.G.**
Associate
Senior Geologist

**EDUCATION:**

**Graduate Work in Geology** - Vanderbilt University, 1988 - 1989
**B.A., Geology (minor in Hydrology)** - Austin Peay State University, 1988

**PROFESIONAL REGISTRATIONS:**

Licensed Geologist, Washington State, No. 1664, 2002

**SPECIALIZED TRAINING:**

OSHA 40-hour Initial HAZWOPER Training and Current 8-hour Refresher
Hazardous Waste Site Supervisor Training

**SUMMARY OF EXPERIENCE:**

Ms. Campbell is an Associate and Senior Geologist at Element Environmental, LLC (E2). Ms. Campbell joined E2 on July 1, 2006, when E2 merged with Mountain Edge Environmental, Inc. She has over 31 years of experience in Hawaii in the environmental consulting field. Her specific expertise includes site assessment, characterization, and remediation. Ms. Campbell has assisted with several state level task forces to assess environmental risk and address petroleum contaminated soils.

Ms. Campbell has managed many environmental projects involving Phase I Environmental Site Assessments (ESAs), preliminary assessments, emergency spill response, subsurface investigation, groundwater monitoring, assessment of fate and transport of surface and groundwater contaminants, soil and groundwater remediation, and risk assessment. She has also managed numerous underground storage tank (UST) removal projects which included preparation of plans and specifications for UST removal, UST removal monitoring, release response activities such as over-excavation, installation of soil borings and groundwater monitoring wells, long-term remediation design and implementation, and report preparation.

Ms. Campbell has also managed a number of complex hazardous and biological waste removal and site closure projects which involved geophysical surveys, preparation of plans and specifications, waste characterization, and removal and disposal activities. She has performed Phase I ESAs and has assisted with the preparation and review of environ mental impact statements. She has also performed environmental and hydrogeological investigations and has conducted remediation activities for several illegal landfill sites. Noteworthy projects Ms. Campbell has managed included several large emergency response site investigations and remediation projects involving the release of petroleum and polychlorinated biphenyls. One of these projects included an emergency response to a major gasoline spill on Kauai that impacted air, soil, surface water, and groundwater. For this project, Ms. Campbell coordinated with the U.S. Coast Guard, county fire and police departments, EPA Region 9, HDOH, responsible parties, property owners, tenants, and the community. She monitored explosivity and contaminant migration in the subsurface, underground structures/utilities, buildings, a private sewage pumping station, an adjacent stream and the Pacific Ocean; coordinated emergency medical treatment and medical monitoring of affected spill response personnel and civilians; monitored installation of soil vapor points, soil borings, and groundwater monitoring wells; collected soil vapor, soil, groundwater, and stream water samples; prepared release response report; and provided technical support to legal team.

Ms. Campbell has been the principal investigator for several water quality related projects, including preparation of National Pollutant Discharge Elimination System (NPDES) permit applications for an auto recycling facility, an aquarium, a well drilling operation, a cemetery, and a museum; preparation of Storm Water Pollution Control Plans for an auto recycling facility and a solid waste transfer station; storm water and industrial discharge monitoring at various sites; and assisting clients in addressing NPDES compliance issues.

Appendix D

# Natural Resources Assessment

*AECOS* No. 1698

# A natural resources assessment for Honokea Surf Village Kapolei (Kalaeloa District)

*AECOS* Inc.
45-939 Kamehameha Highway
Suite 104
Kāneʻohe, Hawaiʻi 96744

March 7, 2022

# A natural resources assessment for Honokea Surf Village Kapolei (Kalaeloa District)

March 7, 2022 *AECOS* No. 1698

**Eric B. Guinther and Reginald David**
*AECOS* Inc.
45-939 Kamehameha Highway Suite 104
Kāneʻohe, Hawaiʻi 96744
Phone: (808) 234-7770 Fax: (808) 234-7775 Email: guinther@aecos.com

## Introduction

The Kalaeloa District of Kapolei on leeward O'ahu—the former Barbers Point Naval Air Station (BPNAS)—has been under the responsibility of the Hawaii Community Development Authority (HCDA) since 2002. The Honokea Surf Village is a development proposed for an approximately 19-ac parcel (TMK: 9-1-013:068; see Figure 1 and Figure 2) in the Kalaeloa District. The Honokea Surf Village ("hereafter, the "Project") will be a recreational surf park comprising a 5-ac surf lagoon for both beginners and experts, a 3-ac area for other recreation (such as a lazy river and/or stand up paddle board area), a 2-ac beach zone, a 2-ac welcome plaza and concession area, a 2-ac film studio and training area, a 1-ac conference center, at least 2 ac dedicated to overnight bungalows, and a 500-car parking lot to be shared with the adjacent Kalaeloa Heritage Park. The site lies on the west side of Coral Sea Road, bounded by Long Island Street on the south, Prince William Road on the west, and the security fence for Kalaeloa Airport on the north.

This report[1] provides results of a survey of natural resources (plants and vertebrates) within the Project parcel. The primary purpose of the survey is to establish that no botanical, avian, or terrestrial mammalian species currently listed or proposed for listing under either federal or state endangered species statutes occur on or adjacent to the project. We also evaluate the potential impacts that the development of the project might pose to any sensitive or

[1] This report was prepared for G70 and is intended to become part of the public record by incorporation into an EA for the subject project.

protected native botanical, avian, or mammalian species, and to propose appropriate minimization or mitigation measures that might be implemented to reduce or eliminate any such impacts.

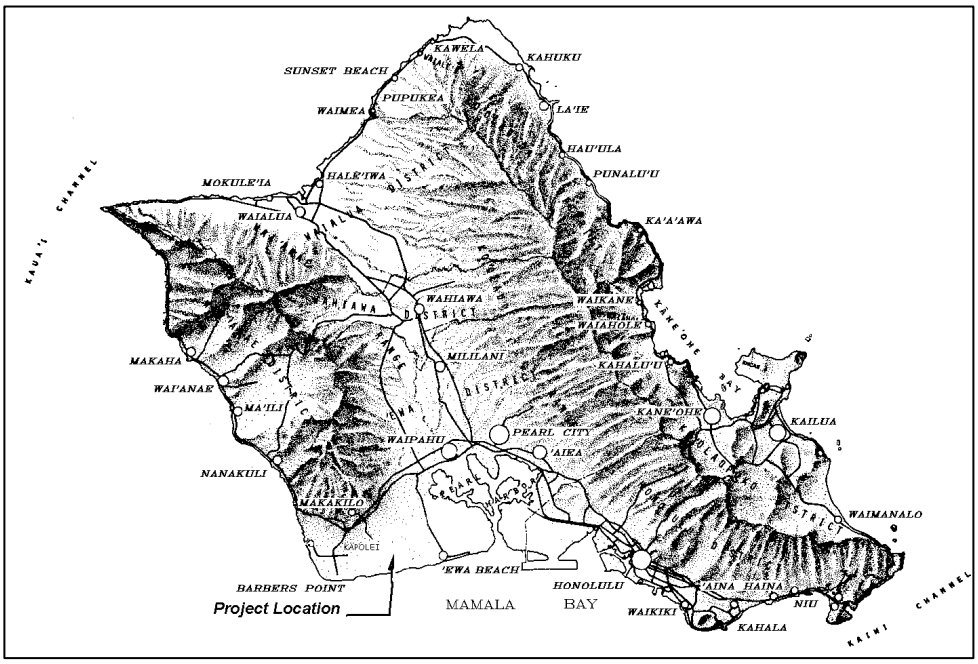


**Figure 1. Project location on O'ahu.**

## Site Description

The proposed site is presently more or less broadly level ground of the 'Ewa Plain. The terrain is uneven and rocky with limestone rubble and outcrops typical of karst, although much of the site has been disturbed by past development evidenced by roads (cover photo), scattered concrete slabs, and other structures dating to the years when this was BPNAS. No openings in the substratum down to groundwater (i.e., potential karst anchialine features) were observed—extensive disturbance of the ground has likely obliterated any such features that may have existed in the distant past.

Looking at satellite images covering the Project vicinity (Google Earth photo dated 6/20/2019) shows the Project site to be substantially more historically disturbed than almost any other nearby properties, the one exception being the former skeet range along San Juacinto St. where the ground surface was essentially scraped away to remove lead contamination. Properties just east of the Project parcel on Long Island and Casablanca streets and the Kalaeloa Heritage Site bordering on the Project site are all more recently developed sites.

# Methods

## Botanical Survey

*AECOS* botanist, Eric Guinther, surveyed the Project site on December 21, 2021. Plant species were identified as they were encountered during wandering transects that covered the entire parcel. Species names follow *Manual of the Flowering Plants of Hawai'i* (Wagner, Herbst, & Sohmer, 1990; Wagner & Herbst, 1999) for native and naturalized flowering plants. More recent name changes for naturalized plant species follow Imada (2019).

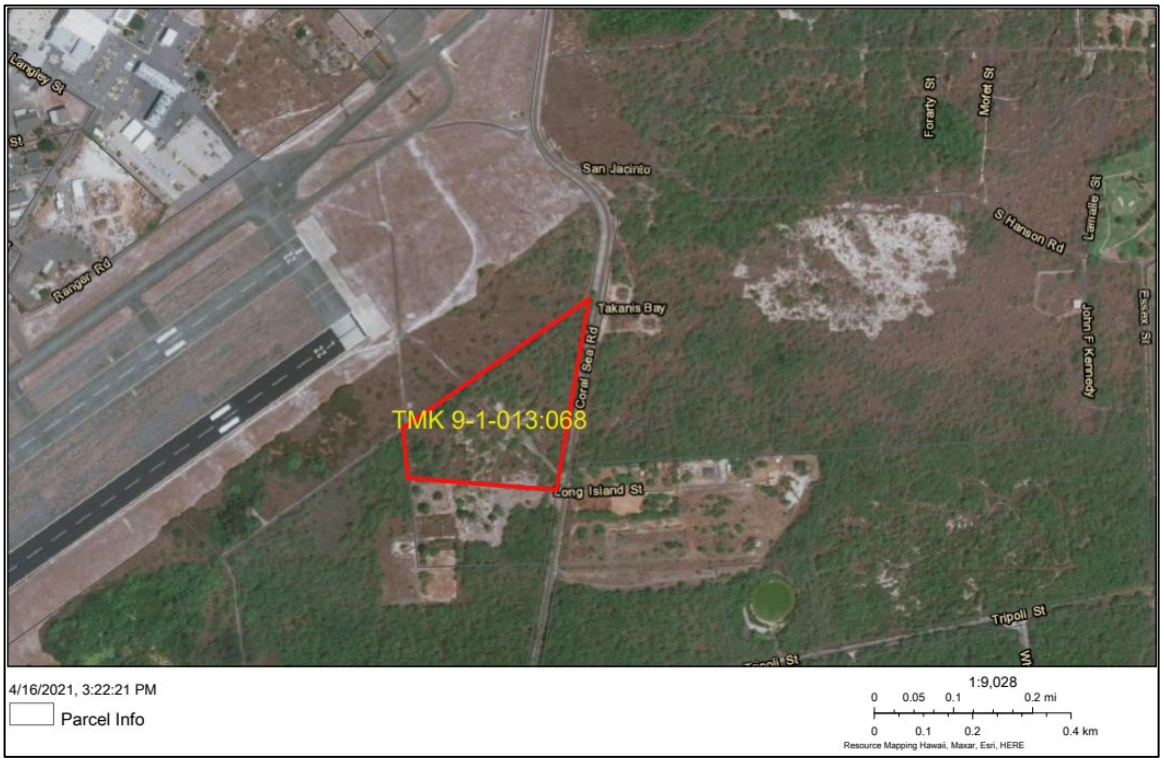


**Figure 2. Project parcel outlined in red (map provided by G70).**

## Terrestrial Vertebrates Survey

### *Avian Survey*

A survey of extant birds was conducted in the morning hours of December 21 2021 by *AECOS* biologist, Reginald David. Three avian count stations were sited roughly equidistant from each other within the project area. A single, eight-minute avian point-count was made at each count station. Field observations

were made with the aid of Leica 8x42 binoculars and by listening for vocalizations. Time not spent counting at point-count stations was used to search the project area for species and habitats not observed during point-counts. Weather conditions were excellent with unlimited visibility, no precipitation, and winds between 1 and 3 miles per hour.

The avian phylogenetic order and nomenclature used in this report follows the AOU *Check-List of North and Middle American Birds 2020* (Chesser et al., 2020), and the *62nd Supplement to the Check-list of North American Birds* (Chesser et al., 2021).

***Mammalian Survey***

The survey of mammals was limited to visual and auditory detection, coupled with observation of scat, tracks, and other animal sign. A running tally was kept of all terrestrial vertebrate mammalian species detected within the survey area. Mammal scientific names follow *Wilson & Reeder's Mammal Species of the World* (Third Edition; Wilson and Reeder, 2005).

# Results

## Vegetation

The Project parcel is a forest of *kiawe* and *koa haole* trees with open areas of disturbed ground (Figures 3 and 4). Ruderal refers to land that is greatly (and recently) disturbed. Typically, ruderal land develops a vegetation type of herbaceous plants that spread rapidly and are adapted to continuing disturbances, such as mowing. Ruderal plants at this location are found along the roadway verge, on the unimproved roadways, and in relatively recent disturbed areas.

## Flora

The survey of plants on the Project site yielded 30 species of flowering plants (no ferns or conifers or their allies were found; see Table 1). Of this number, five (17%) are native species and one (3%) is an early Polynesian introduction. The four indigenous species—*koali'ai* (*Ipomoea cairica*), hoary abutilon or *ko'oloa keokeo* (*Abutilon incanum*), *'ilima* (*Sida fallax*) and *'uhaloa* (*Waltheria indica*)—are common species on O'ahu in dry and mesic environments. With one exception, these species are moderately abundant across the site; *'ilima* is especially common. A single plant of *ko'oloa keokeo* was seen along the road

**Figure 3. Area of mostly *koa haole* and sparse understory.**

**Figure 4. An area of highly disturbed open ground here surrounded by *kiawe* forest.**

**Table 1.** Plant species identified from TMK: 9-1-017:156 (por.) in December 2021.

| Species listed by family | Common name | Status | Abundance | Notes |
|---|---|---|---|---|
| | *FLOWERING PLANTS* | | | |
| | MONOCOTS | | | |
| ALOEACEAE | | | | |
| *Aloë vera* (L.) N.L. Burm. | aloe vera | Nat | R | |
| POACEAE | | | | |
| *Cenchrus ciliaris* L. | buffelgrass | Nat | AA | |
| *Chloris barbata* (L.) Sw. | swollen fingergrass | Nat | R | |
| *Cynodon dactylon* (L.) Pers. | Bermuda grass | Nat | R | <1> |
| *Megathyrsus maximus* (Jacq.) B.K. Simon & W.L. Jacobs | Guinea grass | Nat | A | |
| | *FLOWERING PLANTS* | | | |
| | EUDICOTS | | | |
| ACANTHACEAE | | | | |
| *Asystasia gangetica* (L.) T. Anderson | Chinese violet | Nat | Ca | |
| ASCLEPIADACEAE | | | | |
| *Stapelia gigantea* N.E. Brown | Zulu-giant | Nat | Oo | |
| ASTERACEAE (COMPOSITAE) | | | | |
| *Bidens* sp. | seedlings | Nat | Ro | <2> |
| *Pluchia carolinensis* (Jacq.) G. Don | sourbush | Nat | U | |
| *Pluchea indica* (l.) Less. | Indian fleabane | Nat | U | |
| *Pluchea x fosbergii* Cooperr. & Galang | --- | Nat | R | |
| *Tridax procumbens* L. | coat buttons | Nat | R | <1> |
| *Verbesina enceliodes* (Cav.) Benth. & Hook. | golden crown-beard | Nat | R | |
| CONVOLVULACEAE | | | | |
| *Ipomoea cairica* (L.) Sweet | *koali ʻai* | **Ind?** | O | <2> |
| CUCURBITACEAE | | | | |
| *Sicyos pachycarpus* St. John | *küpala* | **End** | C | <2> |
| FABACEAE | | | | |
| *Desmanthus pernambucanus* (L.) Thellung | virgate mimosa | Nat | O | |
| *Leucaena leucocephala* (Lam.) deWit | *koa haole* | Nat | AA | |
| *Pithecelobium dulce* (Roxb.) Benth. | *ʻopiuma* | Nat | Oc | |
| *Prosopis pallida* (Humb. & Bonpl. ex Willd.) Kunth | *kiawe* | Nat | C | |

Table 1 (continued).

| Species listed by family | Common name | Status | Abundance | Notes |
|---|---|---|---|---|
| MALVACEAE | | | | |
| *Abutilon incanum* (Link) Sweet | hoary abutilon | **Ind** | R | |
| *Malva parviflora* L. | cheese weed | Nat | Uo | |
| *Sida ciliaris* L. | --- | Nat | Oc | <1> |
| *Sida fallax* Walp. | *ʻilima* | **Ind** | C | |
| *Sida rhombifolia* | Cuba jute | Nat | R | |
| *Waltheria indica* L. | *ʻuhaloa* | **Ind** | Oc | <1> |
| LAURACEAE | | | | |
| *Cassytha filiformis* L. | *kaunaʻoa pehu* | Nat | R | |
| NYCTAGINACEAE | | | | |
| *Boerhavia coccinea* Mill. | false *alena* | Nat | U | |
| PORTULACACEAE | | | | |
| *Portulaca pilosa* L. | --- | Nat | Uc | |
| RUBIACEAE | | | | |
| *Morinda cirifolia* L. | *noni* | **Pol** | R | |
| SOLANACEAE | | | | |
| *Solanum seaforthianum* Andr. | --- | Nat | U | |

Legend to Table 1

STATUS = distributional status for the Hawaiian Islands:

**End** = endemic; native to the Hawaiian Islands.

**Ind** = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.

Nat = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of the Cook Expedition in 1778, and well-established outside of cultivation.

ABUNDANCE = occurrence ratings for plants on Lot 18063:

| | |
|---|---|
| R – Rare | seen in only one or perhaps two locations. |
| U - Uncommon | seen at most in several locations |
| O - Occasional | seen with some regularity |
| C - Common | observed numerous times during the survey |
| A - Abundant | found in large numbers; may be locally dominant. |
| AA - Very abundant | abundant and dominant; defining vegetation type. |

NOTES: <1> – Most abundant in open areas as along roads and disturbed places.

<2> = Observed only as numerous seedlings.

<3> – Plant lacking key diagnostic characteristics (e,g., flower or fruit).

across from the Heritage Park. The endemic native is *kūpala* (*Sicyos pachycarpus*), an annual climbing vine that can be very common in the ʻEwa District at certain times of the year. This vine clambers over the vegetation, flowers profusely, and then disappears early in the dry season, resurrecting from seeds the next wet season. All the plants seen were seedlings or newly extending vines, but very common across much of the site. The only early Polynesian introduced plant is *noni* (*Morinda citrifolia*), a small a small tree valued by some for its fruits with purported medicinal properties and common in the wild. The remaining 24 species (80%) recorded in our survey are all non-natives—species introduced to the Islands after 1778 and since naturalized (that is, spreading in the wild).

## Avian Fauna

A total of 96 individual birds of 17 species, representing 13 separate families, were recorded during station counts (Table 2). One species recorded Pacific Golden-Plover (*Pluvialis fulva*) is an indigenous migratory shorebird species. The remaining species recorded during this survey are alien to the Hawaiian Islands.

Avian diversity and densities were in keeping with the highly disturbed, alien vegetation present on the site. Three species—Zebra Dove (*Geopelia striata*), Grey Francolin (*Francolinus pondicerianus*) and Common Myna (*Acridotheres tristis*)—accounted for 49% of all birds recorded during station counts. The most frequently recorded species was Zebra Dove, accounting for 20% of the total number of individual birds recorded.

**Table 2. Avian species detected in the Hookea Surf School Project area, December 2021.**

| **Common Name** | ORDER<br>FAMILY<br>*Species* | **Status** | **RA** |
|---|---|---|---|
| | PHASIANIDAE - Pheasants & Partridges | | |
| | Phasianinae - Pheasants & Allies | | |
| Indian Peafowl | *Pavo cristatus* | A | 0.33 |
| Gray Francolin | *Francolinus pondicerianus* | A | 5.33 |
| Feral Chickens | *Gallus gallus* | A | 2.00 |

Table 2 (continued).

| **Common Name** | ORDER<br>FAMILY<br>*Species* | **Status** | **RA** |
|---|---|---|---|
| | COLUMBIFORMES | | |
| | COLUMBIDAE - Pigeons & Doves | | |
| Spotted Dove | *Streptopelia chinensis* | A | 0.67 |
| Zebra Dove | *Geopelia striata* | A | 6.33 |
| | CHARADRIIFORMES | | |
| | CHARADRIIDAE - Lapwings & Plovers | | |
| | Charadriinae - Plovers | | |
| Pacific Golden-Plover | *Pluvialis fulva* | IM | 0.67 |
| | PASSERIFORMES | | |
| | ALAUDIDAE - Larks | | |
| Eurasian Skylark | *Alauda arvensis* | A | 1.33 |
| | PYCNONOTIDAE - Bulbuls | | |
| Red-vented Bulbul | *Pycnonotus cafer* | A | 1.67 |
| | CETTIIDAE - Cettia Warblers & Allies | | |
| Japanese Bush-Warbler | *Horomis diphone* | A | 1.00 |
| | ZOSTEROPIDAE - White-eyes | | |
| Warbling White-eye | *Zosterops japonicus* | A | 3.33 |
| | MIMIDAE - Mockingbirds & Thrashers | | |
| Northern Mockingbird | Mimus polyglottos | A | 0.33 |
| | STURNIDAE - Starlings | | |
| Common Myna | *Acridotheres tristis* | A | 4.00 |
| | MUSICAPIDAE - Old World Flycatchers | | |
| White-rumped Shama | Copsychus malabaricus | A | 0.33 |
| | ESTRILDIDAE – Estrildid Finches | | |
| Java Sparrow | *Padda oryzivora* | A | 0.33 |
| | FRINGILLIDAE - Fringilline and Carduline Finches & Allies | | |
| | Carduelinae - Carduline Finches and Hawaiian Honeycreepers | | |
| House Finch | *Haemorhous mexicanus* | A | 2.00 |
| | CARDINALIDAE - Cardinals & Allies | | |
| Northern Cardinal | *Cardinalis cardinalis* | A | 2.33 |
| | THRAUPIDAE - Tanagers | | |
| | Thraupinae - Core Tanagers | | |
| Red-crested Cardinal | *Paroaria ccoronata* | A | 3.00 |

Key to Table 2.

Status:

A = Alien - naturalized, non-native species (introduced).

IM = Indigenous Migratory pecies

Relative Abundance (RA): Species count / number of point-count stations (n=17).

## Mammals

We recorded three mammalian species during this survey. All the species detected are alien to the Hawaiian Islands. The species list and detection method for each species is presented in Table 3.

**Table 3. Mammalian species detected on the Hookea Surf School Project site, December 2021.**

| Common Name | Scientific Name | Status | Detection Type (DT) |
|---|---|---|---|
| | RODENTIA - GNAWERS | | |
| | Muridae - Old World Rats & Mice | | |
| European house mouse | *Mus musculus domesticus* | NN | V |
| | CARNIVORA- FLESH EATERS | | |
| | CANIDAE - Wolves, Jackals & Allies | | |
| Domestic dog | *Canis lupus familiaris* | NN | A, Sc, Sk |
| | VIVERRIDAE - Civets & Allies | | |
| Small Asian mongoose | *Herpestes javanicus* | NN | V |

Key to Table 3.

Status:

NN – Alien. Naturalized, non-native (introduced) to the Hawaiian Islands

Detection Type:

A – Audio. The animal was heard.
Sc – Scat. Fecal matter of the species was encountered.
V – Visual. The species was seen.
Sk – Skeletal. Skeletal remains, or horns, were encountered.

# Discussion and Recommendations

Recommendations are partly based on U.S. Fish and Wildlife Service, Animal Avoidance and Minimization Measures (USFWS-PIFWO, nd). Implementation of the recommendations (provided below as bulleted items) by the Project contractor will minimize impacts to listed species to the maximum extent practicable.

## Floral Resources

With respect to the flora, the number of species recorded (30) is relatively small. We can compare survey results from another survey made in the general area along Coral Sea Road (*AECOS*, 2016). For several reasons, that survey (which included a proposed solar panel site closer to the ocean) and a transmission line along Coral Sea Road) found many more plant taxa (65 compared with 30) in a similar environmental setting. However, the list of native (and Polynesian introduced) plants recorded on the Honokea Surf Village site as compared with the 2016 survey locations shows only *ʻilieʻe* (*Plumbago zeylanica*) and *ʻihiʻai* (*Oxalis corniculata*) as missing. This difference is a minor one. Although present in abundance further south along Coral Sea Road (*AECOS*, 2016), rubber vine (*Cryptostegia randifolia*) is not present at the Project site. This plant is considered a serious invasive pest in Hawaiʻi (HISC, 2022).

Several ESA listed plant species are known from the ʻEwa Plain, including an amaranth (*Achyranthes splendens* var. *rotundata*), *koʻoloa ʻula* (*Abutilon menziesii*), and the ʻEwa Plains *ʻakoko* (*Euphorbia skottsbergii* var. *skottsbergii*; USFWS, nd-a). Critical habitat for the latter is located to the east of the Project site (USFWS, nd-b) across Coral Sea Road and some 370 ft (~110 m) at its closest point to the Project property. None of these listed species was observed on the site during our botanical survey (Table 1).

Looking at satellite images covering the Project vicinity (Google Earth) shows the Project site to be substantially more historically disturbed than almost any other nearby properties, the one exception being former skeet range along San Juacinto St. where the ground surface was essentially scraped away to remove lead contamination. This site is now included in the critical habitat for *E. skottsbergii* var. *skottsbergii.* Properties just east of the Project parcel on Long Island and Casablanca streets and the Kalaeloa Heritage Site bordering on the Project site are all more recently developed sites and not included in the critical habitat area.

## Invertebrates

No resources are present that would support native invertebrate populations. In particular, no open water features occur on the site that might provide habitat for anchialine fauna/flora or odonates (damselflies and dragonflies).

## Avian Resources

### *Waterbirds*

The proposed swimming/surfing lagoons at Honokea Surf Village will be public swimming pools subject to the requirements of the Hawaii Administrative Rules Title 11, Chapter 10 Public Swimming Pools (HDOH, 2003). Specifically of potential concern with respect to wildlife is the requirement at HAR § 11-10-15 (b)(2) that "…chlorine residual in the public freshwater swimming pool shall be at least 0.6 parts per million."

Whether any of the three endangered waterbird species present on O'ahu—Hawaiian Coot (*Fulica alai*), the endemic subspecies of the Black-necked Stilt (*Himantopus mexicanus knudseni*), and Common Gallinule (*Gallinula galeata sandvicensis*)—would visit the proposed swimming/surfing lagoons is not easily predictable. In our experience these birds avoid chlorinated water but do spend time around It is possible that night-flying protected seabirds overfly the project site during the nesting season. On man-made water features at wastewater treatment plants.

### *Seabirds*

It is possible that night-flying seabirds overfly the project site during the nesting season. On O'ahu, these include Hawaiian Petrel (*Pterodroma sandwichensis*), Newell's Shearwater (*Puffinus newelli*), Band-rumped Storm-petrel (*Oceanodroma castro*), and Wedge-tailed Shearwater (*Ardenna pacifica*). The first three of these species are listed under both federal and the state endangered species statutes, the fourth is protected under the federal Migratory Bird Treaty Act (MBTA). Hawaiian Petrel and Newell's Shearwater nest in upland mountainous habitat and have been detected on the Island of O'ahu (Young et al. 2019). In the summer and fall, nocturnally flying seabirds (especially fledglings) transiting to the sea from inland locations can become disoriented by exterior lighting. When disoriented, seabirds can collide with man-made structures or the ground. If not killed outright, dazed or injured birds are easy targets of opportunity for feral mammals (Podolsky et al., 1998; Ainley et al., 2001; Day et al., 2003). The primary cause of mortality in nesting seabirds in Hawai'i is predation by alien mammalian species at the nesting colonies (USFWS, 1983; Ainley et al., 2001). Collision with man-made structures is considered the second most significant cause of mortality. No suitable nesting habitat for seabird species occurs in the Project area.

- Deleterious impacts to transiting seabirds can be avoided if Project construction occurs during daylight hours and any outdoor lighting installed is fully "dark sky compliant" (HDLNR-DOFAW, 2016).

White Tern (*Gygis alba*), or *manu o Kū*, is an indigenous seabird listed as threatened under State of Hawai'i endangered species statute, HRS 195D (HDLNR, 2015). In the main Hawaiian Islands, the majority of the White Tern population is restricted to central urban and suburban Honolulu, with a known breeding range extending from Niu Valley to Aloha Tower. Isolated pairs have been observed as far west as Hickam Air Force Base at Pearl Harbor (VanderWerf and Downs, 2018). White Terns are unlikely to visit this site.

***Owls***

The Hawaiian endemic sub-species of Short-eared Owl or *pueo* (*Asio flammeus sandwichensis*) is state-listed as endangered on O'ahu only. Short-eared Owl is a ground nesting birtd and thus susceptible to mammalian predation. The species is increasingly scarce on O'ahu but is known to utilize crop and pasture land for hunting and nesting. No evidence of Short-eared Owl was found in our survey.

- Currently there is no habitat on the site suitable for nesting by Short-eared Owl; however, if the existing vegetation is removed well before whatever modifications are made to the site, thereby creating suitable nesting habitat for this species, it may be appropriate to conduct a nesting survey prior to any further development on the site.

- If a nesting survey discovers a nest, the Hawai'i Department of Land and Natural Resources (DLNR) must be notified before proceeding with any activity that could disturb the nest.

## Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitats present on the site. The only rodent recorded was a singe European house mouse (*Mus musculus domesticus*). It is likely that that one or more of the other three established Muridae found on O'ahu—roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), and Polynesian rat (*Rattus exulans hawaiiensis*)—use resources found within the general Project area on a seasonal basis. All of these introduced rodents are deleterious to native ecosystems and native faunal species dependent on them.

No mammalian species currently protected or proposed for protection under either the federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR, 1998; USFWS, nd-a).

***Hawaiian hoary bat***

It is possible that Hawaiian hoary bats overfly the Project area on a seasonal basis. The principal impact that the construction may pose to bats is during the clearing and grubbing phases when vegetation is being removed. The removal of vegetation within the Project site may temporarily displace individual bats using trees for roosting. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. However, during the pupping season, females carrying pups may be less able to rapidly vacate a roost as a tree is felled. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled.

- Potential adverse impacts from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 ms (15 ft) between June 1 and September 15, the period in which bats may have pups.

## Other Resources of Potential Concern

***Critical Habitat***

Federally delineated Critical Habitat is not present at the Project site but, as noted above, does occur east of the Project property (USFWS, nd-b). No equivalent designation exists under state law.

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Appendix E

# Cultural Impact Assessment

# DRAFT—Cultural Impact Assessment for the Honokea Kalaeloa Surf Village, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu

**TMK: (1) 9-1-013:068**

**Prepared For**:

Hawaii Community Development Authority
547 Queen Street
Honolulu, HI 96813

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kaneohe, HI 96744 ● Phone 808.381.2361

# DRAFT— Cultural Impact Assessment for the Honokea Kalaeloa Surf Village, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu

**TMK: (1) 9-1-013:068**

**Prepared For**:

Hawaii Community Development Authority
547 Queen Street
Honolulu, HI 96813

**Prepared By:**

Cathleen Dagher, BA
Kālenalani McElroy, MA
and
Windy McElroy, PhD

April 2022

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kaneohe, HI 96744 ● Phone 808.381.2361

## MANAGEMENT SUMMARY

A Cultural Impact Assessment (CIA) was conducted for the proposed Honokea Kalaeloa Surf Village located at TMK: (1) 9-1-013:068 in Honouliuli Ahupuaʻa, ʻEwa District, on the island of Oʻahu. This CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community's perspectives on the proposed activity on the property.

The background research synthesizes traditional and historic accounts and land use history for Kalaeloa and the greater Honouliuli area. The background study illustrated that Honouliuli is remembered in ʻōlelo noʻeau, moʻolelo, oli, and mele as abundant in natural resources and an area favored by aliʻi. In historic times, Honouliuli was a significant location for sugarcane and sisal cultivation, with the OR&L railroad running through the region. Kalaeloa was also chosen for the United States Coast and Geodetic Survey Magnetic Observatory, the ʻEwa Marine Corps Air Station, and later, Barbers Point Naval Air Station. The current project area lies on a portion of the Naval Air Station that was the location of a former jet engine test cell site.

Community consultations were performed to obtain information about the cultural significance of the subject property and the surrounding area, as well as to address possible concerns of community members regarding the effects of the proposed project on places of cultural or traditional importance. Three interviews with community members were completed.

Interviews with individuals knowledgeable about the project lands produced information on its rich cultural history. Sinkholes, trails, human burials, and military-related features were among the archaeological sites mentioned, and cultural practices of the area include the harvesting of marine resources at the coast. Several concerns were voiced for the project and in general for the region. Some general concerns are the continued development of Barbers Point, with fewer areas being left as natural landscapes; that some of the archaeology of the area has not been thorough; and that Navy documents are difficult to access to obtain information. More specific concerns are that the development will impact natural and cultural resources and that the selected location is not the right place for the surf village. Interviewee's recommendations and mitigations for the project are as follows:

- conduct thorough archaeology for the project
- explore sinkholes to look for natural and cultural remains
- investigate even small sinkholes, filled-in sinkholes and those that do not appear culturally modified
- conduct GPR for filled-in sinkholes
- prepare a preservation plan for cultural resources of the study area
- save a part of the natural landscape to showcase the natural beauty and sinkholes
- if sinkholes do not have to be destroyed, then leave them in place
- find a solution to lessen the impact on cultural resources
- if this surf park will be built, then save other parts of Barbers Point
- teach visitors about the cultural significance and history of surfing
- create a National Park in the region

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# INTRODUCTION

At the request of G70, on behalf of the Hawaii Community Development Authority (HCDA), Keala Pono Archaeological Consulting conducted a Cultural Impact Assessment (CIA) for the proposed Honokea Kalaeloa Surf Village. This is located at TMK: (1) 9-1-013:068 in Honouliuli Ahupua‘a, ‘Ewa District, on the island of O‘ahu. The CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community’s perspectives on the proposed activity on the property.

The report begins with a description of the study area and a historical overview of land use and archaeology in the ahupua‘a. The next section presents methods and results of the ethnographic survey. Results of the CIA are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary. Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of the interviews.

## Project Location and Environment

The project area is located next to the Kalaeloa Airport in Honouliuli Ahupua‘a, ‘Ewa District, on the island of O‘ahu (Figure 1). TMK: (1) 9-1-013:068 consists of 7.69 ha (19 ac.) (Figure 2). The parcel is owned by the Hawaii Community Development Authority and is situated at roughly 9 m (30 ft.) above mean sea level (amsl). The project area is bounded by Coral Sea Road to the east, Long Island Street to the south, Prince Williams Road to the west, and an unnamed road to the north and northeast. It is roughly 200 m (656 ft.) from the northeast runway of Kalaeloa Airport.

Rainfall is sparse in the vicinity, averaging 53 cm (21 in.) per year (Giambelluca et al. 2013). Honouliuli Stream is the only permanent watercourse in the area, thus when the ‘Ewa Plain floods, water percolates into the porous limestone and drains into sinkholes. Ponds and marshes were more plentiful across the plain in the past, as drilling of artesian wells for historic-era sugarcane cultivation has drained the water table significantly. Several non-perennial streams are in the vicinity. These run through the gulches of Barbers Point, Makakilo, and Kaloi, the latter of which is the closest to the project area, approximately 2,500 m (8,200 ft.) to the east. The topography of the project area is relatively flat and overgrown. Vegetation consists predominately of invasive species such as cactus, koa haole, grasses, and kiawe.

The proposed project area lies 1 km (.62 mi.) from the coast at Eisenhower Beach and topography is very flat. Soil within the project area consist entirely of coral outcrop (CR), which is described by Foote et al. (1972:29) as follows:

> Coral outcrop (CR) consists of coral or cemented calcareous sand on the island of Oahu. The coral reefs formed in shallow ocean water during the time the ocean stand was at a higher level. Small areas of coral outcrop are exposed on the ocean shore, on the coastal plains, and at the foot of the uplands. Elevations range from sea level to approximately 100 feet…Coral outcrop makes up about 80 to 90 percent of the acreage. The remaining 10 to 20 percent consists of a thin layer of friable, red soil material in cracks, crevices, and depressions within the coral outcrop…
>
> This land type is used for military installations, quarries, and urban development. Vegetation is sparse. It consists of kiawe, koa haole, and fingergrass.

Other soils in the vicinity include fill land, mixed (FL) at the former runway and water (W) (Figure 3). Fill land, mixed consists of land that has been filled with dredged material, garbage, or other fill (Foote et al. 1972:31). The land type is utilized for urban development.

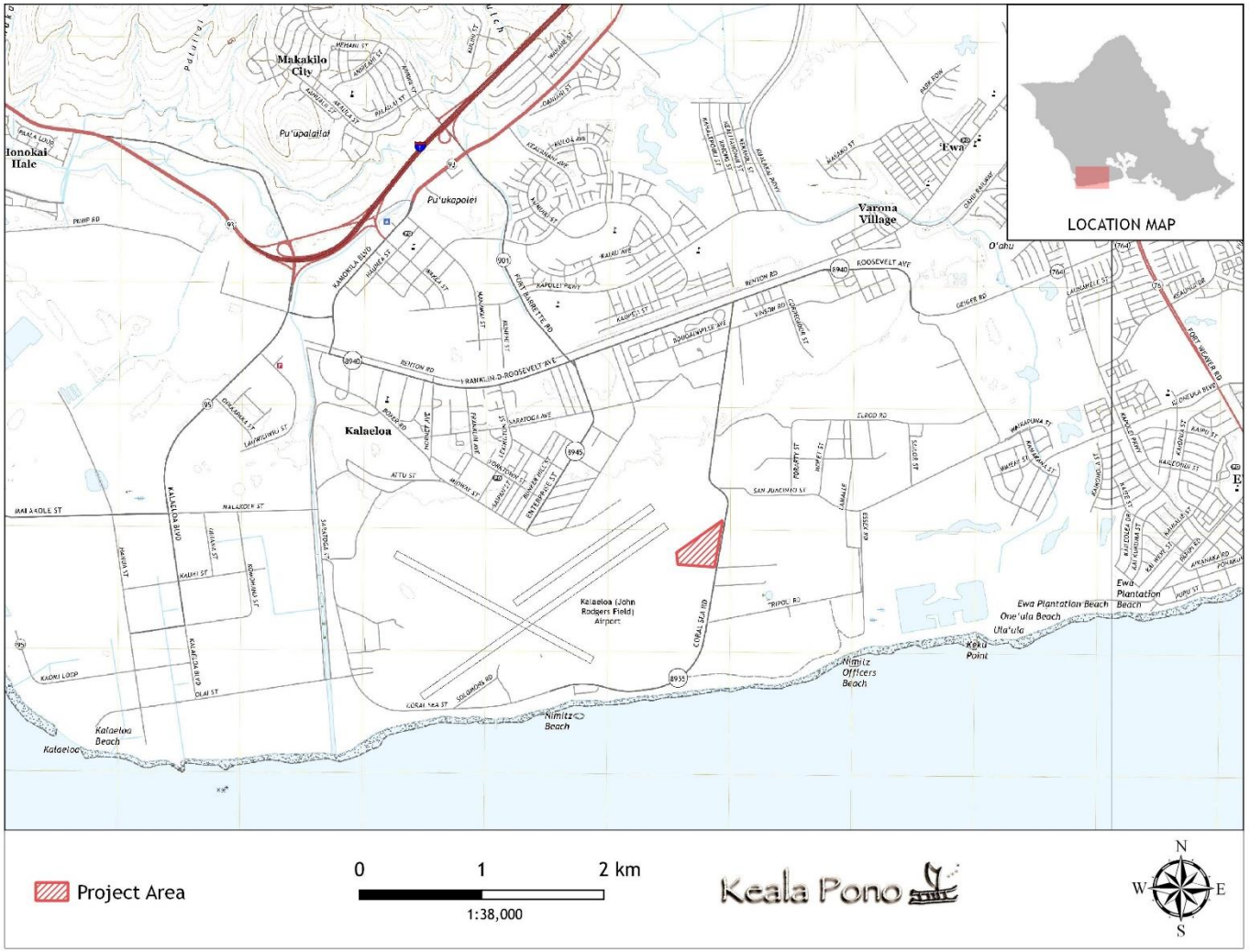



**Figure 1. Project area on a USGS Pearl Harbor quadrangle map (USGS 1999).**

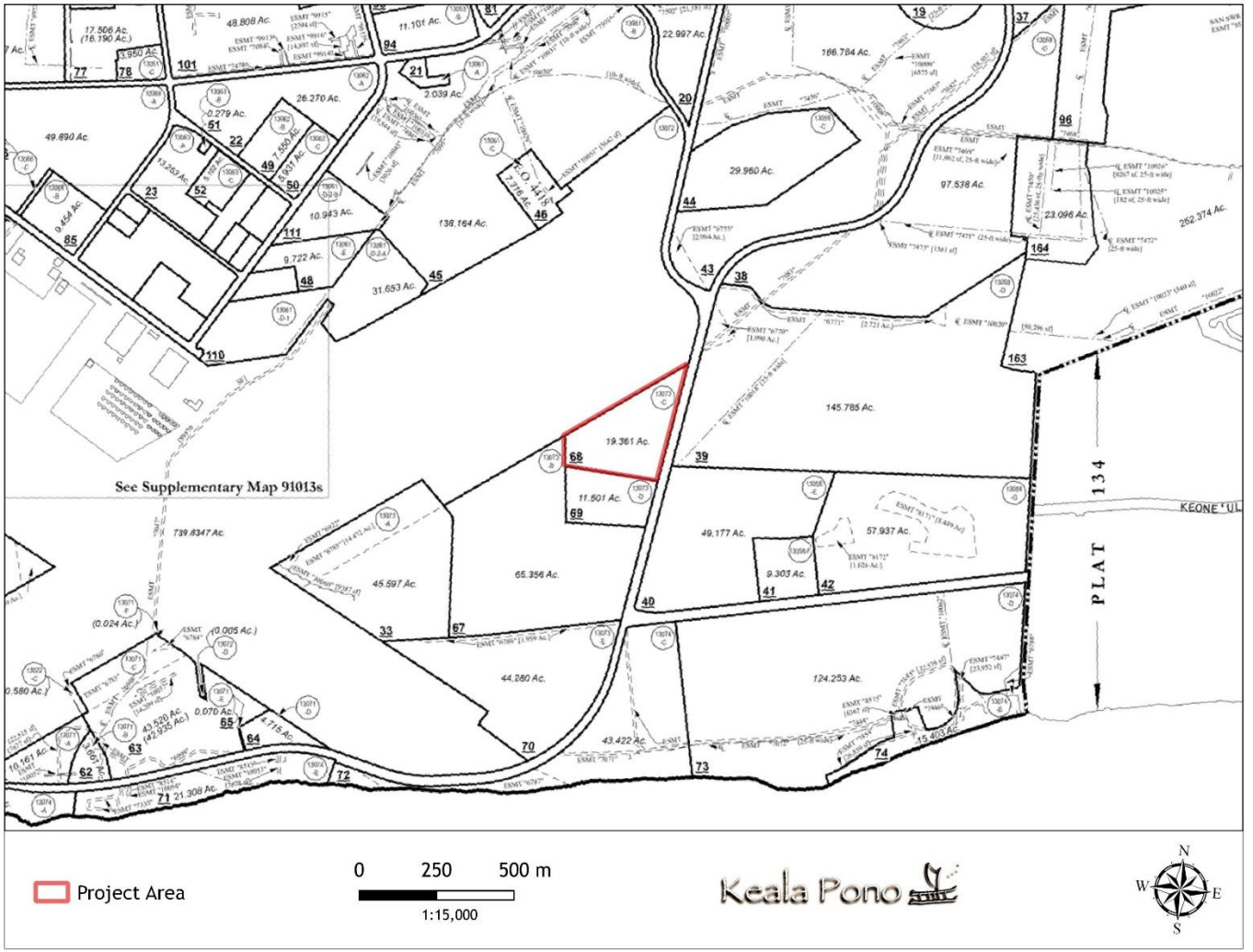



**Figure 2. Project area on TMK: (1) 9-1-013 plat (State of Hawaii 2021).**

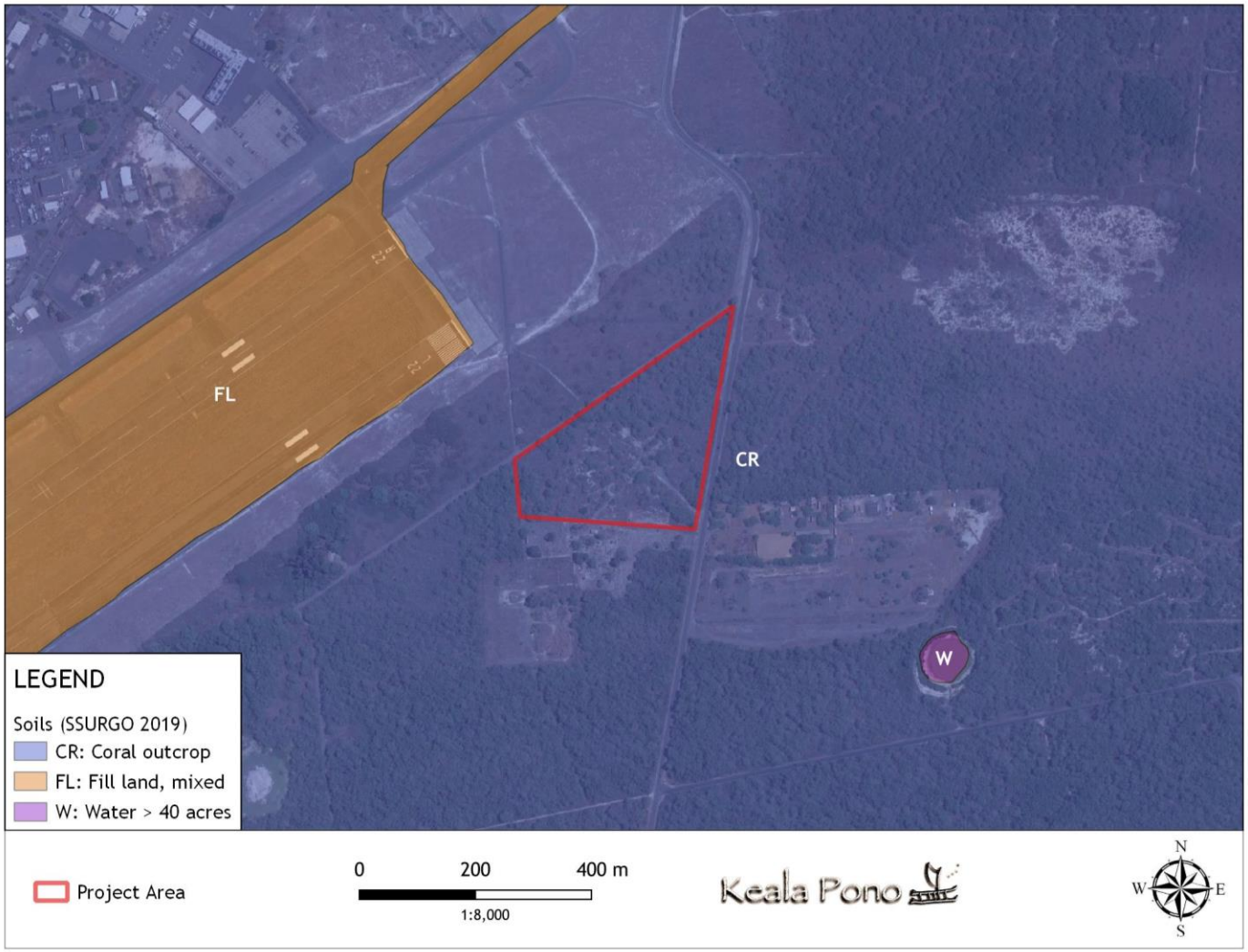



**Figure 3. Soils in the vicinity of the project area (data from Foote et al. 1972).**

**The Project**

The proposed project consists of constructing a surf village with the primary attraction being an artificial wave lagoon. The central wave lagoon will offer 5.5 acres of aquatic area, which will be surrounded by a man-made beach. Excluding the wave lagoon, the development will have approximately 13.8 acres for additional attractions and supporting components. Supporting facilities include an entrance building, offices, event space, restrooms, surfboard rental, changing rooms, a museum/education center, surf training and wellness center, food and beverage services, skate park, swimming pools, playground, splash area, and cabanas.

Approximately 0.5 acres will be dedicated to a membership clubhouse and 50 overnight camp cabins ranging from 400 square feet (sf.) to 800 sf. per unit. The park will open daily with an estimated annual attendance of 530,000 and have roughly 150 full-time employees. A parking lot will be developed along Coral Sea Road that will accommodate 300 to 400 cars. Construction of the various structures, swimming pools, and associated utilities will require significant ground disturbance

## BACKGROUND

This section of the report presents background information as a means to provide a context through which one can examine the cultural and historical significance of the ʻEwa Plain and the ahupuaʻa of Honouliuli. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., moʻolelo, mele, place names) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawaii State Archives, Hawaiʻi State Library, the State Historic Preservation Division, as well as online at databases such as the Hawaiʻi Department of General Accounting map database, Ulukau, and Waihona ʻAina. Historical maps, archaeological reports, and historical reference books were among the materials examined.

### Place Names

Within various accounts, place names can contain significant information which further reveal traditional beliefs and practices associated with an area. Maps of traditional places and features can be found in Figures 4 and 5. The following places are in the Honouliuli region:

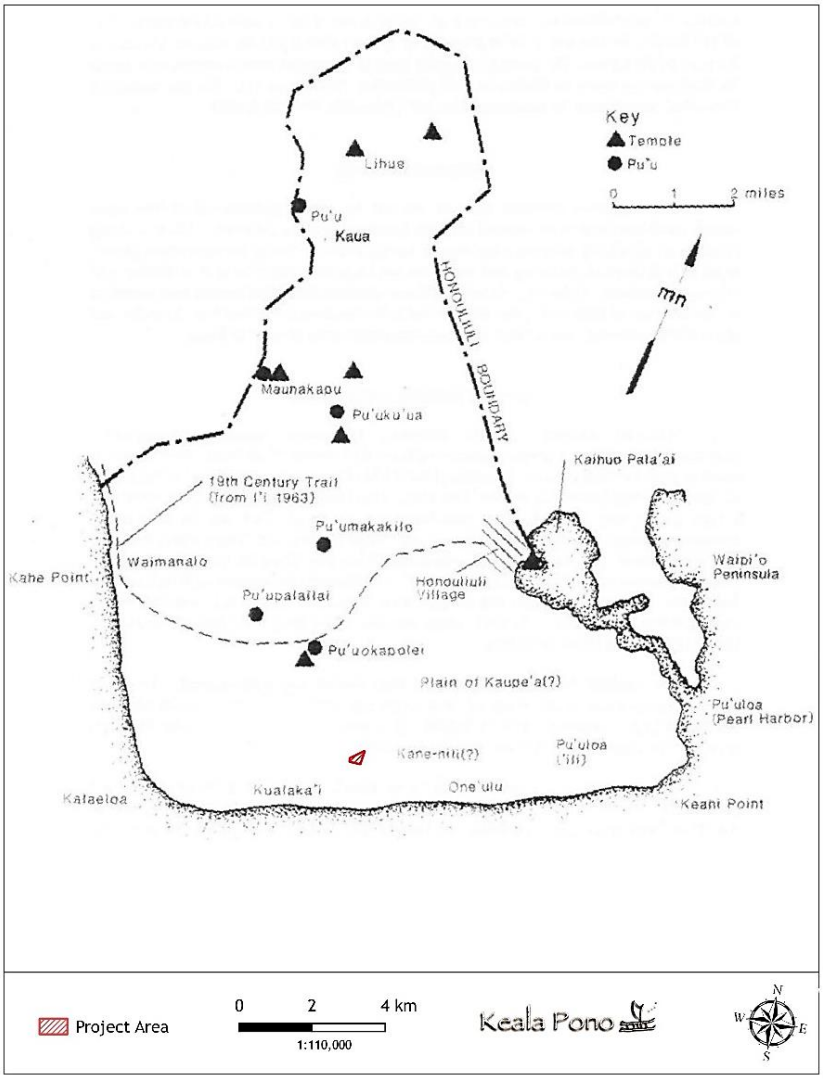



**Figure 4. Place names of Honouliuli, showing the current project area in red (Tuggle 1995:10).**

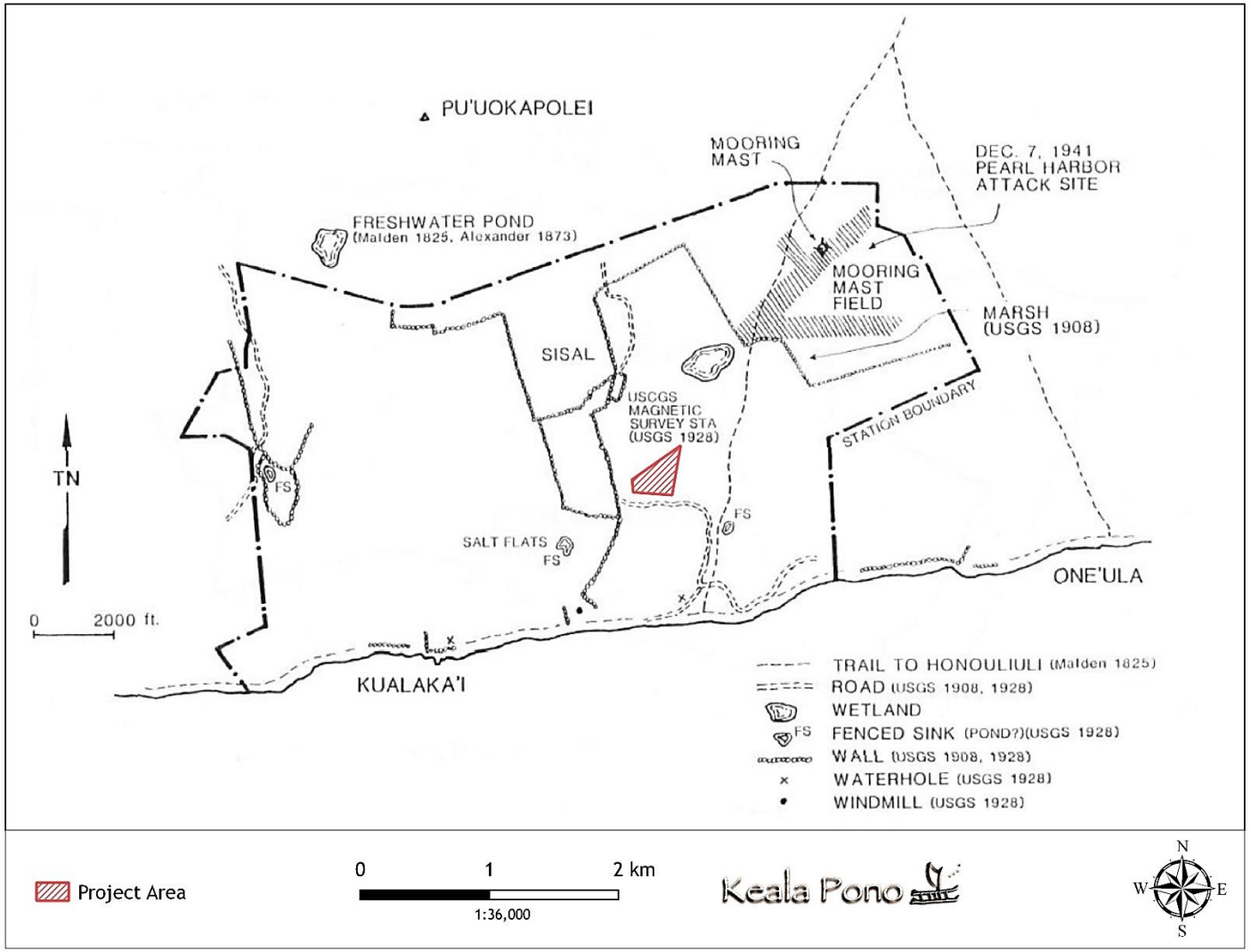



**Figure 5. Features of Kalaeloa (Tuggle and Tomonari-Tuggle 1994:11–12).**

***Hanalei***

> Hanalei, a small flat land with a little gulch on either side on the right of Puuloa mauka of Puu-o-Kapolei. Formerly there was much milo, neneleau, kamani and other trees on the land, home of the iiwi and oo birds (lono, Honomu). (T. Kelsey Collection, HEN: Vol. I, p. 820 in Sterling and Summers 1978:34)

***Hani-o***

"The fishing ground outside Kalaeloa is named Hani-o…" (Beckwith 1970:23)

***Kalaeloa***

Literally meaning "the long point," this area later became known as Barbers Point after Captain Henry Barber ran aground at the point in 1796 (Pukui et al. 1974).

***Kaloi***

> ….Harry's first thought when riding over the country was where to find water, and during the years 1890-91-92 much was done in the way of new troughs, getting water from plantations of flumes, and digging out wet places that showed any prospects of water. One of those places is on the old trail to Palehua, and had evidently been a place of which the Hawaiians had known, for its name is Kaloi (the taro patch), and even in dry weather water would be standing in the holes made by the cattle, as they tried to get a drop or two. …When water was finally led down the rocky hillside to the trough at Kaloi, Mr. William R. Castle, who was with Harry, rechristened the spring "Wai o Kakela," Kakela being Mr. Castle's Hawaiian name. But the old name still stuck to it, and as Kaloi it is known to this day. (Knudsen von Holt 1953:116 in Sterling and Summers 1978:35)

***Kanehili***

> …The boundary of the Ili of Kanehili does not run mauka-makai as most but rather follows the coastline where the water was found in sinkholes. Consequently most cultural thinkers feel that the Ili of Kanehili was bounded by the ocean on the south, the Ili of Puʻuloa on the east, and the Ili of Kaupeʻa mauka. There is not much information on its western boundary…it is highly possible that Kanehili may have been large and encompassed much of the ʻEwa Karst to include the sinkholes of the former Naval Air Station at Barbers Point, Campbell Industrial Park, and Ko Olina (Kane 2011:68)

***Keahumoa***

"…Was the plain before reaching the Kipapa gulch" (Fornander 1918, vol. IV:274) (see Battle of Keahumoa Plain).

***Pohakea***

A place where Lohiau and Hiʻiaka rested on their journey to meet Pele, between ʻEwa and Waiʻanae (Fornander 1918:188).

> …The travelers only stopped one night and spent the following night on the other side of Pohakea. The elders and children who went with them slept above Kunia on this side of Pohakea… (ʻĪʻī 1959:23)

***Pukaua Plain***

The Two Old Women Who Turned to Stone

> If a traveller [sic] should go by the government road to Waianae, after leaving the village of gold, Honouliuli, he will first come to the plain of Puu-ainako and when that is passed, Ke-one-ae. Then there is a straight climb up to Puu-o-Kapolei and there look seaward from that government road to a small hill. That is Puu-o-Kapolei. It is this hill that hides Ewa from view. When you go to that side of Waimanalo, you see no more of the sight back here. You go down some small inclines, then to a plain. This plain is Pukaua and on the mauka side of the road, you will see a large rock standing on the plain. This stone has a legend that made this plain noted…. (*Ka Loea Kalaiaina* 1900 in Sterling and Summers 1978:39)

***Puu-Kuua***

> Here are some pointers for the traveler to Ewa. If you are going by train, look up toward the Ewa mill. If you are above Puuloa, you will see Puu-o-Kapolei, a small hill. Lying below and back of that hill is the government road going to Waianae. Above that is also a small hill and back of that, is a big hill and above it is a large hollow. That is Puu-Kuua where the very dirty ones lived. (*Ka Loea Kalaiaina* 1899 in Sterling and Summers 1978:32)

> …A place where the chiefs lived. Was said to be a battlefield. There were two important things concerning this place. (1) This place is entirely deserted and left uninhabited and it seems that this happened before the coming of righteousness to Hawaii Nei. Not an inhabitant is left. (2) The descendants of the people of this place were so mixed that they were all of one class. Here the gods became tired of working and returned to Kahiki. (*Ka Loea Kalaiaina*, July 8, 1899 in Sterling and Summers 1978:32–33)

***Puʻuloa***

Literally translates to "long hill," this area is now known as Pearl Harbor (Pukui et al. 1974).

***Puʻu o Kapolei***

Located to the north of the current project area, "it is here that Kamauluaniho (Kamaunuaniho) lived with her grandson, Kekeleaiku, the older brother of Kamapuaʻa after they left Kaliuwaa in Kaluanui, Koolau-loa" (*Ka Loea Kalaiaina* 1900 in Sterling and Summers 1978:32–33).

After Kamapuaʻa conquered most of Oʻahu, he installed his grandmother, Kamaunuaniho as queen, taking her to Puʻu o Kapolei. It was noted as a desolate spot, being "almost equally distant from the sea, from which came the fish supplies; from the taro and potato patches of Ewa, and from the mountain ravines containing the banana and sugar cane plantations." It was believed that the foundations of Kamaunuaniho's house, as well as her grave, were still present before the turn of the 20th century. However, with the expansion of sisal and cane activities at the base of Puʻu o Kapolei, stones may have been removed for making walls (Nakuina 1904:50 in Sterling and Summers 1978:34).

Puʻu o Kapolei is also noted as an important landmark which marked the season of Hoʻoilo:

> …the people of Oahu reckoned from the time when the sun set over Puʻuokapolei until it set in the hollow of Mahinaona and called this period Kau, and when it moved south again

> from Pu‘uokapolei and it grew cold and the time came when young sprouts started, the season was called for their germination (oilo) the season of Ho‘oilo. (Kamakau n.d.:23 in Sterling and Summers 1978:34)

A legendary fisherman, Nihooleki, lived at Kuukuua on Pu‘u o Kapolei under the name of Keaha-ikiaholeha. Born at Keauhou in Kona, he became a ruling chief of Wai‘anae. Wielding his famous aku-attracting pearl fishhook named Pahuhu, Keaha-ikiaholeha traveled to Kaua‘i, the birthplace of his high chiefess wife, and became ruling chief. When he died, his body was brought back to Wai‘anae and prayed back to life by his parents. Among his later exploits, Nihooleki returns to Wai‘anae and “enters his tomb” and dies (Beckwith 1970:420).

### *Waimanalo*

> Koolina is in Waimanalo near the boundary of Ewa and Waianae. This was a vacationing place for chief Kakuhihewa and the priest Napuaikamao was the caretaker of the place. Remember Reader, this Koolina is not situated in the Waimanalo on the Koolau side of the island but the Waimanalo in Ewa. It is a lovely and delightful place and the chief, Kakuhihewa loved this home of his. (*Ke Au Hou* 1910 in Sterling and Summers 1978:41)

## ‘Ewa and Honouliuli in the Pre-Contact Era

The project area is located in the ‘Ewa District, the largest land district on O‘ahu, situated on the southern shore of the island. The name “‘Ewa” means “to crook, to twist, to bend” (Andrews 1865). This name may refer to the mo‘olelo within which Kāne and Kanaloa threw stones to determine the boundaries of the district (see Mo‘olelo section) (Sterling and Summers 1978). The current area of study is within the ahupua‘a of Honouliuli, the largest of ‘Ewa’s ahupua‘a. Translated, Honouliuli means “dark bay” (Pukui et al. 1974), likely referring to the deep waters of what is now called West Loch of Pearl Harbor, located on the eastern perimeter of Honouliuli Ahupua‘a.

Within the mo‘olelo of Kūapāka‘a and Pāka‘a and the wind gourd of La‘amaomao, the winds of O‘ahu are recited by Kūapāka‘a:

> …Moa‘e-ku is of Ewaloa,
> Kēhau is of Waiopua,
> Waikōloa is of Līhu‘e,
> Kona is of Pu‘uokapolei,
> Māunuunu is of Pu‘uloa… (Nakuina 1990:43)

> …He Moae-ku ko Ewaloa,
> He Kehau ko Waiopua,
> He Waikoloa ko Lihue,
> He Kona ko Puuokapolei,
> He Maunuunu ko Puuloa… (Nakuina 1990:57)

This Moa‘e wind is also mentioned in the ‘ōlelo no‘eau, “Haunāele ‘Ewa i ka Moa‘e” which is translated as “‘Ewa is disturbed by the Moa‘e wind” (Pukui 1983:59). According to Pukui, this phrase was used when discussing something disturbing, such as a violent argument. It is said that the people of ‘Ewa gathered pipi, or pearl oyster, in silence due to the belief that if they spoke, a Moa‘e breeze would blow, rippling the water and making the oysters “disappear” (Pukui 1983).

### ‘Ōlelo No‘eau

Like oli and mele, traditional proverbs and wise sayings, also known as ‘ōlelo no‘eau, have been another means by which the history of Hawaiian locales have been recorded. In 1983, Mary Kawena

Pukui published a volume of close to 3,000 ʻōlelo noʻeau that she collected throughout the islands. The introductory chapter of that book reminds us that if we could understand these proverbs and wise sayings well, then we would understand Hawaiʻi well (Pukui 1983).

While ʻōlelo noʻeau referencing ʻEwa are numerous, only one saying mentions Honouliuli Ahupuaʻa. The following Hawaiian proverbs and poetical sayings provide further insight to the region of ʻEwa.

> ʻĀina koi ʻula i ka lepo.
> *Land reddened by the rising dust.*
> Said of ʻEwa, Oʻahu. (Pukui 1983:11)
>
> O ʻEwa, ʻāina kai ʻula i ka lepo.
> *ʻEwa, land of the sea reddened by earth.*
> ʻEwa was once noted for being dusty, and its sea was reddened by mud in time of rain. (Pukui 1983:257)
>
> Anu o ʻEwa i ka iʻa hāmau leo e. E hāmau!
> *ʻEwa is made cold by the fish that silences the voice. Hush!*
> A warning to keep still. First uttered by Hiʻiaka to her friend Wahineʻomaʻo to warn her not to speak to Lohiʻau while they were in a canoe near ʻEwa. (Pukui 1983:16)
>
> E ʻEwa e—e kuʻi na lima!
> *O ʻEwa—join hands!*
> This cry was a call of the men of Kona, Oʻahu, when they went with their chief to destroy his brother, the ʻEwa chief. (Pukui 1983:33)
>
> ʻEwa kai lumalumaʻi.
> *ʻEwa of the drowning sea.*
> An epithet applied to ʻEwa, where kauwā were drowned prior to offering their bodies in sacrifice. (Pukui 1983:47)
>
> ʻEwa nui a Laʻakona.
> *Great ʻEwa of Laʻakona.*
> Laʻakona was a chief of ʻEwa, which was prosperous in his day. (Pukui 1983:47)
>
> Haunāele ʻEwa i ka moaʻe.
> *ʻEwa is disturbed by the Moaʻe wind.*
> Used about something disturbing, like a violent argument. When the people of ʻEwa went to gather the pipi, they did so in silence, for if they spoke, a Moaʻe breeze would suddenly blow across the water, rippling it, and the oysters would disappear. (Pukui 1983:59)
>
> He kai puhi nehu, puhi lala ke kai o ʻEwa.
> *A sea that blows up* nehu *fish, blows up a quantity of them, is the sea of ʻEwa.* (Pukui 1983:74)
>
> He lōʻihi o ʻEwa; he pali o Nuʻuanu; he kula o Kulaokahuʻa; he hiki mai koe.
> *ʻEwa is a long way off; Nuʻuanu is a cliff; Kulaokahuʻa is a dry plain; but all will be here before long.*
> Said of an unkept promise of food, fish, etc. Oʻahu was once peopled by evil beings who invited canoe travelers ashore with promises of food and other things. When the travelers asked when these things were coming, this was the reply. When the visitors were fast asleep at night, the evil ones would creep in and kill them. (Pukui 1983:85)

I Waialua ka poʻina a ke kai, o ka leo ka ʻEwa e hoʻolohe nei.
*The dashing of the waves is at Waialua but the sound is being heard at ʻEwa.*
Sounds of fighting in one locality are quickly heard in another. (Pukui 1983:137)

Ka iʻa hāmau leo o ʻEwa.
*The fish of ʻEwa that silences the voice.*
The pearl oyster, which has to be gathered in silence. (Pukui 1983:145)

Ka iʻa hali a ka makani.
*The fish fetched by the wind.*
The *ʻanaeholo*, a fish that travels from Honouliuli, where it breeds, to Kaipāpaʻu on the windward side of Oʻahu. It then turns about and returns to its original home. It is driven closer to shore when the wind is strong. (Pukui 1983:145)

Ka iʻa kuhi lima o ʻEwa.
*The gesturing fish of ʻEwa.*
The *pipi*, or pearl oyster. Fishermen did not speak when fishing for them but gestured to each other like deaf-mutes. (Pukui 1983:148)

Ke kai heʻe nehu o ʻEwa.
*The sea where the* nehu *come in schools to ʻEwa.*
*Nehu* (anchovy) come by the millions into Pearl Harbor. They are used as bait for fishing, or eaten dried or fresh. (Pukui 1983:185)

Ke one kuilima laula o ʻEwa.
*The sand on which there was a linking of arms on the breadth of ʻEwa.*
ʻEwa, Oʻahu. The chiefs of Waikīkī and Waikele were brothers. The former wanted to destroy the latter and laid his plot. He went fishing and caught a large niuhi, whose skin he stretched over a framework. Then he sent a messenger to ask his brother if he would keep a fish for him. Having gained his consent, the chief left Waikīkī, hidden with his best warriors in the "fish." Other warriors joined them along the way until there was a large army. They surrounded the residence of the chief of Waikele and linked arms to form a wall, while the Waikīkī warriors poured out of the "fish" and destroyed those of Waikele. (Pukui 1983:191)

Ku aʻe ʻEwa; Noho iho ʻEwa.
*Stand-up ʻEwa; Sit-down ʻEwa.*
The names of two stones, now destroyed, that once marked the boundary between the chiefs' land (Kuaʻe ʻEwa) and that of the commoners (Noho iho ʻEwa) in ʻEwa, Oʻahu. (Pukui 1983:200)

Ua ʻai i ke kāī-koi o ʻEwa.
*He has eaten the* kāī-koi *taro of ʻEwa.*
*Kāī* is Oʻahu's best eating taro; one who has eaten it will always like it. Said of a youth or a maiden of ʻEwa, who, like the kāī taro, is not easily forgotten. (Pukui 1983:305)

**Moʻolelo**

As mentioned earlier, Hawaiian place names were connected to traditional stories by which the history of the places were preserved. These stories were referred to as moʻolelo,

> …a term embracing many kinds of recounted knowledge, including history, legend, and myth. It included stories of every kind, whether factual or fabulous, lyrical or prosaic. Moʻolelo were repositories of cultural insight and a foundation for understanding history

> and origins, often presented as allegories to interpret or illuminate contemporary life… Certainly many such [oral] accounts were lost in the sweep of time, especially with the decline of the Hawaiian population and native language. (Nogelmeier 2006:429, 430)

Still, many traditional stories managed to be recorded as Hawaiian society transitioned from an oral culture to a written one, and among those chronicled were several versions of moʻolelo connected to the ʻEwa region, including Honouliuli.

The boundaries of ʻEwa have been linked to the story of the gods Kāne and Kanaloa who, while surveying the islands, reached Red Hill and saw the expanse of what is the ʻEwa Plain. To mark the boundaries of the area, they threw a stone, and the boundary was placed where the stone landed. Seeing the beautiful land below them, they thought to include as much as possible, throwing the stone as far as the Waiʻanae Mountain Range in the area known as Waimānalo. While in search of their flung stone, Kāne and Kanaloa were unable to find where it had landed. Because of this, the area was named "ʻEwa" due to the "straying" of the stone. Eventually, the stone was found on a hill and was named Pili o Kahe. This place marks the boundary between the ʻEwa and Waiʻanae Districts, Honouliuli Ahupuaʻa within ʻEwa, and Nānākuli in Waiʻanae (Nawaʻa in Sterling and Summers 1978:1).

The cultural richness of the ʻEwa Moku is seen with the important moʻolelo of the origin of the ʻulu, or breadfruit in Hawaiʻi. Noted as one of the two places in Hawaiʻi where the ʻulu "is to be found," the other being Kaʻawaloa in Kona on the island of Hawaiʻi (W.S. Lokai in Fornander 1918–1919:676–677). The breadfruit of Puʻuloa came from a mythical land in Kahiki, named Kanehunamoku. It was brought by two men of Puʻuloa who were out fishing and, caught in a rainstorm, landed on an island only inhabited by the gods who then introduced the two men to the fruit of the ʻulu tree.

According to Beckwith, near Puʻuloa, at ʻEwa Beach, the first humans, or olohe, landed on Oʻahu. At this place, caves of the olohe (ka lua olohe) are to be seen. Represented in legends as "professional robbers" with tendencies towards cannibalism, the olohe, or Haʻa people, were highly skilled in the art of lua which includes wrestling and bone-breaking (Beckwith 1970:343).

In the epic tale of Hiʻiakaikapoliopele, the sister of Pele, traversed the ʻEwa Plain as she returned back to Pele's domain of Kīlauea, Hawaiʻi, from Hāʻena, Kauaʻi where she was to fetch Pele's lover, Lohiʻau-ipo (Lohiʻau). The full story was printed in the Hawaiian-language newspaper, *Ka Hōkū o Hawaiʻi* from September 18, 1924 to July 17, 1928. An excellent summary of this story can be found within Appendix G of Beardsley (2001) which was written by Kepā Maly. An excerpt pertaining to the ʻEwa Plain and Honouliuli is included below (translations by Kepā Maly).

> *…Aloha ka hau o Kaʻala*
> *ʻOia hau halihali ʻaʻala mauʻu nēnē*
> *Honi ai ke kupa o Puʻuloa*
> *He loa ka imina e ke aloha e…*
>
> Beloved is the dew of Kaʻala
> That dew which bears the fragrance of the *nēnē* grasses
> [fragrant dew which] Kissed the natives of Puʻuloa
> One searches far for love…
> (*Ka Hōkū o Hawaiʻi,* January 18, 1927 in Beardsley 2001:G-1)

As Lohiʻau and Wahineʻōmaʻo sailed from Pōkaʻi (Waiʻanae) to Kou (Honolulu), Hiʻiaka traveled over land and traversed the plain of Honouliuli, encountering women on their way to gather pāpaʻi (crabs), limu (seaweeds), mahamoe, and ʻōkupe (both edible bivalves). At the plain of Keahumoa

(between Waipiʻo and Honouliuli), Hiʻiaka came across a group of women gathering maʻo blossoms (*Gossypium tomentosum,* an endemic yellow-flowered hibiscus typically found on dryland plains) with which they would make lei. Hiʻiaka offered them the following oli:

*E lei ana ke kula o Keahumoa i ka maʻo*
*ʻOhuʻohu wale nā wahine kui lei o ke kanahele*
*Ua like no a like me ka lehua o Hōpoe*
*Me he pua koili lehua ala i ka lā*
*Ka oni pua koaiʻa i ka pali*
*I nā kaupoku hale o ʻĀpuku*
*Ke ku no I ke alo o ka pali o Puʻukuʻua*
*He aliʻi no naʻe ka ʻāina*
*He kauwā no naʻe ke kanaka*
*I kauwā no naʻe wau i ke aloha*
*Na ke aloha no naʻe i kono e haele no māua*
*E hele no wau a—*

The plain of Keahumoa wears the maʻo blossoms as its lei
Adorning the women who string garlands in the wild
It is like the lehua blossoms of Hōpoe
Lehua blossom upon which the sun beats down
On the nodding koaiʻa flowers of the cliff
On the rooftops of the houses at ʻĀpuku
Rising in the presence of the cliff of Puʻukuʻua
The land is indeed the chief
Man is indeed a slave
I am indeed a slave to aloha – love
It is love which invites us two – come
I come-
(*Ka Hōkū o Hawaiʻi,* February, 1927 in Beardsley 2001:G-3)
[Place names ʻĀpuku and Puʻu Kuʻua are both areas located in the uplands of Honouliuli]

The moʻolelo of Kahalaopuna also takes place in ʻEwa (Fornander 1918, Vol. V:188–192). Kahalaopuna was a young woman who was from Mānoa. Betrothed to marry Kauhi, a man from Koʻolau, he sent her numerous gifts before they were to be married. He soon became very angry when he heard rumors that Kahalaopuna had been unfaithful to him. Kauhi took Kahalaopuna to ʻEwa, leading her through the back valley and trails to a place known as Pōhākea and a large lehua tree, where he took her life, even though she begged of her innocence. After burying her body under leaves of the lehua tree, Kauhi returned home. Meanwhile, Kahalaopuna's spirit had flown into the tree, and she was able to chant to passers-byers to tell her parents of her death and of her location. After she was brought back to life by her parents, Kauhi returned to Kahalaopuna, asking for forgiveness, however, she would not listen to him.

The moʻolelo of Namakaokapaoʻo, is about a boy with that name, who has extraordinary strength for a young man his age. His father was Kauluakahai, a great chief with a "godly relationship" who hailed from a great land in Kahiki. Namakaokapaoʻo's mother was Pōkaʻi. The couple met in ʻEwa, in a place called Hōʻaeʻae. Shortly after Namakaokapaoʻo was conceived, Kauluakahai returned to his own land. Pōkaʻi then met a man named Pualiʻi who was from Līhuʻe [Wahiawā, Oʻahu] and was fishing at Honouliuli. The couple resided at the plains of Keahumoa where Pualiʻi had two large potato patches. One day, while Pualiʻi was gone, Namakaokapaoʻo pulled up Pualiʻi's potato plants. Upon his return, Pualiʻi attempted to kill Namakaokapaoʻo with his axe, but ended up cutting off his own head. Namakaokapaoʻo flung the head towards Waipouli, a cave located on the beach at Honouliuli (Fornander 1918, Vol. 5:275, 276).

In the moʻolelo of Kawelo, the king, ʻAikanaka is offended by Kawelo and sends him to live at Waikīkī. While at Waikīkī, Kawelo studied the art of lua in order to get his revenge on ʻAikanaka. Kawelo's teacher was a fish kupua, or demi-god, Uhu maikaʻikaʻi, who lived at Pōhaku o Kawai, near Kalaeloa (Hawaiian Ethnological Notes, Vol. II:114 in Sterling and Summers 1978:41).

The ʻEwa Plain was known to be a very fruitful place, with abundant resources in the ocean and on land. Protecting such a place was the kiaʻi, or caretaker of ʻEwa, named Kanekuaʻana (Kamakau 1991:83). Relied on by the ʻEwa kamaʻāina, during times of scarcity of fish, her descendants built Waihau Heiau and lit fires for the cooking of offerings with the hope of blessings. According to Kamakau (1991), blessings were in the form of the various types of seafood:

> The *pipi* (pearl oyster)—strung along from Namakaohalawa to the cliffs of Honouliuli, from the *kuapa* fishponds of inland ʻEwa clear out to Kapakule. That was the oyster that came in from the deep water to the mussel beds near shore, from the channel entrance of Puʻuloa to the rocks along the edges of the fishponds. They grew right on the *nahawele* mussels, and thus was this *iʻa* obtained. Not six months after the *hau* branches [that placed a kapu on these waters until the *pipi* should come in] were set up, the *pipi* were found in abundance—enough for all ʻEwa—and fat with flesh. Within the oyster was a jewel (*daimana*) called a pearl (*momi*), beautiful as the eyeball of a fish, white and shining; white as cuttlefish, and shining with the colors of the rainbow—reds and yellows and blues, and some pinkish white, ranging in size from small to large. They were of great bargaining value (*he waiwai kumukuʻai nui*) in the ancient days, but were just "rubbish" (*ʻopala*) in ʻEwa. (Kamakau 1991:83)

Other seafood described by Kamakau include the transparent shrimp (ʻōpae huna) and spiked shrimp (ʻōpae kakala) which came into the kuapā and puʻuone fishponds, the nehu pala and nehu maoli fish which filled the nuku awalau (lochs), as well as the bivalves mahamoe and ʻokupe and other types which have disappeared long ago (Kamakau 1991:84).

ʻEwa's abundance could also be attributed to the blessings it received from the gods Kāne and Kanaloa:

> …There are many other legends of ʻEwa which Mrs. Pukui has collected from old-timers or translated from old newspaper stories. …According to another legend it was here in ʻEwa that Kane and Kanaloa were invoked by a planter of sweet potatoes, taros, and *ʻawa* named Maihea. This man, living in the upland of Waiʻawa, when he had prepared his meal and his *ʻawa*, would pray:
>
> O unknown gods of mine,
> Here are *ʻawa*, taro greens and sweet potatoes
> Raised by me, Maihea, the great farmer.
> Grant health to me, to my wife and to my son.
> Grant us *mana*, knowledge and skill.
> Amama. It is freed.
>
> Kane and Kanaloa sent ashore at Waimalu a great whale. It lay there many days. Children climbed on it. Maihea's son did likewise. One day the whale moved into the water. The other children jumped off, but Maihea's son remained on the whale's back. It swam out to sea, and on to Kahiki. There ʻUla-a-Maihea, the farmer's son, "was trained in priestly lore and all of its arts through the instructions of these gods, Kane and Kanaloa." One day two strangers appeared at his door as Maihea was about to pray to his unknown gods. He poured *ʻawa* into three cups and said, "Let me pray to my unknown gods." Then the two strangers revealed that they were his "unknown gods," Kane and Kanaloa, and instructed him to call upon them by name. "This was the beginning of the travels of these gods on earth…." The

> gods went up the hill named Haupuʻu and gazed down upon the fishponds and plantations and coconut groves of ʻEwa and blessed them.
>
> There was a fisherman at Puʻuloa named Hanakahi, who, like Maihea, prayed to "unknown gods." Kane and Kanaloa visited him also, revealed their identity, and taught him to pray properly. They went on to Ke-ana-puaʻa, and built a fishpond which "is there to this day." They made another at Kepoʻokala, and then another opposite this. Then they returned to Hanakahi's house and told them that these ponds were made for him and his descendants. Thus they blessed the beautiful land of ʻEwa." (*Ka Loea Kalaiʻaina*, June 10, 1899 in Handy and Handy 1991:472, 473)

The land of Honoulilului was known for its ʻamaʻama, or mullet fish. The following moʻolelo describes how the route of the ʻamaʻama, which travel from Honouliuli to Lāʻie, came to be.

> Kaihuopalaʻai (a place) was famous from olden times down to the time when the foreigner ruled Honouliuli, after which time the famous old name was no longer used. It is said that in those days the *ʻamaʻama* heard and understood speech, for it was a fish born of a human being, a supernatural fish. These were the keepers of this fish. Kaulu, the husband, and Apokaʻa, the wife, who bore the children, Laniloa, the son, and Awawalei, the daughter. These two children were born with two other supernatural children, an eel and a young *ʻamaʻama.* From this *ʻamaʻama* child came all the *ʻamaʻama* of Kaihuopalaʻai, and thus did it gain renown for its *ʻamaʻama*. Laniloa went to Laʻie, in Koʻolauloa, and there he married. His sister remained in Honouliuli and married Mokueo, and to them were born the people who owned the *ʻamaʻama,* including the late Mauliʻawa and others. These were fishermen who knew the art of making the fish multiply and make them come up to the sand.
>
> While Laniloa lived in Laʻie he heard of the great schools of *ʻamaʻama* at Honouliuli. There were no *ʻamaʻama,* large or small, where he lived. He thought of his younger sister, the *ʻamaʻama,* and guessed that was the reason the place was growing so famous. He said to his wife, "I shall ask my sister to send us some fish for I have a longing for *ʻamaʻama* …" Laniloa left Laʻie to go to Ewa. He reached the house and found his parents and sister. His parents were quite old for he had been away a long time. He said, "I have come to my *ʻamaʻama* sister for a bit of fish as there is none where I live except for some *au moana* (sea-faring) crabs." After three days and nights he left Ewa. The fish were divided into two groups, those that were going and those that were staying. As Laniloaʻs sister went along the shore she went in her human form. The fish came from, that is, left Honouliuli without being seen on the surface. They went deep under water until they passed Kaʻaʻaliʻi, then they rose to the surface. They reached Waikiki. They went on. The sister slept at Nuʻupia while the fish stopped outside of Na Moku Manu. Finally she reached Laʻie, and to this day this is the route taken by the *ʻamaʻama.* (Mokumaia 1922 and *Ka Loea Kalaiaina* 1899 in Titcomb 1972:65)

### Oli and Mele

The noteworthiness of specific locales in Hawaiian culture is further bolstered by their appearances in traditional chants. An oli refers to a chant that is done without any accompaniment of dance, while a mele refers to a chant that may or may not be accompanied by a dance. These expressions of folklore have not lost their merit in today's society. They continue to be referred to in contemporary discussions of Hawaiian history, identity, and values.

In the account recorded by Abraham Fornander, *Moolelo o Kualii,* Honouliuli is mentioned in a list of ʻEwa place names as part of the great chant of Chief Kualiʻi presented by Kapaahulani at the

Keahumoa battlefield. The chant declares that Honouliuli is known for its blue poi. Below is excerpt of this chant (Fornander 1916:401):

O Kaweloiki puu oioi, Puu o Kapolei-e—
Uliuli ka poi e piha nei—o Honouliuli;
Aeae ka paakai o Kahuaiki—Hoaeae;
Pikele ka ia e Waikele—o Waikele;
Ka hale pio i Kauamoa—o Waipio;
E kuu kaua i ka loko awa—o Waiawa;
Mai hoomanana ia oe—o Manana.
He kini kahawai,
He lau kamano—o Waimano;
Ko ia kaua e ke au—o Waiau;
Kukui malumalu kaua—Waimalu;

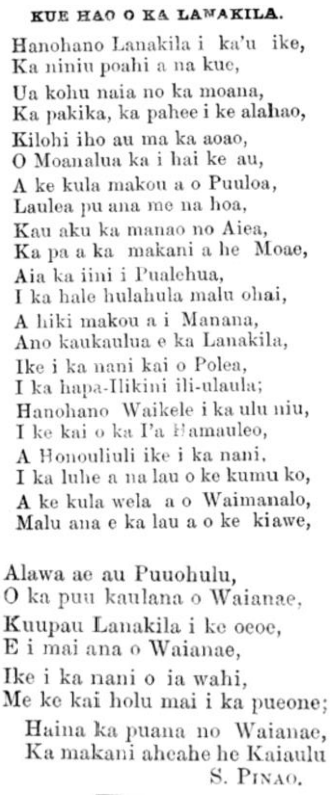
---

Kaweloiki, the sharp-pointed hill. Hill of Kapolei.
Blue is the poi which appeases [the hunger] of Honouliuli;
Fine the salt of Kahuaike—Hoaeae;
Slippery is the fish of Waikele—Waikele;
The arched house at Kauamoa—Waipio;
Let us cast the net in the awa-pond—of Waiawa;
Do not stretch yourself at—Manana.
Many are the ravines,
Numerous the sharks, at Waimano;
We are drawn by the current of Waiau;
In the kukui grove we are sheltered—in Waimalu;

Kanehili is mentioned in a kanikau, or lamentation, by Kekuapoʻi for the aliʻi Kahahana, her deceased husband:

| | |
|---|---|
| I walea wale i ke a | Contented among the stones |
| I ka ulu kanu o Kahaʻi | Among the breadfruit planted by Kahaʻi |
| E ka manu o Kanehili | By the bird of Kanehili |
| I kea ae la hoi kuu lani | My chief also was seen |
| Iluna ka ohu Kanalio a ka manu e | Above the dense Kanalio fog by the bird |
| Kela manu haule wale I kauwahi | That bird dazed by smoke |
| I hapapa I loaa I ke kanaka | Falling to the ground is caught by men |
| Honi I ka manu hunakai o kai | The bird scents the sea spray |
| Aia ka I kai kuu lani | There indeed by the sea is my chief (Kane 2011:75) |

Printed during the last few months of 1895, *Buke Mele Lahui*, was a response to the recent overthrow of the Hawaiian monarchy in 1893. A collection of 105 songs, this publication served as a means of expression during a time of censorship. The song “Kue Hao O Ka Lanakila” mentions various places in ʻEwa and Waiʻanae, and in this mele, Honouliuli is described (Figure 6) (Hawaiian Historical Society 2003:98–99).



KUE HAO O KA LANAKILA.

Hanohano Lanakila i ka'u ike,
Ka niniu poahi a na kue,
Ua kohu naia no ka moana,
Ka pakika, ka pahee i ke alahao,
Kilohi iho au ma ka aoao,
O Moanalua ka i hai ke au,
A ke kula makou a o Puuloa,
Laulea pu ana me na hoa,
Kau aku ka manao no Aiea,
Ka pa a ka makani a he Moae,
Aia ka iini i Pualehua,
I ka hale hulahula malu ohai,
A hiki makou a i Manana,
Ano kaukaulua e ka Lanakila,
Ike i ka nani kai o Polea,
I ka hapa-Ilikini ili-ulaula;
Hanohano Waikele i ka ulu niu,
I ke kai o ka I'a Hamauleo,
A Honouliuli ike i ka nani.
I ka luhe a na lau o ke kumu ko,
A ke kula wela a o Waimanalo,
Malu ana e ka lau a o ke kiawe,

Alawa ae au Puuohulu,
O ka puu kaulana o Waianae,
Kuupau Lanakila i ke oeoe,
E i mai ana o Waianae,
Ike i ka nani o ia wahi,
Me ke kai holu mai i ka pueone;
Haina ka puana no Waianae,
Ka makani aheahe he Kaiaulu

S. PINAO.

**Figure 6. Mele that mentions places in ʻEwa (Hawaiian Historical Society 2003:98, 99).**

### Subsistence and Traditional Land Use

What truly sets the ʻEwa area apart is its expansive coastal plain which is surrounded by the deep bays of West Loch and Pearl Harbor. Offering a favorable environment for the construction of loko iʻa, fishponds, and fish traps, residents of this area had the opportunity to catch deep-sea fish such as akule, which entered the bays during the incoming tide. These ponds were the summer home of the ʻamaʻama, or mullet. Another important resource of the coastal area was the diverse variety of shellfish found in the harbor. The Hawaiian pearl oyster, pipi, was eaten raw and was valued for its shell that was used to make fishhooks. Other shellfish of the area included papaua, ʻowaʻowaka, nahawele, kupekala, and mahamoe (Lahilahi Webb in Handy and Handy 1991:471).

The wide lowlands, bisected by streams, created a land that easily facilitated the cultivation of loʻi kalo, irrigated taro patches. The ʻEwa District was known for a prized variety of native kalo called kai or kai o ʻEwa (Handy and Handy 1991:471). This taro was so delicious that it's said anyone who marries someone from ʻEwa would move there and never leave because of the tasty kalo. Four varieties of kai are noted, the kai koi, kai ʻeleʻele or kai ʻuliʻuli (black/dark kai), kai kea (white kai), and kai ʻulaʻula (red kai). The kai kea variety was reserved for the aliʻi (Handy and Handy 1991:471).

ʻEwa's natural landscape, sprawling plain, and gently sloping valley walls, created environments ideal for crops such as maiʻa and uhi. Inland, ʻEwa was noted for the cultivation of ʻawa, as well as its mamaki, wauke, and olonā. This extensive upland area, also known as wao, gave inhabitants an advantage during times of famine as a place where they could forage for food during droughts

(Handy and Handy 1991:469). The upland areas of ʻEwa were also home to unique avifauna and birds which were important for their colorful feathers that were used in helmets, capes, and lei.

**ʻEwa and Honouliuli in the Historic Period**

Descriptions and maps from early visitors to Hawaiʻi help to paint a picture of what Honouliuli was like in the 18th to 20th centuries.

**Early Descriptions of the ʻEwa Plain**

Anchored off the entrance to West Loch in 1793, Captain George Vancouver was an early visitor who described the ʻEwa landscape:

> The part of the island opposite to us was low, or rather only moderately elevated, forming a level country between the mountains that compose the east [Koolau] and west [Waianae] ends of the island. This tract of land was of some extent, but did not seem to be populous, nor to possess any great degree of natural fertility; although we were told that, at a little distance from the sea, the soil is rich, and all the necessaries of life are abundantly produced. …Mr. Whitbey obsesrved [sic], that the soil in the neighborhood of the harbor appeared of a loose sandy nature; the country low for some distance, and, from the number of houses within the harbour, it should seem to be very populous; but the very few inhabitants who made their appearance were an indication of the contrary. (Vancouver 1801, vol. 3:361, 363)

Seaman A. Campbell moved to Hawaiʻi to recover from frostbite, and his 1819 account includes a description of ʻEwa, also noting the rich soil of the region:

> We passed by foot-paths winding through an extensive and fertile plain, the whole of which is the highest state of cultivation. Every stream was carefully embanked, to supply water for the taro beds. Where there was no water, the land was under crops of yams and sweet potatoes. The roads and numerous houses are shaded by cocoa-nut trees, and the sides of the mountains covered with wood to a great height. We halted two or three times, and were treated by the natives with the utmost hospitality." (Campbell 1819:145)

G.F. Mathison, who set out to work in the opium trade, traveled extensively and wrote of visiting the "Sandwich Islands" in 1821–1822. He noted the abundance of resources within the ʻEwa Plain:

> The adjoining low country is overflowed both naturally and by artificial means, and is well stocked with tarrow-plantations, bananas, etc. The land belongs to many different proprietors; and on every estate there is a fishpond surrounded by a stone wall, where the fish are strictly preserved for the use of their rightful owners, or tabooed, as the natives express it. One of particular dimensions belongs to the King. (Mathison 1825 in McAllister 1933:109)

During a visit to Hawaiʻi in 1825, Scottish botanist James Macrae offered the following remarks about Puʻuloa and the surrounding area:

> The neighborhood of the Pearl River is very extensive, rising backwards with a gentle slope towards the woods, but is without cultivation, except round the outskirts to about half a mile from the water. The country is divided into separate farms or allotments belonging to the chiefs, and enclosed with walls from four to six feet high, made of a mixture of mud and stone. (Macrae 1922 in McAllister 1933:31)

Captain Jacobus Boelen's 1828 narrative of Puʻuloa discusses traveling to ʻEwa from Honolulu and the shallow reefs which shelter the bay. He notes the highly fertile soils which are heavily cultivated in kalo and sugarcane:

> On 26 February, in the company of some good friends and acquaintances, we made an excursion to what the Indians called the harbor of Oporooa [Puʻuloa], which I believe means approximately "Pearl River"—at least that is what the foreigners call this bay. This is because the Indians sometimes find pearls there, which they offer for sale in Honoruru. We departed from Honoruru at ten o'clock in the morning in two boats, sailed out of the harbor to sea, and rowed a distance of about three quarters or one league toward the west along the coral reef that encircles the whole south coast of Woahoo. We passed over the bar of Oporooa harbor. The bar is no more than ten feet deep at low tide, from which one can conclude that in a rough sea high waves will break against it. Even at high tide the passing of this bar can be very dangerous unless the sea is calm. Therefore, on the advice of our pilot, a native of the island, we remained for a time outside the bar and then rowed hard across it.
>
> We found ourselves in a rectangular bay, or rather a lake with several arms, consisting of several deep bights. Two of the most important of these stretched to the northeast, while the one to the northwest cut the farthest….The soil in this region seemed at first sight to be exceptionally fertile, and the land consisted of meadows and *taro* and sugar [cane] fields….
>
> We rowed to the end of the harbor of Opooroa, or the so-called Pearl River, and landed with the boats near a small Indian village with the name of Mannonco….In the meantime, we strolled through the surrounding land, which everywhere was very fertile, with cultivated fields of *tarro*, maize, and also sugar cane. (Boelen 1988:64–65)

### Power and Warfare in Honouliuli

Known for its bountiful resources which included fertile lands and well-stocked fishponds, the ʻEwa area was a sought-after land for the aliʻi, and as a result, numerous battles ensued. One such example is the unfought battle of the Keahumoa Plain which involved Kualiʻi (ca. 1650) who was a celebrated chief, skilled, and victorious in the art of warfare. This bloodless "battle" instigated by brothers Kapaʻahulani and Kamakaʻaulani resulted in Kualiʻi uniting all the islands (Fornander 1918, vol. IV:364).

Another battle known to have taken place on the ʻEwa Plain was that of Māʻilikūkahi. During this battle, chiefs from the island of Hawaiʻi, joined with aliʻi from Maui, waged war on Oʻahu mōʻī, Māʻilikūkahi. Fornander offers a genealogy of aliʻi preceding Māʻilikūkahi and follows with an account of the battle:

> On Oahu, at the close of the migratory period, after the departure of Laamaikahiki, we find his son, Lauli-a-Laa, (88) Maelo. married to Maelo, the sixth in descent from Maweke, and daughter of Kuolono, on the Mulielealii-Moikeha line. They probably ruled over the Kona side of the island, while *Kaulaulaokalani,* on the *Maweke-Kalehenui* line, ruled over the Koolau side, and *Lakona,* also sixth from *Maweke,* on the *Mulielealii-Kumuhonua* line, ruled over Ewa, Waianae, and Waialua districts, and in this latter line descended the dignity of Moi of Oahu. Tradition is scanty as to the exploits of the Oahu Mois and chieftains, until Haka we arrive at the time of *Haka,* Moi of Oahu, chief of Ewa, and residing at Lihue. The only genealogy of this chief that I have, while correct and confirmed by others from *Maweke* to *Kapae-a-Lakona,* is deficient in three generations from *Kapae-a-Lakona* to *Haka.* Of *Haka's* place on the genealogy there can be no doubt, however, as he was superseded as Moi by *Mailikukahi,* whose genealogy is perfectly correct from the time of *Maweke* down, and conformable to all the other genealogies, descending from *Maweke*

through his various children and grandchildren. Of this *Haka,* tradition records that he was a stingy, rapacious, and ill-natured chief, who paid no regard to either his chiefs or his commoners. As a consequence they revolted from him, made war upon him, and besieged him in his fortress, called Waewae, near Lihue. During one night of the siege, an officer of his guards, whom he had ill-treated, surrendered the fort to the rebel chiefs, who entered and killed *Haka,* whose life- was the only one spilt on the occasion. Tradition does not say whether *Mailikukahi* had a hand in this affair, but he was clamorously elected by the Oahu chiefs in council convened as Moi of Oahu, and duly installed and anointed as such at the Heiau (temple).

I have before (p. 70) referred to the expedition by some Hawaii chiefs, *Hilo-a-Lakapu, Hilo-a Hilo-Kapuhi,* and *Punaluu,* joined by *Luokoo* of Maui, which invaded Oahu during the reign of *Mailikukahi.,* It cannot be considered as a war between the two islands, but rather as a (90) raid by some restless and turbulent Hawaii chiefs, whom the pacific temper of *Mailikukahi* and the wealthy condition of his island had emboldened to attempt the enterprise, as well as the *éclat* that would attend them if successful, a very frequent motive alone in those days. The invading force landed at first at Waikiki, but, for reasons not stated in the legend, altered their mind, and proceeded up the Ewa lagoon and marched inland. At Waikakalaua they met *Mailikukahi* with his forces, and a sanguinary battle ensued. The fight continued from there to the Kipapa gulch. The invaders were thoroughly defeated, and the gulch is said to have been literally paved with the corpses of the slain, and received its name, "Kipapa," from this circumstance. *Punaluu* was slain on the plain which bears his name, the fugitives were pursued as far as Waimano, and the head of *Hilo* was cut off and carried in triumph to Honouliuli, and stuck up at a place called *Poo-Hilo.*

*Mailikukahi's* wife was *Kanepukoa,* but to what branch of the aristocratic families of the country she belonged has not been retained on the legends. They had two sons, *Kalononui* and *Kalona-iki,* the latter succeeding his father as Moi of Oahu. (Fornander 1996:87–90)

### Māhele Land Tenure and Ownership of Honouliuli and Kalaeloa

The change in the traditional land tenure system in Hawai‘i began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission.

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for lands that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kama‘āina totaling only about 30,000 acres and recorded in ten large volumes.

During the Māhele, 97 kuleana awards were given to applicants in Honouliuli by the Board of Commissioners to Quiet Land Titles. Most of these claims were located in the wetland lo‘i and were approximately one acre in size, with all 97 awards totaling only 106.54 acres (Haun 1991:160). None of these are located near the project area. The majority of the land of Honouliuli, 43,250 acres, was granted to Kekau‘onohi, granddaughter of Kamehameha I, within LCA 11216.

In 1849 Kekauʻonohi sold the land of Puʻuloa, now known as Pearl Harbor, to Isaac Montgomery, where it is believed that he and Kamehameha III established a successful salt works enterprise that shipped salt to the Pacific Northwest. This is likely the salt works illustrated in an 1873 map (Figure 7). In this map, Kalaeloa is labeled as "Lae Loa." There are no points of interest shown near the project area, however, with nothing labeled aside from the place name "Kualakai" near the coast.

Land also changed hands when Kekauʻonohi's widower, Haʻalele'a died, and his second wife, Anadelia Amoe deeded the land to her sister's husband, John H. Coney. In 1877 Coney subsequently sold Honouliuli to James Campbell. For approximately 43,640 acres of land, Campbell paid a sum of $95,000 (Haun 1991:160). During the initial years of his ownership, Campbell utilized about 10,000 acres as a cattle ranch and also leased out land for rice cultivation, fishing rights to Pearl Harbor, as well as a lime quarry.

An 1878 map of "Honouliuli Taro Lands" illustrates the thriving cultivation of kalo in Honouliuli (Figure 8). Numerous family plots are mapped in this figure, as is an area on the west marked as "mud flats," a road circling the land plots, as well as a wall, or "pa aina" which encloses several of the lots. It is unknown exactly where the current study area is located in relation to these taro plots, however this fertile region is probably located near Pearl Harbor's West Loch, not near the study lands.

In 1889, Campbell leased Honouliuli for 50 years to Benjamin Dillingham, who established the Ewa Sugar Plantation in the lower portion of the ahupuaʻa, and Oahu Sugar Company's cane fields in the upper reaches of Honouliuli. Dillingham also built the Oahu Railway and Land Company railroad in Honouliuli which extended out to Waiʻanae. In 1893, the first sisal was brought to Hawaiʻi from Florida, and was grown in Honouliuli not far from the project area. The sisal plantation operated under the name of Hawaii Fibre Company in 1898. The plantation can be seen on a 1902 map of Oʻahu (Figure 9). The land of the project area is labeled as "coral plain," and the sisal plantation is just to the north and northwest. The study lands are located at the U.S. Coast and Geodetic Survey Magnetic Station within a large region of grazing lands (yellow outline) that extends to Kahe in the west and Pearl Harbor in the east. The Oahu Railroad line runs to the north of the project area through the sisal plantation with the ʻEwa Mill sitting along the rail line.

**The Military and Modern Development**

The presence of government structures in Kalaeloa began in 1888 with the construction of the Barbers Point Lighthouse by the Hawaiian Government. The following work in the area consisted of the construction of the United States Coast and Geodetic Survey Magnetic Observatory. In the 1930s the military leased a 3,000 square foot area from the Campbell Estate. This period brought much development to the area's infrastructure and capital improvements and included the creation of approximately 18 miles of road built between 1935 and 1937 (Beardsley 2001:II.23). When the military's lease expired in 1940, the Navy acquired a lease of 3,500 acres on which the ʻEwa Marine Corps Air Station, and later, Barbers Point Naval Air Station would be built. Following the Japanese bombing of Pearl Harbor on December 7, 1941, construction at the Air Station dramatically increased after the ʻEwa airstrip and a majority of the planes were destroyed in the attack. Construction of the Naval Air Station at Barbers Point was completed on April 15, 1942 with an increase in the station's capacity from its original 2,000 enlisted members, 250 officers, and 800 civilians to facilities for 4,000 enlisted members, 450 officers, and 1,200 civilians (Gould and Klein 1945). Due to the coral outcrop in the region, blasting and jackhammering were used during construction of the station and sinkholes were filled (Gould and Klein 1945).

Since World War II, Barbers Point Naval Air Station has played an integral role as a strategic military base and has provided a diverse range of functions, including an antisubmarine patrol, headquarters

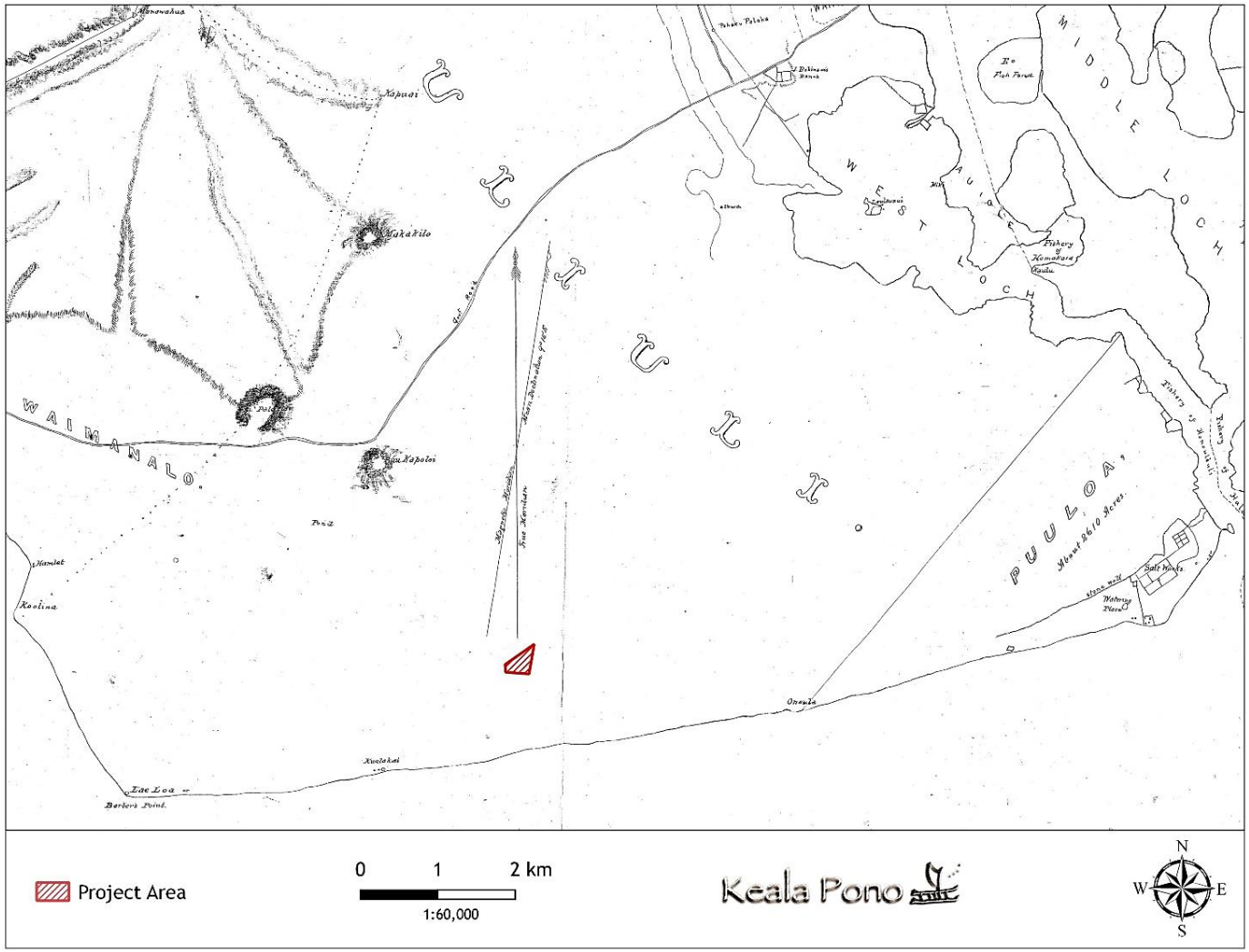



**Figure 7. Portion of an 1873 map of Honouliuli (Alexander 1873).**

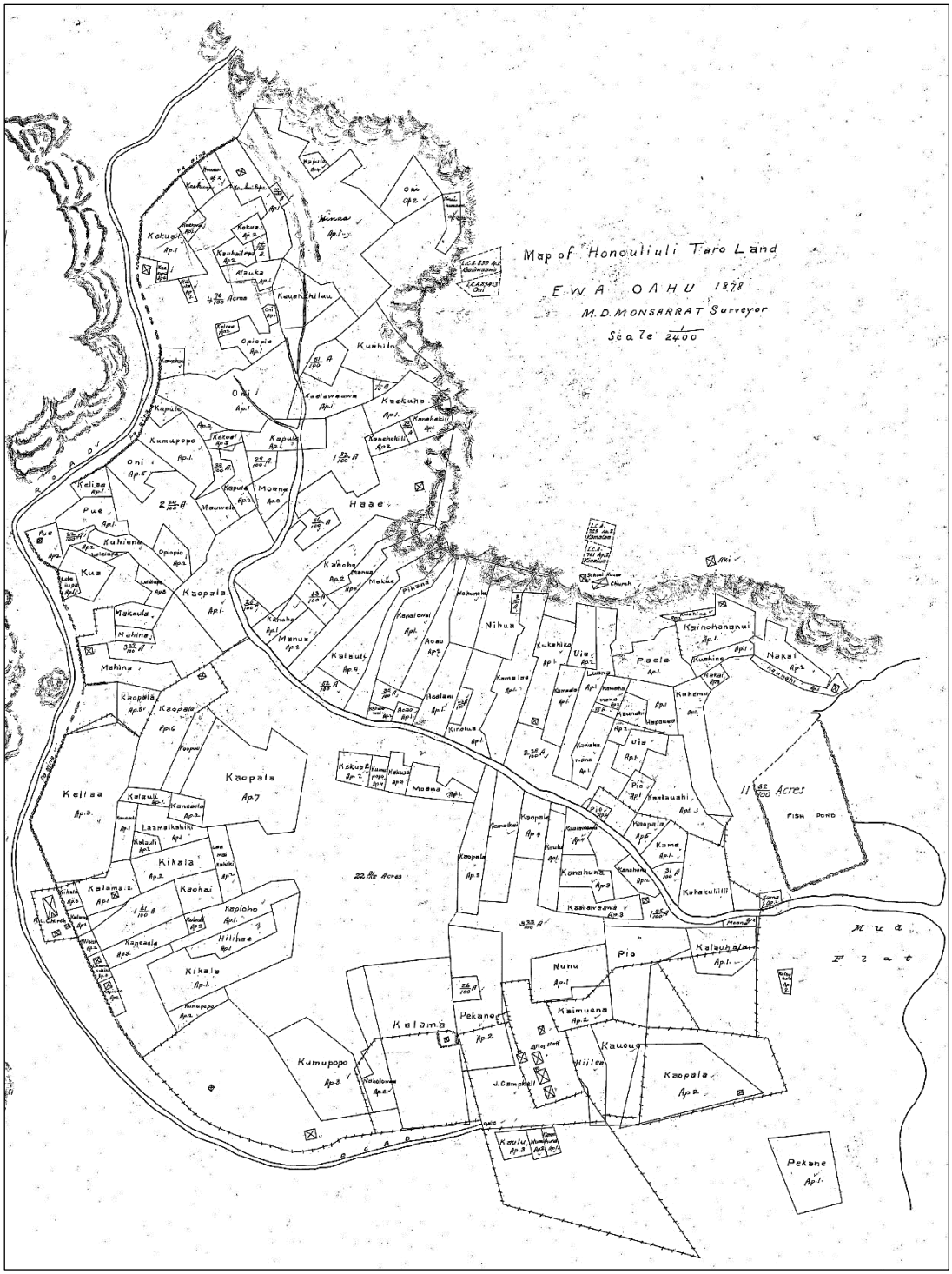



**Figure 8. Map of Honouliuli Taro Lands (Monsarrat 1878). North on the map is toward the top of the page. The project area could not be identified on this map.**

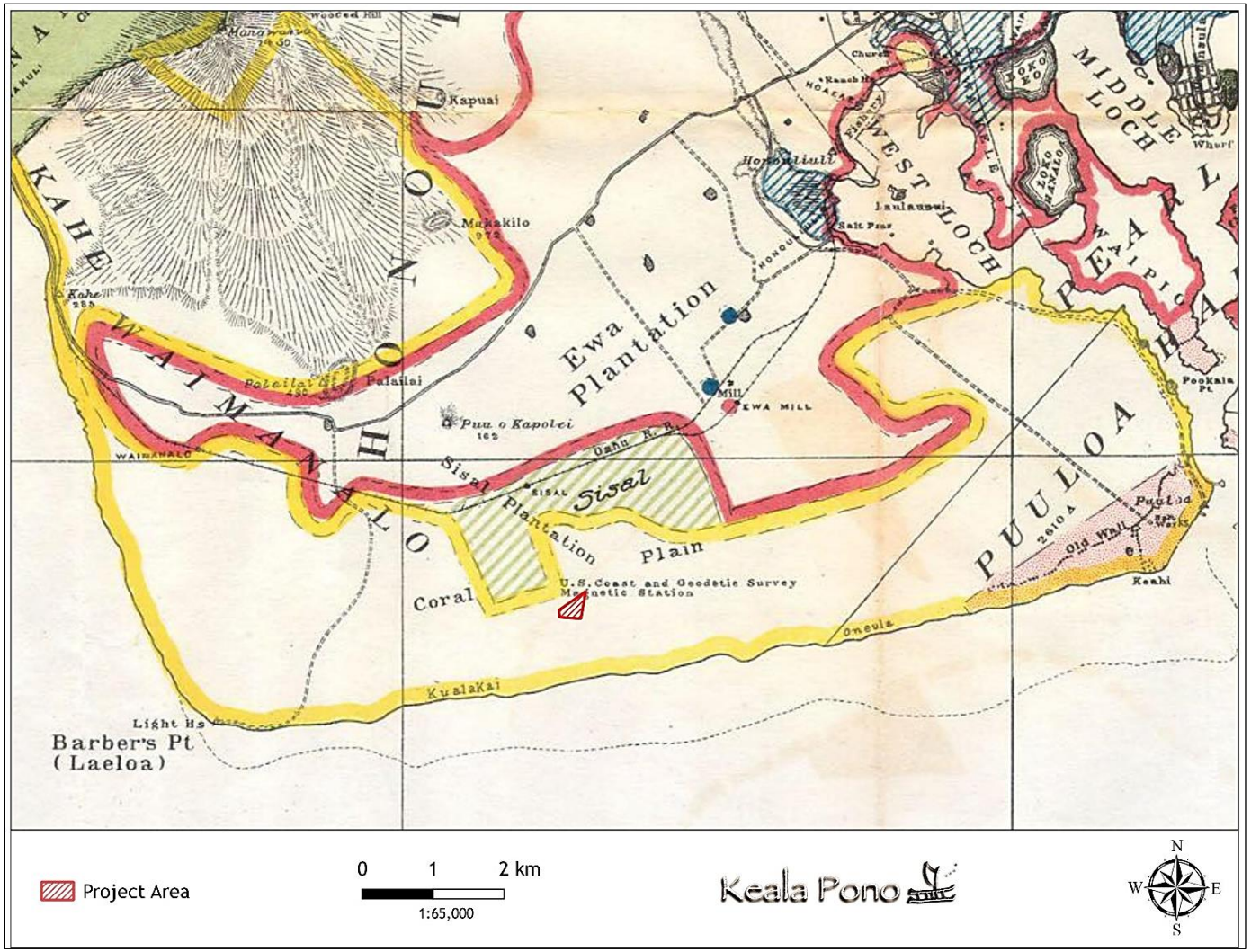



**Figure 9. Portion of a 1902 map of O‘ahu (Alexander 1902).**

of the Pacific Airborne Barrier Command (1958–1965), guided missile units, and the Pacific Sound Surveillance System (Beardsley 2001:II.24). Over the course of time, activities associated with construction and the execution of these functions have had a major impact on cultural and natural resources. Some of these impacts include a defensive line of barbed wire and gun emplacements along the coast, infrastructure developments of roads, sewers, water systems, electricity, gas, housing units, and general bulldozing and grading in surrounding areas (Kelly 1991; Tuggle and Tomonari-Tuggle 1994).

An aerial photograph of the project area from 1951 shows both Coral Sea and Prince Williams Roads are already in place at this time with a smaller road extending into the center of the project area for access to a large building with smaller adjacent structures (Figure 10). There are also several buildings along Prince Williams Road, one of which falls within the current study lands. This portion of the Naval Air Station was the location of a former jet engine test cell site, which was used to conduct stationary engine tests including lengthy endurance tests.

A USGS map from 1953 displays the development at the Naval Air Station at this time (Figure 11). Coral Sea Road, the main thoroughfare in this area is depicted, and a large cluster of structures are seen inland of the airstrip, northwest of the current project area. Additional development is made to the north and northeast of the study area, though few structures are shown in the makai region. Nimitz Beach is labeled and multiple coral pits can be seen. A short road runs through the current project area at a northeast/southwest orientation leading to a large building in the center with a smaller building mauka of the road. Two other structures are depicted within the western portion of the parcel.

In 1999 the Naval Air Station was closed by Base Realignment and Closure (BRAC) and was turned over to the State of Hawai‘i. It is currently named the Kalaeloa Community Development District (Hawai‘i Community Development Authority 2012). Additional maps and photos of the project area were provided by John Bond and are presented in Appendix F.

**Previous Archaeology**

A wealth of archaeological studies have been conducted on the ‘Ewa Plain and within Honouliuli Ahupua‘a. The following discussion provides information on archaeological investigations that have been performed in the vicinity of the project area (Figure 12 and Table 1). State Inventory of Historic Places (SIHP) numbers are prefixed with 50-80-12 and nearby sites with known locations are displayed in Figure 13.

One of the earliest island-wide archaeological studies was conducted in the 1930s by J.G. McAllister (1933). In his study of O‘ahu, he recorded numerous sites located on the ‘Ewa Plain and specifically in the ahupua‘a of Honouliuli. Sites include heiau, ko‘a, fishponds, and ranching walls. The closest site to the project area is Pu‘u Kapolei Heiau (Site 50-80-12-138), although it is well inland (see previous discussion on Pu‘u o Kapolei). Unfortunately, the heiau was destroyed by the time of McAllister’s study (1933:108):

> The stones from the heiau supplied the rock crusher which was located on the side of this elevation, which is about 100 feet away on the sea side. There was formerly a large rock shelter on the sea side where Kamapuaa is said to have lived with his grandmother.

Aside from the heiau mentioned above, McAllister described the plethora of sites on the ‘Ewa Plain within a single site number, Site 50-80-12-146 (1933:109):


**Figure 10. Aerial photograph of Kalaeloa showing the project area (USGS 1951).**

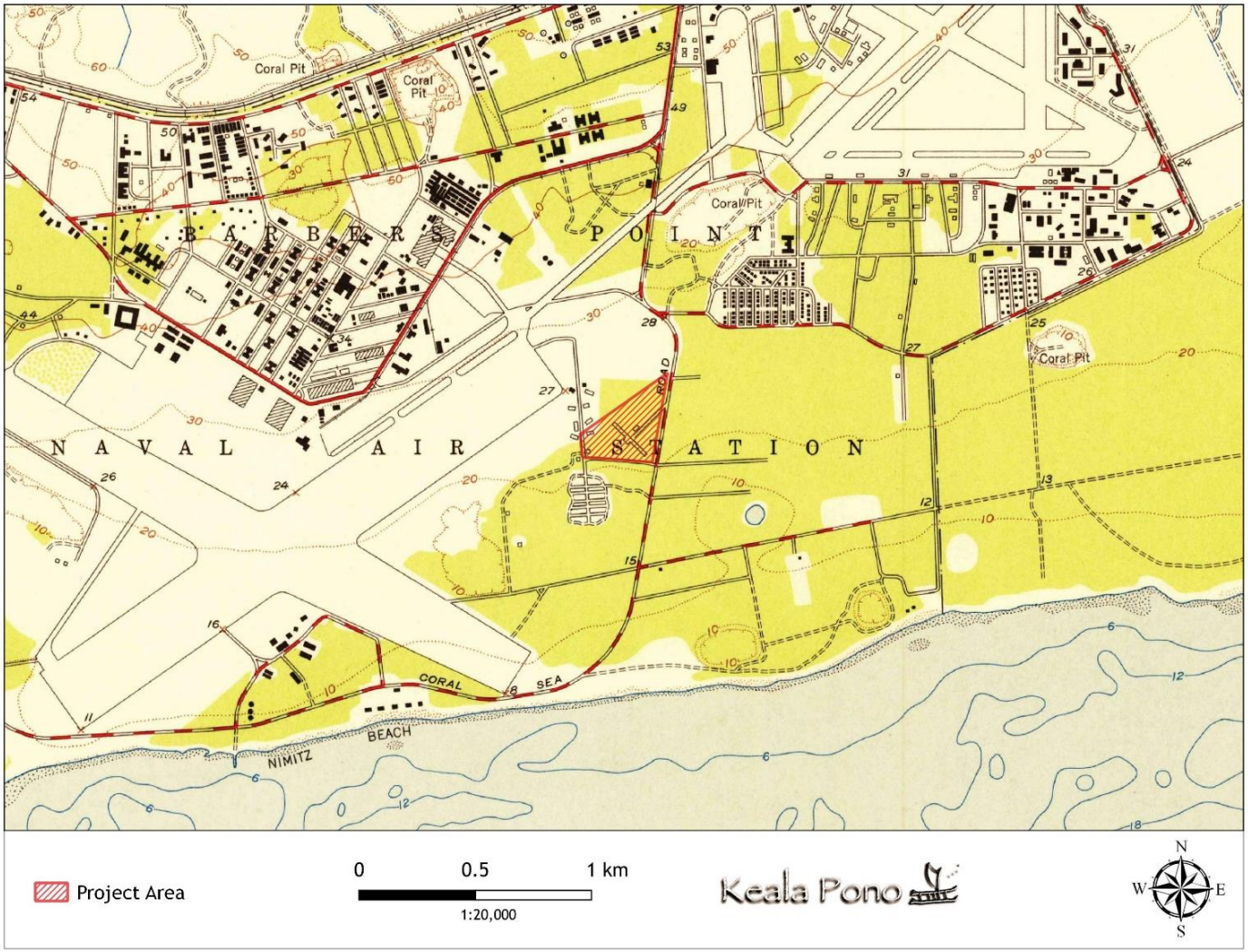



**Figure 11. Portion of a 1953 USGS map of 'Ewa (USGS 1953).**

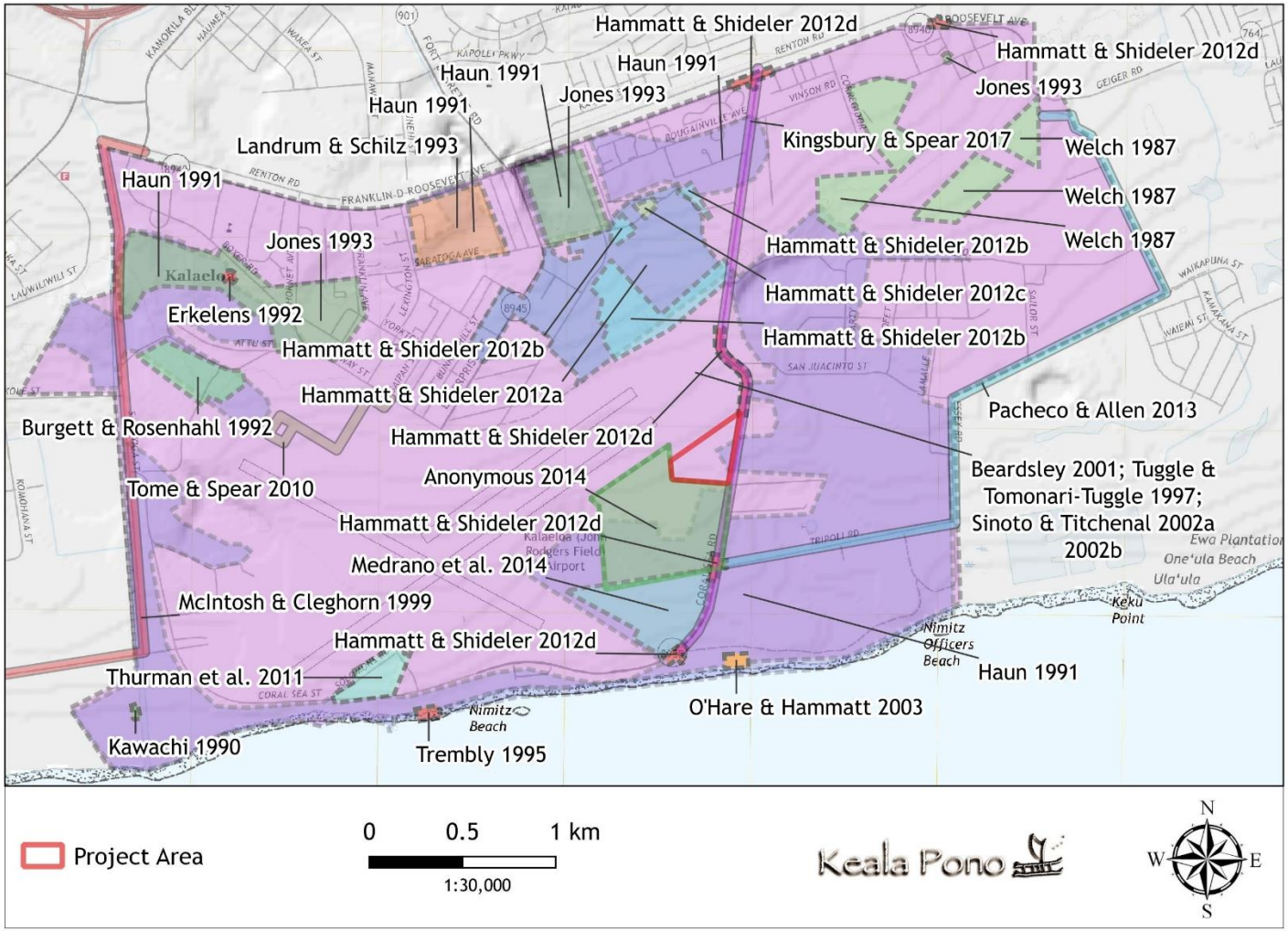



**Figure 12. Previous archaeological studies in the vicinity of the project area.**

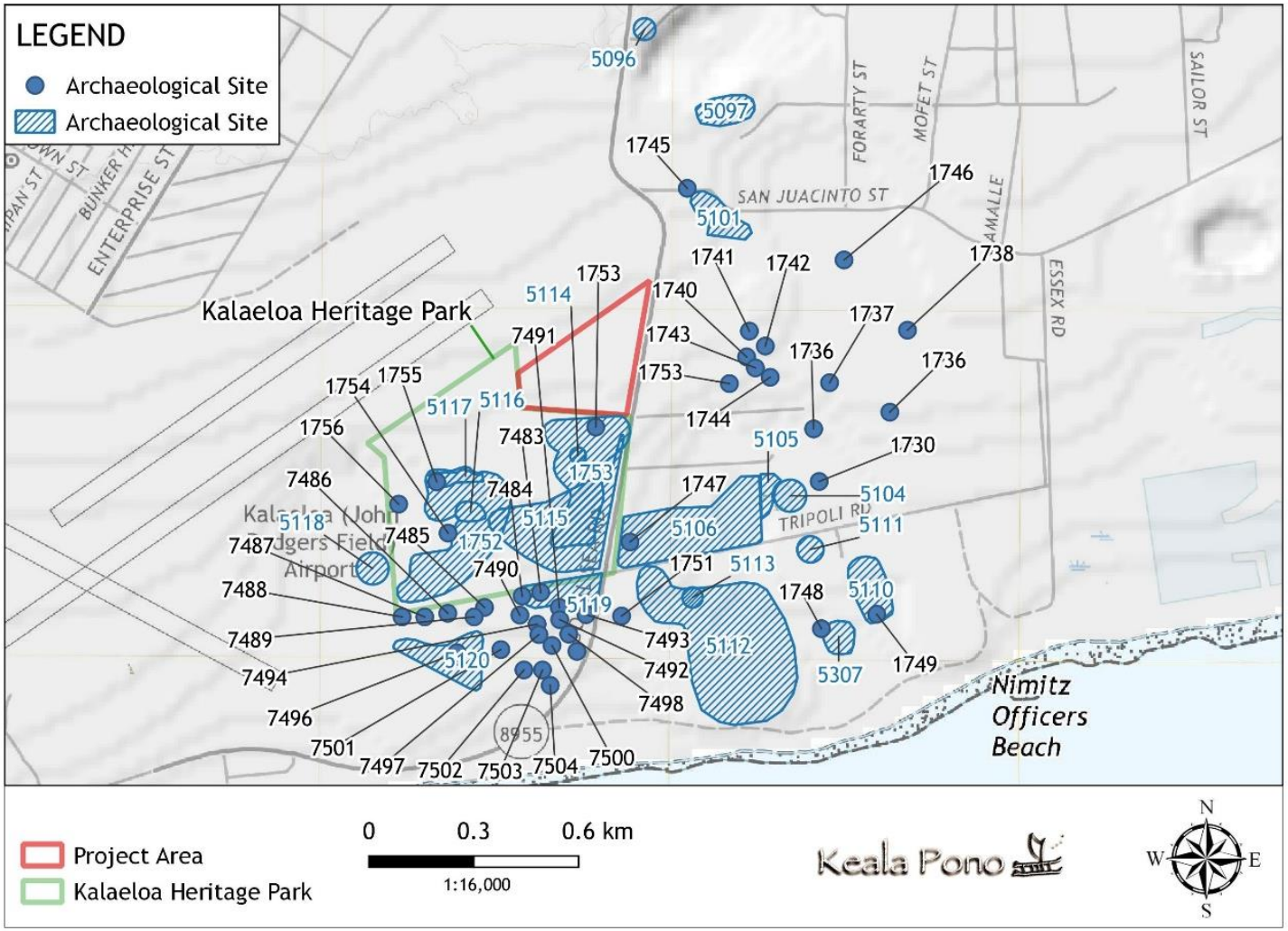



**Figure 13. Archaeological sites with known locations in the vicinity of the project area.**

**Table 1. Previous Archaeology on the ʻEwa Plain**

| Author and Year | Location | Work Completed | Findings |
|---|---|---|---|
| McAllister 1933 | Island of Oʻahu | Archaeological Survey | Recorded 384 archaeological sites on Oʻahu, many of these located in the ʻEwa District. Site types include heiau, enclosures, and fishponds. |
| Bowen et al. 1962 | Barbers Point | Burial Report | Documented human remains (SIHP 2314). |
| Welch 1987 | Ewa Marine Corps Air Station | Reconnaissance Survey | Documented two sites: a habitation complex (SIHP 3721) and a wall (SIHP 3722). |
| Kawachi 1990 | TMK: (1) 9-1-031:028 | Burial Report | Recorded a human burial in a sinkhole capped by a coral boulder. |
| Haun 1991 | Barbers Point Naval Air Station | Archaeological Survey | Surveyed 1,230 acres recorded 43 sites comprised of 385 features. Three-quarters of sites were determined to be pre-contact, many of which are "architecturally complex" suggesting permanent habitation. |
| Burgett and Rosendahl 1992 | Barbers Point Naval Air Station | Archaeological Inventory Survey | Recorded 20 new sites (SIHP 4548–4567), consisting of agriculture and habitation complexes. |
| Erkelens 1992 | Barbers Point Naval Air Station | Archaeological Survey | Mapped SIHP 1719, which was previously documented by Haun (1991); identified new features of the site. |
| Jones 1993 | Barbers Point Naval Air Station | Archaeological Inventory Survey | Re-evaluated sites documented by Haun (1991) and recorded new habitation and military features. |
| Landrum and Schilz 1993 | Barbers Point Naval Air Station | Reconnaissance Survey with Subsurface Testing | Documented five sites, consisting of walls (SIHP 1728, 4649, and 4653) and agricultural/habitation complexes (SIHP 4650–4652). |
| Tuggle and Tomonari-Tuggle 1994 | Barbers Point, Naval Air Station | Summary and Assessment of Cultural Resources, Research Design | Findings of previous studies summarized. |
| Trembly 1995 | Nimitz Beach | Burial Report | Reported on a child burial, SIHP 2220. |
| McIntosh and Cleghorn 1999 | Honouliuli Wastewater Treatment Plant | Archival Research | Emphasized the significance of sinkholes in the area and the possible presence of more burials. |
| Beardsley 2001 | Barbers Point, Naval Air Station | Intensive Archaeological Survey and Testing | Investigated 63 sites, as recommended by Tuggle and Tomonari-Tuggle (1994). A total of 254 test units were excavated and "confirmed prehistoric Hawaiian occupation and use within the area of Naval Air Station Barbers Point." |
| Sinoto and Titchenal 2002a | Barbers Point Proposed Desalination Facility | Archaeological Inventory Survey | Identified three new archaeological sites. |
| Sinoto and Titchenal 2002b | Barbers Point Proposed Desalination Facility | Archaeological Monitoring | No findings. |

**Table 1. (Continued)**

| Author and Year | Location | Work Completed | Findings |
|---|---|---|---|
| O'Hare and Hammatt 2003 | Barbers Point Naval Air Station | Field Inspection | No findings. |
| Thurman et al. 2011 | South side of Kalaeloa Airport | Archaeological Inventory Survey | Recorded pit caves associated with the previously-identified site SIHP 5121. |
| Tome and Spear 2010 | Kalaeloa Airport T-Hangers | Archaeological Monitoring | No findings. |
| Hammatt and Shideler 2012a | Hawaii Army National Guard Facility | Archaeological Inventory Survey | No findings. |
| Hammatt and Shideler 2012b | Northwest corner of Kalaeloa Airport | Field Inspection | No findings. |
| Hammatt and Shideler 2012c | North side of Kalaeloa Airport | Archaeological Inventory Survey | No findings. |
| Hammatt and Shideler 2012d | East side of Kalaeloa Airport | Field Inspection | No findings. |
| Pacheco and Allen 2013 | Tripoli St. and Essex Rd. | Archaeological Inventory Survey | No findings. |
| Anonymous 2014 | Kalaeloa Heritage Park | Cultural Impact Assessment | Recommended Sites 1752 and 1753 for preservation. This includes military Sites 5115, 5116, and 5117. |
| Medrano et al. 2014 | Southeast side of Kalaeloa Airport | Archaeological Inventory Survey | Recorded 23 sites (SIHP 5119, 5120, 7483–7494, and 7496–7504), two of which were previously identified (SIHP 5119 and 5120). |
| Kingsbury and Spear 2017 | Coral Sea Road | Addendum Archaeological Inventory Survey | No findings. |

> Ewa coral plains, throughout which are the remains of many sites. The great extent of old stone walls, particularly near the Puuloa Salt Works, belongs to the ranching period of about 75 years ago. It is probable that the holes and pits in the coral were formerly used by the Hawaiians. Frequently the soil on the floor of larger pits was used for cultivation, and even today one comes upon bananas and Hawaiian sugar cane still growing in them. They afford shelter and protection, but I doubt if previous to the time of Cook there was ever a large population here.

In 1991 a large scale archaeological survey was conducted at Barbers Point Naval Air Station, identifying 43 sites comprised of 385 features (Haun 1991). Approximately three- quarters of these sites were deemed to be pre-contact in age and are "architecturally complex," suggesting permanent habitation. An assessment of cultural resources and inventory research design summarized the archaeology of the Naval Air Station and made recommendations for future work (Tuggle and Tomonari-Tuggle 1994). A later survey (Beardsley 2001) reassessed many of the sites identified by Haun (1991), as recommended by Tuggle and Tomonari-Tuggle (1994).

Four studies at the Kalaeloa Airport produced no findings. These include an archaeological inventory survey (Hammatt and Shideler 2012a) and field inspection north of the project area (Hammatt and Shideler 2012b), an archaeological inventory survey north of the airport runway (Hammatt and

Shideler 2012c), and a field inspection of five areas along Coral Sea Road and Roosevelt Avenue (Hammatt and Shideler 2012d). Along the coastline at Nimitz Beach, another field inspection produced no findings (O'Hare and Hammatt 2003).

On the makai side of Kalaeloa Airport, an archaeological inventory survey recorded pit caves associated with the previously-identified Site 5121 (Thurman et al. 2011). Another study nearby documented a child burial (Site 50-80-12-2220) at Nimitz Beach (Trembly 1995).

North and northeast of the airport, three archaeological studies were completed. A reconnaissance survey identified Site 50-80-12-3721, a habitation complex, and Site 50-80-12-3722, a wall (Welch 1987). An archaeological inventory survey re-evaluated sites documented by Haun (1991) and recorded new habitation and military features (Jones 1993). A reconnaissance survey with subsurface testing documented five sites, consisting of walls (Sites 50-80-12-1728, 4649, and 4653) and agricultural/habitation complexes (Sites 50-80-12-4650–4652) (Landrum and Schilz 1993).

Northwest of the airport, another three studies were conducted. An archaeological inventory survey recorded 20 new sites (Sites 50-80-12-4548–4567), comprised of agriculture and habitation complexes (Burgett and Rosendahl 1992). An archaeological inventory survey from the same year mapped Site 1719, which was previously documented by Haun (1991), and identified new features of the site (Erkelens 1992). In 2010, archaeological monitoring was required for the construction of the Kalaeloa Airport T-Hangers (Tome and Spear 2010). Monitoring of ground disturbing activities did not yield cultural material or archaeological sites, however it was noted that stratigraphy of the area included karstic limestone in which historic properties were encountered in sinkholes not far from the study lands. Archaeological monitoring was recommended for any future excavation.

To the southwest of the current project area, human remains were identified in two separate studies. In 1962, human remains were inadvertently discovered on Barbers Point along with habitation sites and walled pits (Bowen et al. 1962). Most of the iwi were recovered by the Bishop Museum, and the site was designated as Site 50-80-12-2314. Many years later, a burial was inadvertently discovered at the end of Kalaeloa Street (Kawachi 1990). The burial was in a sinkhole that had been covered with a coral boulder.

A large archaeological inventory survey covering the majority of the Barbers Point Naval Air Station was completed for a proposed desalination facility (Sinoto and Titchenal 2002a). Three sinkhole sites were identified: Site 50-80-12-6373, a circular enclosure with limestone covering a sinkhole; 50-80-12-6374, a sinkhole that had been used as a lime kiln in the post-contact era, the only one found on the 'Ewa Plain; and 50-80-12-6375, which was comprised of seven sinkholes yielding avifaunal remains, including one species which was prehistorically extinct. Archaeological monitoring of construction activities yielded no further cultural material (Sinoto and Titchenal 2002b).

Archival research was conducted for a project along Saratoga Street that was associated with the Honouliuli wastewater treatment facility (McIntosh and Cleghorn 1999). Conclusions from the report stated that there would be a low likelihood to encounter surface finds there. It was noted that there was a greater possibility of subsurface features occurring in the area, such as culturally significant sinkholes and possible burials.

An archaeological inventory survey was performed along Coral Sea Road, part of which runs adjacent to the current study area (Kingsbury and Spear 2017). The study produced no findings.

A cultural impact assessment was completed for the Kalaeloa Heritage Park located across the street from the current project area on the makai side (Anonymous 2014). The project aims to preserve

known traditional habitation and agricultural complexes and serves as a community education center maintained by the Kalaeloa Heritage and Legacy Foundation. Background research identified 177 previously identified archaeological features of Sites 1752 and 1753, which are two associated complexes. The features consist of a permanent habitation structure; C-shaped, L-shaped, and U-shaped enclosures; platforms; mounds; a portion of a traditional trail; heat-altered limestone piles; upright limestone slabs; sinkholes (modified and unmodified) used for agriculture, water supply, religion, and burial; and a burial ahu. Both sites were recommended for preservation and eligible for the National Register of Historic Places (NRHP) under Criteria A, C, and D. Four historic sites were also documented: a plane wreck from WWII (Site 50-80-12-5114), a WWII military complex (Site 50-80-12-5115), a military dynamite storage building (Site 50-80-12-5116), and a historic agricultural wall related to sisal cultivation (Site 50-80-12-5117).

In 2014, an archaeological inventory survey was conducted on a roughly 44 acre area makai of the Kalaeloa Heritage Park for a proposed solar farm (Medrano et al. 2014). The survey documented 23 sites with a total of 146 features (Sites 50-80-12-5119, 5120, 7483–7494, and 7496–7504). Two of these sites, Sites 5119 and 5120 were previously identified by Tuggle and Tomonari-Tuggle 1997, however new features were added to both sites. Most features were determined to be associated with traditional Hawaiian occupation of the region and consisted of small enclosures and structures, karst pits (modified and unmodified), platforms, and small trails. Historic military features include a concrete structural foundation, pillbox, and guard shack.

On the opposite side of Coral Sea Road, an archaeological inventory survey was completed on a 5,195.4 meter-long corridor along Tripoli Street and Essex Road for the East Kalaeloa Energy Corridor (Pacheco and Allen 2013). No historic properties or cultural material were encountered.

**Settlement Patterns**

Based on a review of previous archaeological studies and the examination of both pre- and post-contact history, settlement patterns for the Honouliuli area and larger ‘Ewa Plain can be surmised. Synthesized with Cordy’s (1993) O‘ahu sociopolitical model, Beardsley (2001:III-8, III-9) summarizes the following settlement pattern for Honouliuli:

> ***Pre-AD 1000*** – During this period political organization of the islands consisted of small chiefdoms. Temporary habitations were located in resource rich areas. Permanent settlements were clustered around prime agricultural land; these prime agricultural lands were probably located in well-watered valleys. For the ‘Ewa Plain, this means that only temporary habitations should be found in the project area, located to exploit rich marine resource areas and possible to exploit bird populations. Permanent settlements might have been established in the Honouliuli floodplain.
>
> ***AD 1000 to 1300s*** – The political organization of the island coalesced into three independent districts: Greater ‘Ewa, Ko‘olau and Kona. Temporary settlements were established for the first time in inland garden areas, associated with dryland agriculture; permanent habitation expanded into new areas. For ‘Ewa, the Honouliuli floodplain would have been the focus of permanent habitation. Settlement in the project area focused on exploitation of marine resources, but was also associated with permanent inland settlement.
>
> ***AD 1400 to 1500s*** – Full development of class stratification occurred during this period, together with the unification of the entire island under one chief. Permanent habitations expanded in all areas; temporary habitations in inland garden areas were replaced by permanent habitations. For the project area, permanent habitations, possibly associated with rectangular enclosures, developed.

***AD 1600 to 1778*** – District chiefs fought for control over the resources of the islands. For ʻEwa, the population density was still concentrated on the irrigated Honouliuli Valley floodplain. Other population concentrations occurred around Pearl Harbor and at the base of the Waiʻanae Range. Scattered permanent habitation in the project area, possibly on a seasonal basis, or only in years of high rainfall, might have also occurred.

***Post-Contact*** – Scattered Hawaiian occupations continued across the ʻEwa Plain and in the project area until the mid-19th century. In the later historical period, populations were low and consisted of scattered families with habitation sites along the coast for marine exploitation and inland houselots with possible walled agricultural areas.

**Summary of Background Research**

An examination of traditional and historic land use for Honouliuli as demonstrated in moʻolelo, historic literature, and archaeological investigations, shows that this area was once a land rich in natural, as well as cultural resources. Moʻolelo and ʻōlelo noʻeau reveal a place blessed by the gods, abundant in natural resources of both land and sea. Known as an aliʻi stronghold, as well as a vacationing spot of the royalty, Honouliuli was an ahupuaʻa of importance. In the historic era, Honouliuli was a significant location for sugarcane and sisal cultivation, with the OR&L railroad running through the region connecting it with Honolulu. Kalaeloa was also chosen for the United States Coast and Geodetic Survey Magnetic Observatory, the ʻEwa Marine Corps Air Station, and later, Barbers Point Naval Air Station. The current project area lies on a portion of the Naval Air Station that was the location of a former jet engine test cell site.

Previous archaeological studies express the complexity of Hawaiian settlement of the ʻEwa Plain through the diversity and range of site types, which include modified sinkholes utilized for habitation, agriculture, and burial, religious sites such as heiau and koʻa, agricultural sites, walls, mounds, enclosures, trails, and iwi kūpuna. These were all found outside the project boundaries. Also found in Kalaeloa are historic resources associated with cattle ranching, sugar and sisal plantations, transportation, the military, and burial.

## ETHNOGRAPHIC SURVEY

Not all information can be found in the archives, in textbooks, or at the library. Rather, it is through the stories, knowledge and experiences of our kama‘āina and kūpuna, that hidden information is found. Through them we are able to better understand the past and plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and/or historic cultural resources and traditional cultural practices of the project area in Kalaeloa, ethnographic interviews were conducted with community members who are knowledgeable about the area.

### Methods

This Cultural Impact Assessment was conducted through a multi-phase process between January and April 2022. Guiding documents for this work include The Hawai‘i Environmental Council’s Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 (State of Hawai‘i). Personnel involved with this study include Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting, as well as Cathleen Dagher, BA and Gina McGuire, MS, Ethnographers.

Interviewees were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting or the landowners; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Three individuals participated in the current study. Mana‘o and ‘ike shared during these interviews are included in this report.

Due to the Covid-19 restrictive proclamations and location (one of the interviewees was living in Guam at the time of the interview), telephone or virtual interviews were substituted for in-person interviews. The interviews were taped using a digital recorder. During the interviews, each person was provided with a map or aerial photograph of the subject property, the Agreement to Participate (Appendix A), and Consent Form (Appendix B), and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the interviewee to answer in the manner that he or she was most comfortable. Follow-up questions were asked based on the interviewee‘s responses or to clarify what was said.

Transcription was completed by listening to recordings and typing what was said. A copy of the edited transcript was sent to each interviewee for review, along with the Transcript Release Form. The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document (Appendix C). When the forms were returned, transcripts were corrected to reflect any changes made by the interviewee.

Several potential interviewees were contacted, resulting in three interviews (Table 3). The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. Research topics include connections to the project lands, Kalaeloa history, the natural environment, archaeological sites and cultural practices, change through time, and concerns and recommendations for the project. Edited transcripts are presented in Appendices D–F. Supplemental information provided by John Bond is provided in Appendix G.

**Table 2. List of Individuals Contacted**

| Name and Connection | Method of Contact | Result of Contact |
|---|---|---|
| Shad Kane (Director, Kalaeloa Heritage and Legacy Foundation; Kapolei Hawaiian Civic Club) | Email | Completed a site visit. |
| Lynette Paglinawan (Cultural practitioner, kupuna, educator) | Email | Replied that she was not familiar with the area. |
| D. Ulukoa Duhaylonsod (Kumu hula, cultural practitioner, cultural descendant of Honouliuli) | Email, Videoconference | Completed a videoconference interview. |
| John Bond (President, Kanehili Cultural Hui, President) | Email, Telephone | Completed a telephone interview. |
| Mikiala Lidstone (Executive Director, Ulu A'e Learning Center) | Email, Mail | No reply. |
| Mana Caceres (OIBC 'Ewa District Representative; CEO of 'Ohana Kūpono Consulting) | Email, Telephone. | Completed a telephone interview. |
| Nettie Tiffany (Kahu, caretaker, of Lanikūhonua, cultural practitioner) | Email | Replied but did not schedule an interview. |
| Lance Holden (President, Ahahui Siwila Hawaii O Kapolei) | Email | No reply. |

## Interviewee Background

The following section presents background information for each interviewee, in their own words. This includes information on the interviewee's 'ohana and where the interviewee was born and raised. The interviewees are John Bond, Mana Caceres, and D. Ulukoa Duhaylonsod.

### John Bond

> I'm the president of Kanehili Cultural Hui, which is an organization founded by a Native Hawaiian cultural practitioner Michael Kumukauoha Lee, who was born in this area with relatives in 'Ewa. Kanehili Cultural Hui is named for the area which is currently Kanehili, Honouliuli, former MCS 'Ewa, the Barbers Point area.

### Mana Caceres

> [My] name is Mana Kaleilani Caceres. I was born in Orange County in California. My parents moved there right before I was born. After that I was raised in Washington State until I graduated from high school and moved back to Hawai'i. I went to UH Hilo, eventually graduated. Met my wife there and started our family in Hilo. I think in 2004 we moved to O'ahu. And we lived in Honouliuli since 2005, maybe. So we've been living in 'Ewa ever since.

### D. Ulukoa Duhaylonsod

> Aloha, my name is Dietrix John Ulukoa Duhaylonsod. I'm from Honokai Hale…My dad's family is from Kahuku and to an extent Damon Tract. Most of the siblings grew up there but when he was young, he moved to Damon Tract where the airport is. My mom is from Mākaha and also in the Leilani-School Street area of Kalihi…But she's rooted in Mākaha mostly.

I went to Mauka Lani Elementary, which is at the top of Makakilo Hill. And then back then the school bus would pick us up and take us to ʻIlima Intermediate in ʻEwa Beach and Campbell High School. I went to the University of Hawaiʻi, at Mānoa. Got a double degree in Anthropology and Ethnic Studies and a certificate in ʻŌlelo Hawaiʻi.

I'm a hula person, so the lens that I look through, the landscape, it's very significant. It's very significant. I look at the landscape and I know how Hiʻiaka traveled through the area and where she stopped and I know the same about Kamapuaʻa, where he lived and the places he visited and what he did, so the places you're talking about, the project area is within that landscape, which to me is a place of cultural significance even though a lot of it has been built over, it's still a place of cultural significance despite the changed environment.

### Topical Breakouts

The following sections are extended quotations from the interviews, organized by topic. Interviewees provided information on connections to the project lands, the history of Kalaeloa and adjacent lands, the natural environment, archaeological sites and cultural practices, and change through time. They also shared their concerns and recommendations for the proposed Honokea Kalaeloa Surf Village.

#### Connections to the Kalaeloa Area

[M]y mom and dad, they wanted to raise their family in the countryside so they decided to…build a new community there at Honokai Hale. So when they got the house, well when they got the lot, they would come every week to see, you know how far the house has got and there were no neighbors, just kiawe trees and a white coral road. No streetlights. It was country….This was early 1960-ish. So over 50 years ago. And there's been five generations of our immediate family that have lived a portion of their life there. [D. Ulukoa Duhaylonsod]

Yeah. So anyways that's where um…that's the place that has fed me and has raised my siblings and I. And till this day we still have a family house there. It's called the Corner Pocket. And we still gather there. [D. Ulukoa Duhaylonsod]

…I really loved my beach. I really loved the coastline where Koʻolina is at now. Kahe Point and Tracks. Those are our beaches. Those are like right next door. This was a little further away whereas the beaches where Koʻolina is at, those were walking distance. We knew all the trails. We knew all the old trails through Koʻolina. [D. Ulukoa Duhaylonsod]

…My wife's genealogy ties into some lines that were connected to the ʻEwa Moku and Honouliuli. Of course, that's long time ago ʻkine. My family's, not really involved in, but you know, just familiar with the place, especially where the project is. My grandfather was retired military, so…when we were in California, Washington, when we flew in to visit, we used to stay over there. You know where Barbers Point is? Go shopping, the commissary was over there, all that stuff. He also used to take us, I don't recall the names of the places back then, but I know we had to drive past the runways to get to some of the beaches. I'm not sure exactly where and my grandfather passed away and I can't ask him and I doubt if my grandmother remembers, the exact areas. But those kind of things, just recreational. [Mana Caceres]

Like I mentioned, my wife and kid's genealogy ties into ʻEwa. We have been involved in iwi kūpuna situations, maybe the past ten or so years, you know every once in a while when there's development going on, kind of in the same area as this new project. So that's kind of why we're familiar with that particular area. I'm not sure if you know the solar farm, that's the neighbors, it's kind of makai of Kalaeloa Heritage Park, I think. So kind of remembering the parcel, it's through those consultations, that we're able to become more

familiar with the places in ʻEwa. That was our first, kind of, introduction to kuleana in ʻEwa. At the time Uncle Shad Kane was the Oʻahu Island Burial Council rep for ʻEwa and then when he retired from that post that's when I applied and was appointed by the governor to sit in that same seat that Uncle Shad sat on. [Mana Caceres]

…I'm the president of Kanehili Cultural Hui, which is an organization founded by a Native Hawaiian cultural practitioner Michael Kumukauoha Lee, who was born in this area with relatives in ʻEwa. The family came from this area and has connections with Hawaiian royalty, which passed away and I don't want to go into great detail of who he's related to, but I used to write all kinds of legal documents and submittals for different projects, so I know a lot of his background and his certification documents and so forth…. I also talked to a lot of the ʻEwa villagers over the years. I recorded their oral histories. [John Bond]

So my claim to fame is somewhat unique in that I claim pretty extensive knowledge, Hawaiian knowledge, even though I'm not Native Hawaiian. I also have pretty extensive military knowledge because that's my primary area of historical interest is military history and I've read pretty much all the EA's and EIS's that's been produced out here to gain a pretty good knowledge of the area. Also based on what I've done, which is walk through the whole area on foot for years and years, probably for the past 10 to 12 years. Sometimes alone, sometimes with Mike Lee and maybe Tom Berg with a video camera to just really see all the stuff that's out here and see how much stuff was never recorded by the Tuggles even though they did the additional job for the Navy BRAC. [John Bond]

**History of Kalaeloa and Adjacent Lands**

…Kanehili was one of the plains of Ewa. I believe we can credit Hiʻiaka for naming Kanehili. It was used in some of her chants. [John Bond]

[The area was] recorded by a cartographer for the HMS Navy ship that came out here, which is another fantastic piece of snapshot evidence of what existed out here back in the ancient times. I mean right before, they arrived in 1825 and were able to do this probably hiking up into the hills of Makakilo to see it all. He doesn't describe walking through it but he probably did hike up the hills to look at stuff. So we have that wonderful snapshot and then of course we have just locations of Oneʻula and Kualakaʻi where people were known to live. I have read all of, pretty much all of the kūpuna histories that Kepā Maly collected from his relatives out here. The different family holdings and what people remembered as kids, walking on the beach and what they would see, how the water was, the trails, and all that stuff. [John Bond]

It teaches us a good lesson because when the first Westerners came to our corner of the island, they really dismissed it. They said you know, basically I'm paraphrasing, but they said, "There's no way people can thrive in this area. It's you know so desolate, so hot." Relatively speaking, yeah, if you look at a green area and you can see the stream flowing on land and whatnot, yeah, of course, but you should never discount or dismiss anything or anyone as being no good. We know that the community did thrive in that area. So for a time, there was just seasonal habitation, right. People would just go there seasonally. And why? To gather the plentiful and abundant and rich marine resources. That was why. And eventually as the population increased on Oʻahu then those temporary habitation sites became, in the Kalaeloa area, became permanent habitation sites. But even in the time of the temporary habitation sites, I mean um…so I talked about one thing already. Why would they even do it if it's hot? Well, because you had such a rich, rich marine area and there's more to it and I don't want to say everything [laughs]. But I will say it's backed by tradition and that's why it was such a special place. [D. Ulukoa Duhaylonsod]

…A lot of the ʻike that I have normally available I don't have on me at this moment. A lot of it comes from moʻolelo shared by Uncle Shad Kane, I don't know if you're familiar with the book he published a couple years ago, it's called Cultural Kapolei. That was just kind of a compilation of writings that he did over the years, like you know, letters to the editor

kind of thing. That's all in one book. It's a lot of moʻolelo that came from that, it's amazing. It talks about place names and all that. Another person that has close ties to that area and has a lot of moʻolelos is Kawika McKeague. Yeah, his moʻokūʻauhau is from the area also. So whenever we're in that area and he says a moʻolelo, I'm always learning from both of them. [Mana Caceres]

**The Natural Environment**

I do know in the ancient history also that when the power dynamics was as such, the aliʻi from Honolulu, from the Kona District, they would get a lot of tribute in the form of produce from the ʻEwa District. And an important way was just across the mouth of Pearl Harbor. You had canoes right, so you load up the canoes and send it across that small channel and it's there in Honolulu, and so forth. So yeah, the ʻEwa District and the Honouliuli Plain was a place of both land and marine resources. As you know Honouliuli stretches to the mountains too. [D. Ulukoa Duhaylonsod]

So thank goodness that the place [Barbers Point] is now open and we can actually visit. So, besides Barbers Point, we have another big disruption in the landscape and that's the Industrial Park, Campbell Industrial Park. I say Barbers Point was a disruption because it was totally off limits right, so it might as well not even exist. And then I say Campbell Industrial Park is a disruption because look at what they did. It's an industrial park, right. But what you see is, you have little pockets here and there that have survived that are beautiful examples of the unique landscape of our part of Oʻahu. And it was a very unique landscape. [D. Ulukoa Duhaylonsod]

…[I]n order to do that [have permanent habitation], what are you going to need?...They got food via the water, right. The marine resources. But yeah. The other thing is water, fresh water. So…if there's a lack of streams, then how can you survive? Well the way you survive is you gotta know where the water is. So what people don't realize is we have above-ground streams and we have underground streams. So those sinkholes was actually the key to life because those are the ways they were able to access the fresh water underneath, whether for drinking, which is a necessity, but also for bathing, you know after you jump in the water and you want to bathe. So you would need to know which sinkholes had access to water. For bathing but more importantly, which sinkholes had access to water for drinking. [D. Ulukoa Duhaylonsod]

So our Hawaiian ancestors knew which ones. When you said brackish, you still can collect water from springs that open up into the open ocean. Yeah, you know what I mean. Where there is brackish water, there is fresh water close by…The point I'm making is that water was there, you just have to know. And you're not going to know unless you're intimate with the land. And that's the kind of relationship our Hawaiian ancestors had with the area. That intimate relationship with the land where they knew where to get water. [D. Ulukoa Duhaylonsod]

But besides that, offshore you have everything. You have the fish from the pelagic fish to the reef fish. You have seaweeds, you have the wana, the crab. You have everything you can think of. They're all there. Those are the marine resources, you know besides salt. Sea salt. [D. Ulukoa Duhaylonsod]

…You know, I grew up seeing the salt forming all along the coastline, but from a commercial point of view, or what has been in modern history, the area where it really became a business was between Hau Bush and…actually closer to the entrance of Pearl Harbor. That area. They had a salt factory going on out there. But from a subsistence point of view, you know…if you don't have like a major Kailua population over there, you don't really need to modify anything so that we have salt. You just go out and collect. [D. Ulukoa Duhaylonsod]

Well, the [caves are] actually large holes in the ground that are bigger than normal sinkholes. There's a lot of sinkholes back there too. Very deep sinkholes. I've seen water in the sinkholes back there, so there's underground pools of water. You can hear them running after a big storm. The water takes about six hours, four hours to reach down there, but there's water running through there. [John Bond

I've got pictures of water in the sinkholes, but the caves are quite large. There's evidence, definitely that somebody had broken out stalactites, stalagmites of calcite, which is that white milky mineral that forms inside caves and inside large caves. So somebody went in there and chipped out the calcite cave hanging stuff and chipped it all up into pieces and there's a pile of them laying out there. [John Bond]

Some [sinkholes] were very deep. In fact my older brother, my older siblings, they remember some of the sinkholes near, closer to Honokai Hale where the harbor is at and some of them is like the favorite place of the Honokai Hale kids where they go swimming. And they call it the cave even though it was a sinkhole, but you know as kids you just call it, you know, a cave. [D. Ulukoa Duhaylonsod]

Yeah my brother will actually tell you, well you know how there's so many kids, so your older brother and kids his age will be swimming there and you'll say, "Well he got the fresh water so we're going to go swim in the ocean today." But there was enough of a water landscape that all the kids could go to and stay out of each other's area, you know. So yeah some [sinkholes] were pretty huge and some were smaller. [D. Ulukoa Duhaylonsod]

So in the sinkholes themselves they have ʻopae ʻula, which is the endangered red shrimp, right. There's at least two types…Yeah. They're in there naturally and also what we have learned in the last, say decade is that even though these holes have been covered, if you uncover them and let them breathe again, oh my God. The shrimp will come back. [D. Ulukoa Duhaylonsod]

The ʻopae ʻula shrimp are a rare native shrimp that's supposed to be on the endangered species list but for some reason, no one's ever done it. Early Hawaiians used the sinkholes as kind of like refrigerators because below ground it can get surprisingly cold. Actually they found places out here where you can find cold air coming out of some of the sinkholes. [John Bond]

It's because the sinkholes are connected to larger caverns that go all the way back up to the mountains…the sinkholes themselves were dark and shady. They were at least 10 to 15 degrees colder than the surrounding area. So Hawaiians knew all those tricks because obviously when you lived in those days without TV or internet or anything, you were very conscious of every little thing that happened. You know, just every little thing they were aware of. That's why it's so interesting to read these Hawaiian stories because you learn about things that you just go out and you never thought anybody would do that but that's what they did. [John Bond]

If I was home, I'd ask to visit because I would like to see what sinkholes are there. If sinkholes are there, that, number one, is 100% proof that you do have some of the original landscape. It's not all disturbed, right? It's been disturbed but the fact that you have a sinkhole there, it's the original landscape that was there one thousand, two thousand years ago. To me as a keiki o ka ʻāina, a child of the land, that's super important to me. Every single sinkhole that's still around is super important because in contrast, you have so many that have been filled over. [D. Ulukoa Duhaylonsod]

So we know Kanehili, where it is, and then there's Kaupeʻa, and then above that Puʻu o Kapolei and all that. The different plains. There's like five plains out here, but Kanehili was noted for its birds. It's where a lot of royal feathers, where ʻōʻō bird feathers were collected from. Like you used to have stories about how they collected the birds but they were careful not to kill them. They plucked the feathers off one of the birds and then they let them go. So that was Kanehili's claim to fame in ancient Hawaii. [John Bond]

But I'm sure there were things like ʻōʻōʻs and things they weren't killing, like other birds which were royal feather birds. But I have adopted a feeling of, I feel like I know very well what people were doing back there and living there. You know there's sinkholes with big giant ti leaves, ti plants. I've got pictures of those and you know the kupunas describe the holes being used to grow bananas and sweet potato and stuff like that. I've never seen myself, but there's a lot of evidence of people planting ancient stuff. Mike Lee identified a lot of plants. He said he had never seen these kinds of plants anywhere on Oʻahu and I've only seen plants like this on Maui. [John Bond]

Yeah I have pictures of him [Mike Lee] with some of the stuff. I would take pictures whenever we did find stuff. It starts with an "M" [Maiapilo, *Capparis sandwichiana*]. I can't remember the name. But it's kind of a pretty white flowery, kind of like an orchid almost, it's white. And of course we went down to the refuge areas where the, where some of the plants were actually being preserved down there. They were um, it's a Hawaiian word for blood. The ʻakoko [*Euphorbiaceae* sp.]. [John Bond]

**Archaeological Sites and Cultural Practices**

You know I've never myself seen the trails through there but Tuggle's early trail map shows all the trails and I do think the Tuggles do have a map showing the trails going through there. And I can send you that map too. [John Bond]

Yeah ʻcause when we start bringing up the trails…when I first moved out here I didn't know about all that stuff and I was like, what the hell are all the trails, but then I was able to go through the Tuggle reports and saw the maps and they have several trails going down either side of Coral Sea Road and they rate the trails as Categories A and B. [John Bond]

There was a trail that runs on the west side of Coral Sea that runs all the way down, which hooks up through Shad Kane's trail that runs down to Kalaeloa Heritage Park. But the primary trail that they show on there as the main trail runs down the east side of Coral Sea Road and I've seen a ton of stuff back there. [John Bond]

You know during COVID I saw remnants of the trails, but a lot of it has changed. The only reason I saw it was because, I don't know if you remember but no one was allowed to drive unless it was, you know you had to stay off the roads, stay home, remember that? I remember telling my family, "Well I guess I'll go down to the beach," and only as a kid I used to go walking to the beach. So here I am walking. Some of the trails are still there and some are not. It was, wow, you know, kind of weird reminiscing by myself, you know how it used to be. I would pause and I'd look. I'd pause and I'd look, so different, but to answer your question. Some of the trails are still there, some are not. [D. Ulukoa Duhaylonsod]

And probably ancient trails. You know, to really see an ancient trail you have to go back and look for stones, upright stones, upright coral flags or flags that were in the ground to see which stone was which. I'm sure you can get down there and see that. [John Bond]

They all used to talk about walking down to the beach along these trails and along the way they'd see caves. The skeletons that were in them. They'd run past those ʻcause in those days they weren't covered up. It was just wide open. [John Bond]

I've had ʻEwa villagers tell me that after heavy rains they would find bones washed out of the sinkholes. Hawaiian implements washed out…[John Bond]

The most immediate one [human burial], just in the vicinity is the solar farm one. I know there is a couple of burial sites that have been preserved as well as maybe, contemporary burial sites, not as close. I think, the other side, not in the immediate area. [Mana Caceres]

So from an archaeological point of view, the sinkholes also hold these very precious records, archaeological records of the past. You know, that you're not going to find otherwise because it's in the sinkhole. It's been preserved there. So, I think what I'm getting

at and what I'm leading to, which you'll probably ask later is the importance of really examining those sinkholes. [D. Ulukoa Duhaylonsod]

I did a site visit, kind of like across the street from the heritage park area. And Uncle Shad Kane was on that visit also. That was for another solar company, I think. And there's an area that he kind of explained as like a makahiki grounds, couple sites where there's traditional place to cook. You can't really make an imu over there 'cause of the ground but it almost looks like an oven kind of thing, that was kind of cool. A little bit closer to the property there was the iwi kūpuna, the burials. We see a lot of burials as well as just cultural sites inside of the, what do you call them, karst? The dips in the coral. So you see that a lot in the surrounding area so I'm curious to see what it looks like within this parcel. I'm not sure if it is, if you folks have done any surveys yet. [Mana Caceres]

Yeah, that's the types of the things we're always on the lookout is for the holes in the coral and the piles of rocks; sometimes underneath those will have something at the bottom of that. [Mana Caceres]

So from an archaeological point of view, well I mean I mentioned culturally, water, but for the sinkholes that did not have water, that was the number one place you would plant because of the moisture. You're sheltered from direct sunlight and so you know, you have these sinkholes that were used as gardens, right. In some cases the sinkholes were also used for burials because if…you don't have a lot of soil to dig, then you use the sinkhole as a burial, similar to a burial cave in other areas. So that's from the cultural point of view. From an archaeological point of view, we also realized from like the '70s that sinkholes were like the repositories for extinct faunal bones. You know, we find in Kalaeloa and the Barbers Point area we find water birds. You know. Some things like the Hawaiian eagle. Some things that no longer exist. [D. Ulukoa Duhaylonsod]

The answer is I don't think [the project would impact a place of cultural significance] but I'm not sure about it, for certain if there is or isn't…especially some of those areas are really overgrown with kiawe so a lot of sites are really hard to identify without first having cleared area. [Mana Caceres]

I go in the water all the time. My dad, my papa. My dad was an avid fisherman. My papa was an avid fishman and a really good diver. My dad and my papa they were all ocean people. They were kanaka o ke kai, people of the sea. They really loved the water and my dad liked to crab too. We crabbed a lot. [D. Ulukoa Duhaylonsod]

My papa, the way he learned to pick limu is the same time he learned to dive. Because when he was a little kid he grew up in Pukoli'i in West Maui and his grandpa, his dad wanted a specific type of limu. So my papa was a little kid and he'd have to hold on, hold his breath, hold onto his body, and then pick the right type of limu and come back up. And that's how he learned how to pick the limu. [D. Ulukoa Duhaylonsod]

Yeah into the coastal area. Limu and all that down there. I don't know if you've ever been to the beach. Have you ever been down to the far end past the Coast Guard Station, there's like a Navy recreation beach back there. Fisherman walk back there. [John Bond]

…Uncle Mike Lee used to always talk about, not so much anymore because of pollution and climate change, but you know, talk about the practice of collecting limu on the exposed coral at low tide at the beach. So he always used to say that that whole beach had limu. Not so much anymore but that's something that he spoke a lot about in this area. [Mana Caceres]

So the main cultural practice would be…subsistence gathering, which is mostly on the marine side. But I know there is a movement nowadays for people to reconnect with the old ways of visiting the landscape and acknowledging the mo'olelo and the ancestors that walked the land and the things that they did. I guess that's a way of saying again, I wouldn't discount a landscape that's quote, unquote "devoid" of rock shelters, of mounds, and

terraces, and say well, what's there. Because in the act of visiting and remembering, that's a cultural practice for a lot of the schools. To go out and to visit and to learn and to see. That's also an important part of teaching, you know, the next generation…Aunty Nettie over at Lanikūhonua used to say, there's a big difference in telling the kids there's a sinkhole as opposed to taking them there and saying this is how it looks. This is how the landscape looks with several sinkholes, as opposed to describing it. So, that in itself is a cultural practice to me, to be able to physically share it. To be able to have access to the sinkhole and say, "Let's try and grow things in them like they did in the old days." We haven't reached that yet, but I see it around the corner. [D. Ulukoa Duhaylonsod]

Well, you know, when you talk about intangible things like that, when our hālau goes out and goes to places and we chant and greet and say thank you and we say excuse me and we say please, these are all things that you might define as spiritual. These are intangible. I don't know if I'm walking there and I'm reconnecting with the land and there's sinkholes there or you guys are replanting native plants of the area, you know, we're going to be doing the same kinds of protocol as opposed to if it's just a building there. So you know, you can interpret it whichever way. You can say just the fact by allowing it to exist it's conducive to spiritual and cultural things and on the other side of the token, just the nature of destroying everything is not conducive. It halts. It halts it all. If you're going to just bulldoze the whole thing. The only chant I can do there is going to be a cry, a lamentation. Well, I mean you could still say aloha, but it's just not the same. Otherwise any other specific cultural practices, I cannot say because I don't know. Being that that place was fenced off for so long, I don't know if people went to that specific spot to get medicinal plants or to do a specific ceremony. I cannot say that people didn't at that spot because it's been off limits for such a long time. But I can say that these spots that are often overlooked are still special to people who are connected to the place. And they will acknowledge it culturally. It doesn't have to be this Diamond Head for us to remember it or even Kūkaniloko, which is very special. It's just the everyday natural landscape that culturally rooted people will still find significant and special. [D. Ulukoa Duhaylonsod]

This parcel is also in the Kepā Maly – HART Rail Honouliuli TCP called "Leina a ka‘uhane" spirit leaping place that starts from Āliamanu crater and crosses MCAS Ewa-NASBP. The spirits leaped from there with the assistance of their ‘aumakua. Those that didn't make it were stuck in the wiliwili grove sinkholes and caves of Kanehili and Kaupe‘a. Kepā Maly did a highly detailed report under an FTA federal TCP contract. [John Bond]

And you'll get the old Hawaiian stuff as well. In those days they weren't looking for Hawaiian stuff, so there's probably more artifacts to be found out there…I found a really good artifact when they were doing the Hunt KREP PV farm and it's clearly an ancient artifact. I took pictures of it and everything. Of course the Navy and Jeff Pantaleo is just a real big liar anyway, he claimed that it was nothing and it was just all natural. But I've got pictures of it, I can send it to you. I sent it to people and they say yeah. It would be identified probably as a bait thing for fisherman's bait or it could have been a thing for holding, for burning kukui nuts for going inside caves. Kind of like an ancient flashlight. [John Bond]

I've found a lot of round, very smooth round, basalt type rocks and some coral rocks. They're very, very heavy, perfectly round and that you know, the bigger ones could have been used as weapons during warfare, but the smaller ones could have been used to hunt birds because the Hawaiians were very good at slingshot. Well, a sling. A sling is a very good weapon actually. [John Bond]

Aloha Solar took about 40% of the property out of the development. They ended up preserving a whole bunch of the area because it was loaded with Hawaiian sites back there. Crash sites, planes and all kinds of things. [John Bond]

Along the perimeter, I have, years ago, I was able to with the permission of the airport, get to drive all around that area. Actually, with Tom Berg driving and Michael Lee. And we

went all through those parcels back there and we ended up extensively walking through ‘cause it has quite heavy overgrowth, but found a lot of stuff. Found a lot of military gun batteries, parts of a crash, F4 Phantom, but that’s not in this particular parcel you’re talking about. [John Bond]

Because people, or maybe the military dependents when the base was open or after the base was closed, there’s a lot of stuff to loot out of there. There used to be airplanes laying around out back there that people got to salvage. That’s why they pulled out all the engines. [John Bond]

The Marines were really heavy Coke drinkers in those days and they actually had machines out there, everywhere. So there’s recorded in the command’s histories about just massive amounts of Coke bottles that everybody had. So there’s a lot of stuff out there. I’m sure coins from Coke machines, I mean in the area where you guys are looking at. Because if they had any of that kind of revetment stuff going on, I’m sure they had tons of Coke machines, so you’d probably find anything from old quarters and dimes to bottle caps like they found in the ‘Ewa Field or old bottles lying around in the grass and all that stuff. [John Bond]

Well you know when they did the solar farm over on the west side of the base as the first part of DHHL’s thing, they went over there and they found that big pillbox. That’s another issue, but that’s now moved over by the airport. They found a pillbox from ‘Ewa Field and they found all kinds of bottles and military gear and stuff. So whenever we have a lot of military, Navy, Marines sitting around doing something, you’re going to find a lot of that stuff later. [John Bond]

There’s a gun battery in the parcel you’re talking about. We did drive by and you can see a gun battery back in there. It looks really well preserved. And I did look at it on Google Earth and it’s still there. I don’t know if you guys have been in there yet, but…[John Bond]

Yeah that was a heavily utilized area because it was right near the, the Navy had two half circle revetments, which I have photographs of from World War II. Where they, it looked like they maintained or maybe armed the planes in that area. So nearby a lot of engines were buried. [John Bond]

A group came in here and dug up all the engines, but yeah they probably, I’m sure there’s a lot of military stuff back in there because it would have been considered a key defensive area during the war. [John Bond]

…[Y]eah there would’ve been mostly the concrete gun batteries, which are typically, you know they’re kind of a square or U-shape. And then we have a concrete, what most people think is a pillbox, but it’s actually an engine shed. It’s an engine shed with a big concrete flat top. And also very likely it has, and what hopefully you guys will be looking for is possibly the fourth ‘Ewa Field pillbox. It could be laying around back there somewhere…They were extremely RARE and only four made. I have located three of them in Kalaeloa and I believe the fourth is likely on this parcel. They were portable pillboxes with hooks on the top. They were originally at MCAS Ewa by the main runway in 1942. I’ve found three of the four, but I’ve never found the fourth. But I always theorize that’s where it is. Right in your area. [John Bond]

Yeah ‘cause they originally had them around the runway at ‘Ewa Field and then as the war progressed around ‘43, they took ‘em all out. They took the four they had out to the four quadrants of the Navy airfield. So you’ll find one down in the far west, southwest side and it’s in excellent condition. There’s a really good battery back there in perfect condition. And they found the other one on the northwest quadrant when they were developing that solar farm project. That’s what got moved over to the airport, which is another issue in itself. And then Mike Lee and I, Tom Berg, found the third one on the southeast side of the Navy runway. It was the main, I forget…anyway. So there’s a gun battery back there. The

fourth quadrant would have been the one up where your project is. So it's really a likely chance that there is a concrete pillbox back there somewhere. [John Bond]

Yeah, you know there's a bunch of stuff laying around all over. There's a bunch of tools. This is in a different area, but down by the Coast Guard station on the left west side of the Coast Guard, they buried a huge amount of aircraft maintenance tools because apparently there was some concern. You're not supposed to lose all the excess surplus going out. For some reason they didn't want all these valuable tools getting in the hands of, God knows why, the civilians or somebody else. [John Bond]

And you know, if the archaeologists go back and do a good job, I'm sure they'll find a lot more stuff. Just like they did out on the west side for the other project. The more work, the more stuff you're going to find out there. [John Bond]

**Change Through Time**

…'Ewa used to flood heavily before they put up that drainage canal in the '60s or '70s I believe out here. When they built the 'Ewa Golf Course and all that stuff. [John Bond]

The west side got more torn up because that's where they put the Navy Air Station Barbers Point runways. Of course they concreted over all the engine cell area was just all poured with concrete so they pretty much just destroyed that. But you know, anything that wasn't concreted would have been military stuff back in there. [John Bond]

[B]y the time I came around we had neighbors, so because there were no stores close by, there's nothing. Really, there's nothing…So the whole neighborhood, the whole community really was one family. That's another place where the elders are dying. I really want to get all the stories of the old time families there. To share what it was like growing up there with no stores and you know, with no Koʻolina. If you think about where it's located. To think that it was all kiawe around there and with a boundary of sugarcane too that came so far, but you know being out there it was, it was a beautiful place growing up. [D. Ulukoa Duhaylonsod]

So where the fire station is at, that's where we went to elementary. Funny that when my oldest brother was a kid, the only school was Barbers Point Elementary because the base was there. So he went there and then as they started to build Honokai Hale and Makakilo they built Makakilo Elementary. So then he switched over to Makakilo Elementary, my other sister and my other older brother, they all went there. And Makakilo started to get so developed, they created the school at the top of Mauka Lani and said okay, all you guys from Honokai Hale, you go to Mauka Lani. So next thing you know when I came around, from kindergarten, my younger sister and…we all went to Mauka Lani. [D. Ulukoa Duhaylonsod]

That's the only elementary school I went to. And then they started building way at the top of the hill and they said okay, Honokai Hale, that top part is for Mauka Lani and so my younger brother transferred back down to Makakilo so they were all sent there and finally after everybody, everything was filled up, my youngest sister said you know what, Honokai Hale now goes to Barbers Point Elementary. So, funny how we made a big circle back. [D. Ulukoa Duhaylonsod]

Groceries? We'd either have to go to Nānākuli or we'd have to go to Waipahu. And these were the old stores. Nanakuli Supermarket and Waipahu was Big Way or Times… Kapolei did not exist. [D. Ulukoa Duhaylonsod]

…My earliest memories is me and my brother visiting my grandparents and then…getting access to Barbers Point, it's a military installation. Of course it's a lot of malihini, military malihini in there. That whole feel to it. And then being back here, its opened up, the military was gone already, and everything was kind of...so it went from this really restrictive place where you didn't really feel welcome to this place that was open but really run down, you

know, graffiti, you didn't feel safe there type of thing. And then that was kind of the feel of that place for a while. We didn't want to go through that area unless we absolutely had to 'kine. Even when there was a post office over there we used to dread having to drive over there. And then you know, slowly, you know, with the community associations, involvement, the parcels there, it started to get more clean. You can see that it's changing a little. In that area. You know on that road that goes all the way to the end, where those cabins are and stuff like that, I think they recently finished some utility work on the beach side. If you drive down there on the weekend, my family, we're gonna start buying some fishing poles and stuff like that 'cause the area seems to be more inviting. [Mana Caceres]

Yeah but growing up, the area we're talking about is by Barbers Point. That whole area was off limits. That was one of the biggest things. Striking things I remember because when we go to 'Ilima Intermediate, you know the first time I went to school, we'd have to go through the base. So, you know we're going through this gated place with somebody in uniform and it was very, it didn't feel like Hawai'i. It didn't make me feel comfortable. I mean even as a kid. It didn't feel threatening, but I was like, "What is this?" Because you could see the fences on two sides and then there's a guy, you could tell he's a guard and then we'd slow down and stop and they'd do the salute. As kids on the bus we'd joke and go, "Where we going?" So it was really weird. Anything within the fence line was, it felt like it wasn't Hawai'i. The whole landscape looked different. At least the places where the school bus would go through. [D. Ulukoa Duhaylonsod]

That was my growing up experience. It wasn't until 1999, with the base realignment, the closure, you know that's when we started to have access. Access there to our backyards…Prior to that I'd say I can count on one hand the times I went with somebody to the Navy Exchange or I just stayed in the car. My dad was a civil service worker, so we'd go on to go bowl, you know, but actually we went more often for bowling. I remember now. [D. Ulukoa Duhaylonsod]

So thank goodness that the place is now open and we can actually visit. So, besides Barbers Point, we have another big disruption in the landscape and that's the Industrial Park, Campbell Industrial Park. I say Barbers Point was a disruption because it was totally off limits right, so it might as well not even exist. And then I say Campbell Industrial Park is a disruption because look at what they did. It's an industrial park, right. But what you see is, you have little pockets here and there that have survived that are beautiful examples of the unique landscape of our part of O'ahu. And it was a very unique landscape. [D. Ulukoa Duhaylonsod]

But here's the interesting thing, when the military came and took over whatever they took over in the area, you know Kalaeloa and the adjacent areas, what is one of the first things they did? Well they covered all the sinkholes. Number one it's not conducive to what they want, you know. If you want to make a foundation for whatever you're building, just cover 'em all. And number two it's an eyesore. It's not, it's an eyesore, it's not beautiful. Right? Get rid of, just cover all of this, make it nice. What does, "Make it nice" mean when you got sinkholes? Cover it. So it's interesting how it's a very total opposite view of the sinkhole environment. On the one hand from the indigenous point of view, it's a part of the environment and it's actually the key to water, so you need to take care of this environment and the sinkholes in it. But on the very opposite 180 degree non-indigenous view, is that the sinkholes are an eyesore and they're an obstacle to progress. Progress is subjectively defined right. Progress is, "I need to have it all level and covered." So two very different approaches, opposite approaches, I need to emphasize, when dealing with the landscape. [D. Ulukoa Duhaylonsod]

### Concerns and Recommendations

So you know, when we heard the plans on the news, about this surf village, of course we saw the backlash, people trying to protest it, you know [saying], "We don't need a surf

thing when we can just surf at the beach," but then personally I see it as an alternative. I'm kind of excited for it…I thought the wave pool was just gonna be a small thing like the water park but then when I saw some videos of the new technology that they're using, you can actually put a surfboard on those waves. Not that I surf or anything. [Mana Caceres]

Yeah, well the good thing about the developments that we've been involved with in the recent years in that area, is that a lot of 'em are solar farms so it's a lot easier for them to redesign their layout, where the panels will be, so we're able to have them shift around the solar panels so that all of the cultural sites can be preserved in place and weren't impacted by those developments. I imagine that would be a little bit harder, just having to excavate for this project, a little bit harder to accomplish that if something was found on site. But you know, we always try to find some solution. The good thing about that area too, is there's a lot of space. It's not like in town where you've got one development property ten feet away from the next person's wall. [Mana Caceres]

I haven't heard anything from the residents that we know living there and we haven't heard any concerns. Since the military's left, I would think more people would be more open to have development in that area as long as it's done respectfully. [Mana Caceres]

I would hope that you folks could explore these sinkholes and really check them…In the past, what was done to the sinkholes, a lot of it was just covered. They were covered. So my thing is, I honestly, honestly believe that there's so much out there, but what we do as archaeologists is we look at the landscape and first of all we say there's no mounds, no terraces, whatever so there's nothing there. If there's sinkholes we kinda look in 'em and we can't see anything, but what I'm getting at is what would be the real pono thing to do is to do ground penetrating radar, which I know you guys won't do this, nobody would do this. But what I'm saying is to reopen the sinkholes that have not been bulldozed or jackhammered because they are still repositories as well and in the case of those places where the water was there, the 'opae 'ula came back so that's kind of like a lesson saying, "Never say that it's been covered and it's no good." You open it, 'opae 'ula come back, you open it and you might find other things. [D. Ulukoa Duhaylonsod]

I'm not being a stickler. I mean I'm not saying Keala Pono has to do it or G70 has to do it. I would like that to happen if it's feasible but I don't know if they would pay for this kind of…I don't know if people care….It's the approach we in Hawai'i have taken to sinkholes because we're so used to looking at large scale heiau and mounds and above ground features that nobody bothers to see the value of the sinkholes but that sinkhole was the key to survival in our area…[D. Ulukoa Duhaylonsod]

…[W]hat are in the sinkholes? You know? Do you discount it because it's a small sinkhole? Because you don't see a rock alignment around? Because you don't see a burial in it you discount it? Just like the first Westerners that came around they said, "Oh this isn't important." I would prefer that some effort would be taken into looking into the sinkholes and seeing if anything is there. You know? What if you do find another sea eagle there or something that hasn't been discovered. To find that kinds of things within the last 20 years, oh my God. The sinkholes are a hiding place. [D. Ulukoa Duhaylonsod]

So I would prefer that even if it's a small sinkhole that these things really be, like, I mean really investigated. When you find these things in an excavation you find them by sifting. You don't do it by only glancing into that sinkhole or one meter by one meter and saying, "Ah." But I understand that it's also, you know, I don't know how many hours have been budgeted to do that kind of work and I have to say, not just with Keala Pono, but the way SHPD approaches this, and I like the people at SHPD, I really do, but nobody until this day has really been a champion of the sinkholes. Actually there was one archaeologist and I saw his presentation at the Bishop Museum and at the end I asked, are you saying we should investigate all sinkholes and preserve the ones that are here? He said, "Oh yes!" [D. Ulukoa Duhaylonsod]

But as far as mitigation, what I would suggest is to really look at the landscape and like, I mean if you have sinkholes here and there. If it doesn't have to be destroyed, is there a way to use those pockets? To share some of the original landscape with the visitors or is it just gonna be a plastic…money generating thing? From an economic point of view I can see why this would be a non-issue, like who cares, but I care. So from a mitigation point of view, it would be really nice if they could leave a corner so that they're educating all the visitors that come. Have fun at this water park and all that, but you know, when you have lunch come in this little ancient Kalaeloa area, ancient Kualakaʻi area and have your lunch and see the sinkholes. You know, to have that educational opportunity sharing the natural beauty of the area. That would be a nice mitigation rather than just continuing the old way of, well it's just easier, let's bulldoze everything. Let's cover everything. Whether we need that square footage or not, let's just cover everything. Because it's, you know, it's easier for them to do. Just come with a tractor, just bulldoze everything. [D. Ulukoa Duhaylonsod]

Another mitigation thing would be to dedicate some of the activities there to teaching the visitors about the cultural aspect of surfing, of sliding on the waves, which is what it translates to, sliding on the waves. Um, and just the cultural significance and the history of it all. I do have two nephews that they descend from the Kahanamokus, one of their great-great grandpas is a brother to Duke Kahanamoku. So they could and they should. It's a really good opportunity to share how surfing started. And there's so much about surfing, so much cultural richness about surfing that you could share. I got people telling me that they thought this originated with the surfers in California [laughs]…But you got two ways of mitigation, of honoring our Hawaiian community there. One way is through the surfing thing and then the other way is keeping, reserving a part, you know, with the natural landscape and encouraging people to see the beauty. Because when people don't see the beauty in other places and other people, that's where the problem begins. You gotta teach people and encourage them to see the beauty in other places and other people than what you've been grown to view. [D. Ulukoa Duhaylonsod]

I cannot say I'm against the project. You know it's an economic thing. People got their reasons. If you got the money and you bought it, you cannot really fight against that. But it's just being conscientious of what you do, you know? I'm not trying to say you can't build, but just be conscientious. Check what's there. Really investigate what's there and then if you have natural sinkholes, my goodness, if you don't have to dig 'em up or, you know, destroy it with a jackhammer, then leave it. Especially, if I had the money, you know me, I like to keep as much landscape as possible. These little pockets, these little pockets here and there are really important. Especially someplace like Kapolei, the second city. Little pockets are super important because it's like little oases here and there that are showing. Even though they're not huge, if you have enough of 'em, it will give you a window of how it used to be. But if you destroy the few that you have left, you really just don't have an option. There's just nothing left. [D. Ulukoa Duhaylonsod]

Here's the other thing and it's not so much related to the culture thing. The only thing that kinda like gives me second thoughts is the question of what else are they going to do with the former Barbers Point and what I'm getting at is maybe a surf park is not the best plan. But it doesn't mean you shouldn't do it because it's not the best plan, but I mean there's a lot of other things you could be doing. But if I know that they're going to build a cultural center on the property somewhere or they're going to build, do other things that'll encourage cultural practitioners or encourage the teaching of the history of the area, if I know they're doing that somewhere else to a certain extent on the Barbers Point lands, then well, okay go build your surf park. But like if you're only building this plastic thing and then another…and then next thing you know you have no sense of place. You have no sense of Kalaeloa, Kualakaʻi, and West Honouliuli, and Kaupeʻa and Kanehili, and Hoakalei and Hilo One, and it's all built over and there's no sense of that place then I'm against it. Because the surf park is contributing to it. But by itself, I'm not against it. I understand why they want to do it but just, you know for me that's not the best use of that

parcel, but if you're addressing these other important things like other projects in the area, then I'm okay with it. You know, because I know you're making space for the cultural aspect of the area for other projects…[D. Ulukoa Duhaylonsod]

Yeah because if they don't plan on it now, what you'll end up having is one plastic thing after another and then all of a sudden, well, all the land's taken. It's too late. So I'm not saying don't make the surf park because that's not the best thing. It's not the best thing, but okay, I hope in the big scheme of things they make room for some natural landscape and other things. [D. Ulukoa Duhaylonsod]

Yeah. And I know right next door they have the Kalaeloa Heritage Park. And they might say well, what does it matter since they got the heritage park and that stuff. But whatever, I like sinkholes, so…[laughs] [D. Ulukoa Duhaylonsod]

[This is a] super culturally rich area. I've advocated many times that it should become a National Park because there's all kinds of caves back there, burial caves, it looks like maybe when they closed the base somebody went in there and put a bunch of rocks in some of the caves to keep people from looting them. [John Bond]

If they do what they show they're going to do, they're going to build parking lots and apparently develop the whole thing. It would absolutely impact all kinds of stuff. [John Bond]

…I'm not opposed to the project directly but it doesn't seem to me to be the right place. It's right by, you know, a major runway. The military is going to start using this area a lot more in the near future so you're going to have a lot of air traffic. A little later on, theoretically it's going to become a commercial airport, which it isn't now. So anyway, it's not a great place for that and again Haseko is building their own, somewhat similar project down there in a big dirty lagoon, which can never be connected to the ocean - at least not in the near future. [John Bond]

The Tuggle [archaeological] reports are kind of like Post-It notes and in some cases their sub-contractors did pretty much just drive by stuff because when you go through the area now there's just a whole lot more there. They weren't able to put it in their reports or maybe the Navy didn't want that stuff put in the reports. It could have also been that. They pretty much kept stuff out of there they didn't want to hear about… you know what the Navy does with a lot of their documents is they keep them in what's called draft form therefore they can claim that it doesn't exist and it cannot be FOIA'ed (Freedom of Information Act). [John Bond]

I believe we're going to have to do something like what Aloha Solar did which was to do an HAR277 preservation plan… Aloha Solar took about 40% of the property out of the development. They ended up preserving a whole bunch of the area because it was loaded with Hawaiian sites back there. Crash sites, planes and all kinds of things… So yeah, they're going to have to do a preservation plan. It's going to be…areas are going to have to be permanently preserved I believe. [John Bond]

**Site Visit with Uncle Shad Kane**

A site visit was conducted on January 28, 2022 to the project area and the adjacent Kalaeloa Heritage Park (Figure 14). In attendance were Uncle Shad Kane, Keala Pono Senior Archaeologist Steven Eminger, as well as several G70 staff. Uncle Shad was very supportive of the proposed Honokea Kalaeloa Surf Village. He noted that this area was traditionally a place for makaʻāinana habitation and that makahiki grounds are nearby to the southeast. He shared that agriculture was practiced in the sinkholes as well as along the river systems, and soil was brought in from the mauka regions for traditional agriculture. Uncle Shad also mentioned the Kualakaʻi Trail, which runs along Kaloʻi Gulch.

**Figure 14. Walking within the project area on a site visit with Uncle Shad Kane.**

**Summary of Ethnographic Survey**

The three interviewees have extensive knowledge about the Kalaeloa project lands and vicinity. One individual is a Kumu Hula and archaeologist who grew up near Kalaeloa and frequented the project vicinity as a child. Another is a cultural practitioner that is a resident of Kalaeloa and is the ʻEwa representative for the Oʻahu Island Burial Council (OIBC). The third interviewee has spent many years studying the area with the recently deceased Native Hawaiian cultural practitioner Kumu Michael Kumukauoha Lee. In addition, this interviewee has spent many years researching the history of the former Naval Air Station, Barbers Point. Both interviewees have conducted oral histories themselves in the Kalaeloa community.

The project area vicinity was an area with many natural resources. Interviewees noted both land and marine resources, as well as fresh water and brackish water. Native plants, birds, the endangered ʻopae ʻula shrimp, and extinct avifauna were mentioned. The interviewees agreed that sinkholes would likely be prevalent on the project lands, and that there are large caves on the ʻEwa Plain that contain fresh water.

The interviewees shared a strong awareness of the cultural and archaeological significance of the landscape and the naturally occurring sinkholes, which are present throughout the region. It was noted that the sinkholes on the ʻEwa Plain were traditionally used for agricultural purposes, sources of fresh water, and as interment sites for iwi kūpuna. The sinkholes also are known to contain the ʻopae ʻula as well as avifaunal remains of extinct species. The interviewees also spoke of the trails in the area, a traditional cooking site, and makahiki grounds, as well as military-related historic sites such as gun batteries, revetments, engines, engine sheds, plane crash sites, and pillboxes. Both traditional and historic artifacts were also mentioned, including either a bait cup or kukui nut lamp, weapons, tools, bottles, and coins. Within the project area itself, the interviewees expect that sinkholes, a gun battery, and one of four ʻEwa Field Pillboxes might be found.

Cultural practices identified during the interviews include the gathering of marine resources in coastal Kalaeloa, through fishing, diving, crabbing, and collecting limu. Sea salt was also noted as a coastal resource, and a former salt factory was located closer to the entrance of Pearl Harbor. The

project region was known for its birds in the past, and artifacts that could be related to hunting birds suggest that this activity may have been practiced in the region. The area also has additional spiritual significance, as one of the interviewees identified a "leina a ka'uhane" or "a leaping place of souls" (Kamakau 1987:47) that begins at "Āliamanu crater and crosses the MCAS Ewa-NASBP" (John Bond). According to Pukui et al. (1974:131), "ghosts were thought to leap to the nether world" from these sites. Other spiritual practices were noted during the interviews, such as chanting and greeting, as well as visiting the landscape to reconnect to old ways. It was noted that because the area had been off-limits for a long time, it is possible that there were cultural practices carried out there before military use of the land, that are no longer known.

Several of the community members consulted view the proposed surf village as a positive alternative for the area, as long as it is done in a pono way. The interviewees voiced their concerns and recommendations both in general and specifically for the project. Some general concerns are the continued development of Barbers Point, with fewer areas being left as natural landscapes; that some of the archaeology of the area has not been thorough; and that Navy documents are difficult to access to obtain information. More specific concerns raised are that the development will impact natural and cultural resources and that the selected location is not the right place for the surf village. Many of the interviewees' recommendations focused on the sinkholes: 1) to explore the sinkholes thoroughly to look for natural and cultural remains; 2) to investigate even small sinkholes, filled-in sinkholes, and those that do not appear culturally modified; 3) to utilize Ground Penetrating Radar (GPR) to study the filled-in sinkholes; and 4) if sinkholes do not have to be destroyed, then to leave them in place. Other recommendations are to conduct more thorough archaeology, prepare a preservation plan for the study area, to create a National Park in the region, and if this surf village will be built, then other parts of Barbers Point should be preserved in their natural state. One interviewee suggested that a part of the project area's original landscape be saved to showcase the natural beauty and sinkholes so that visitors of the surf park can learn about and enjoy these unique features. Another interviewee referenced nearby solar projects as an example where layouts were redesigned to preserve cultural sites. And finally, it was recommended to teach visitors about the cultural significance and history of surfing in Hawai'i as part of the surf village.

## SUMMARY AND RECOMMENDATIONS

An examination of traditional and historic land use for Honouliuli as demonstrated in moʻolelo, historic literature, and archaeological investigations, shows that this area was once a land rich in natural, as well as cultural resources. Moʻolelo and ʻōlelo noʻeau reveal a place abundant in natural resources of both land and sea. Known as an aliʻi stronghold, as well as a vacationing spot of the royalty, Honouliuli was an ahupuaʻa of importance. In the historic era, Honouliuli was a significant location for sugarcane and sisal cultivation, with the OR&L railroad running through the region connecting it with Honolulu. Kalaeloa was also chosen for the United States Coast and Geodetic Survey Magnetic Observatory, the ʻEwa Marine Corps Air Station, and later, Barbers Point Naval Air Station. The current project area lies on a portion of the Naval Air Station that was the location of a former jet engine test cell site.

Previous archaeological studies express the complexity of Hawaiian settlement of the ʻEwa Plain through the diversity and range of site types, which include modified sinkholes utilized for agriculture and burial purposes, as well as religious sites such as heiau and koʻa. Habitation, agricultural sites, walls, mounds, enclosures, trails, and iwi kūpuna have also been identified. Historic resources identified in Kalaeloa are associated with cattle ranching, sugar and sisal plantations, transportation, the military, and burial. No previously-identified traditional or historic archaeological sites are known for the project area itself.

### Cultural Resources, Practices, and Beliefs Identified

Archival research and ethnographic interviews compiled for the current study reveal that Kalaeloa is a culturally rich area. The ʻEwa Plain is known to contain numerous modified and unmodified sinkholes which were traditionally used for agricultural purposes, sources of fresh water, and as interment sites for iwi kūpuna. The sinkholes also are known to contain the ʻopae ʻula as well as avifaunal remains of extinct species. Trails were also known for the area, a traditional cooking site, and makahiki grounds, as well as military-related historic sites such as gun batteries, revetments, engines, engine sheds, plane crash sites, and pillboxes. Within the project area itself, the interviewees expect that sinkholes, a gun battery, and one of four ʻEwa Field Pillboxes might be found.

With regard to cultural practices and beliefs, the gathering of marine resources in coastal Kalaeloa was important, through fishing, diving, crabbing, and collecting limu. Other practices of the region include collecting salt, bird hunting, chanting and greeting, as well as visiting the landscape to reconnect to old ways. One interviewee identified a leina a kaʻuhane that stretches from Āliamanu crater and extends through the ʻEwa Plain. Another interviewee noted that because the area had been off-limits for a long time, it is possible that there were cultural practices carried out there before military use of the land, that are no longer known.

### Potential Effects of the Proposed Project

The proposed project has the potential to affect natural and cultural resources located within the study area as well as affect natural resources of the vicinity and the general landscape. Awareness of this should be at the forefront to prevent any adverse effects from occurring as a result of the project. The project is not expected to block access to traditional gathering places or fishing grounds.

### Confidential Information Withheld

During the course of researching the present report and conducting the ethnographic survey program, one of the interviewees did request that sensitive information be withheld in confidentiality. This information was not recorded during the interview and is therefore not included in the transcripts.

**Conflicting Information**

No conflicting information was obvious in analyzing the ethnographic interviews. On the contrary, a number of themes were repeated and information was generally confirmed by independent sources. The interviewees both emphasized the cultural significance of the area.

**Recommendations/Mitigations**

Several of the community members consulted view the proposed surf village as a positive alternative for the area, although concerns were voiced for the project and in general for the region. Some general concerns are the continued development of Barbers Point, with fewer areas being left as natural landscapes; that some of the archaeology of the area has not been thorough; and that Navy documents are difficult to access to obtain information. More specific concerns are that the development will impact natural and cultural resources and that the selected location is not the right place for the surf village. Recommendations and mitigations for the project include the following:

- conduct thorough archaeology for the project
- explore sinkholes to look for natural and cultural remains
- investigate even small sinkholes, filled-in sinkholes and those that do not appear culturally modified
- conduct GPR for filled-in sinkholes
- prepare a preservation plan for cultural resources of the study area
- save a part of the natural landscape to showcase the natural beauty and sinkholes
- if sinkholes do not have to be destroyed, then leave them in place
- find a solution to lessen the impact on cultural resources
- if this surf park will be built, then save other parts of Barbers Point
- teach visitors about the cultural significance and history of surfing
- create a National Park in the region

**Summary and Conclusion**

In sum, background research and oral history interviews identified archaeological resources within the project area and on the wider ʻEwa Plain. An archaeological inventory survey is recommended to determine if any surface or subsurface cultural resources remain on the property with special care to look out for sinkholes, iwi kūpuna, and historic military sites. A biological survey is recommended to identify native plants that might occur on the project site. The community should be kept informed on the construction plans, and their concerns and recommendations should be considered during all phases of the proposed work. The project lands are clearly significant in both the past and present.

## GLOSSARY

**ahupua‘a** Traditional Hawaiian land division usually extending from the uplands to the sea.

**‘āina** Land.

**‘akoko** Endemic shrubs and trees of *Euphorbia* spp., the sap of which was made into a paint for canoes in traditional Hawai‘i.

**aku** The bonito or skipjack (*Katsuwonus pelamis*), a prized eating fish.

**akule** Big-eyed or Goggled-eyed scad fish (*Trachurops crumenophthalmus*).

**ali‘i** Chief, chiefess, monarch.

**‘ama‘ama** The mullet, or *Mugil cephalus*, a prized indigenous fish.

**‘aumakua** Family or personal gods. The plural form of the word is ‘aumākua.

**‘awa** The shrub *Piper methysticum*, or kava, the root of which was used as a ceremonial drink throughout the Pacific.

**banana** The mai‘a, or *Musa* sp., whose fruit was eaten and leaves used traditionally as a wrapping for cooking food in earth ovens.

**hālau** Meeting house for hula instruction or long house for canoes.

**‘ike** To see, know, feel; knowledge, awareness, understanding.

**heiau** Place of worship and ritual in traditional Hawai‘i.

**iwi** Bone.

**Kahiki** A far away land, sometimes refers to Tahiti.

**kalo** The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.

**kama‘āina** Native-born.

**Kanaloa** A major god, typically associated with Kāne.

**Kāne** The leading of the traditional Hawaiian deities.

**kia‘i** Guard, caretaker; to watch or guard; to overlook, as a bluff.

**kiawe** The algarroba tree, *Prosopis* sp., a legume from tropical America, first planted in 1828 in Hawai‘i.

**ko‘a** Fishing shrine.

**koa haole** The small tree *Leucaena glauca*, historically-introduced to Hawai‘i.

**konohiki** The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.

**kukui** The candlenut tree, or *Aleurites moluccana*, the nuts of which were eaten as a relish and used for lamp fuel in traditional times.

**kuleana** Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.

**kumu hula** Hula teacher/master.

**kupekala** A bivalve of Pearl Harbor, possibly *Chama* spp.

**kupua** Demigod, hero, or supernatural being below the level of a full-fledged deity.

**kupuna** Grandparent, ancestor; kūpuna is the plural form.

**lehua** The native tree *Metrosideros polymorpha*, the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in musical instruments.

**leina** To leap or spring. Leina ka ʻuhane or leina a ke akua were places where spirits leapt into the nether world.

**limu** Refers to all sea plants, such as algae and edible seaweed.

**loʻi, loʻi kalo** An irrigated terrace or set of terraces for the cultivation of taro.

**loko, loko iʻa** Pond, lake, pool.

**lua** The ancient style of fighting involving the breaking of bones, dislocation of joints, and inflicting pain by applying pressure to nerve centers.

**mahamoe** Sleek, as a plump animal, attractive; smooth; also the name of an edible bivalve.

**Māhele** The 1848 division of land.

**maiʻa** The banana, or *Musa* sp., whose fruit was eaten and leaves used traditionally as a wrapping for cooking food in earth ovens.

**maiapilo** *Capparis sandwichiana*, a shrub with vine-like branches that is part of the caper family.

**makaʻāinana** Common people, or populace; translates to "people that attend the land."

**makahiki** A traditional Hawaiian festival starting in mid-October. The festival lasted for approximately four months, during which time there was a kapu on war.

**māmaki** *Piptarus spp.*, a small native tree. Fiber from its bark was used to make a kind of coarse tapa. Sometimes spelled mamake in old texts.

**manaʻo** Thoughts, opinions, ideas.

**maʻo** *Gossypium sandvicense*, or native cotton, a shrub in the hibiscus family that bears yellow flowers and seed cases containing brown cotton.

**mauka** Inland, upland, toward the mountain.

**mele** Song, chant, or poem.

**mōʻī** King.

**moku** District, island.

**moʻolelo** A story, myth, history, tradition, legend, or record.

**nahawele** Bivalves of the family *Isognomonidae* or *Brachiodontes*, the purse shell and mussel, respectively.

**nehu** The anchovy, *Stolephorus purpureus*, used for eating and as a chum for bonito.

**nuku** Beak, snout, tip, end; spout, beak of a pitcher; mouth or entrance, as of a harbor, river, or mountain pass or gap.

**ʻohana** Family.

| | |
|---|---|
| **ʻōkupe** | A method of digging holes using a stick, to prod the earth aside, as for taro; to stumble or trip; err or go astray morally; the name for the bivalve *Spondylus tenebrosus*. |
| **ʻōlelo Hawaiʻi** | Hawaiian language, to speak Hawaiian. |
| **oli** | Chant. |
| **olonā** | The native plant *Touchardia latifolia*, traditionally used for making cordage. |
| **ʻōʻō** | *Moho nobilis*, the extinct black honey eater. Its black and yellow feathers were used in featherwork. |
| **ʻōpae** | Shrimp. |
| **ʻōpaeʻula** | Red shrimp. |
| **ʻowāʻowaka** | A bivalve, possibly of the family *Isognomonidae*. |
| **pāpaʻi** | General term for crabs. |
| **pāpaua** | The clam *Isognomon*, a bivalve. |
| **pipi** | *Pinctada radiata*, the Hawaiian Pearl Oyster. In songs this is referred to as the *iʻa hāmau leo o ʻEwa*, or ʻEwa's silent sea creature, as it was believed that speaking would cause a breeze to ripple the ocean and scare the *pipi*. |
| **pono** | Correct, proper, good. |
| **post-Contact** | After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew. |
| **pre-Contact** | Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew. |
| **puʻuone** | Pond near the seashore, as at the end of a stream. |
| **ti (kī)** | The plant *Cordyline terminalis*, whose leaves were traditionally used in house thatching, raincoats, sandals, whistles, and as a wrapping for food. |
| **uhi** | The yam *Dioscorea alata*, commonly grown for food. |
| **ʻulu** | The Polynesian-introduced tree *Artocarpus altilis*, or breadfruit. |
| **wana** | Sea urchin, such as *Diadema paucispinum* and *Echinothrix diadema*; some were considered ʻaumākua in traditional Hawaiʻi. |
| **wao** | A general term for inland areas, usually forested and uninhabited. |
| **wauke** | The paper mulberry, or *Broussonetia papyrifera*, which was made into tapa cloth in traditional Hawaiʻi. |
| **wiliwili** | The tree *Erythrina sandwicensis*, whose light weight wood was used for surfboards, canoe outriggers, and net floats in ancient times. |

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## APPENDIX A: AGREEMENT TO PARTICIPATE

## Agreement to Participate in the Cultural Impact Assessment for the Honokea Surf Village Project
## Cathleen Dagher, Ethnographer, Keala Pono Archaeological Consulting

You are invited to participate in a Cultural Impact Assessment (CIA) for the Honokea Surf Village project on the island of Oʻahu (herein referred to as "the Project"). The project area is located on TMK: (1) 9-1-013:068 in Kalaeloa, Oʻahu, on former Barbers Point Naval Air Station lands. The Assessment is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, on behalf of G70. The ethnographer will explain the purpose of the Project, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Project is written below. Feel free to ask the ethnographer questions if the Project or procedures need further clarification. If you decide to participate in the Project, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

### Description of the Project

This CIA is being conducted to collect information about the Project in Kalaeloa, through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, moʻolelo, mele, or oli associated with this area. The goal of this Project is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices in properties on the current subject properties. This Assessment will also attempt to identify any affects that the proposed development may have on cultural resources present, or once present within the Project area.

### Procedures

After agreeing to participate in the Project and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

### Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Project may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

### Benefits

This Project will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

**Confidentiality**

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in Project material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity, you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection, and note it on the attached Consent Form.

**Refusal/Withdrawal**

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.

## APPENDIX B: CONSENT FORM

**Consent Form**

I, _____, am a participant in the Cultural Impact Assessment for the Honokea Surf Village (herein referred to as "Project"). I understand that the purpose of the Project is to conduct oral history interviews with individuals knowledgeable about the subject property and surrounding area of Kalaeloa on O'ahu Island. I understand that Keala Pono Archaeological Consulting and/or G70 will retain the product of my participation (digital recording, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

_____ I hereby grant to Keala Pono and G70 ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

_____ I also grant to Keala Pono and G70 my consent for any photographs provided by me or taken of me in the course of my participation in the Project to be used, published, and copied by Keala Pono and G70 and its assignees in any medium for purposes of the Project.

_____ I agree that Keala Pono and G70 may use my name, photographic image, biographical information, statements, and voice reproduction for this Project without further approval on my part.

_____ If transcriptions are to be included in the report, I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after two weeks from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Project, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

| **Consultant Signature** | **Date** |
|---|---|
| **Print Name** | **Phone** |
| **Address** | |

**Thank you for participating in this valuable study.**

## APPENDIX C: TRANSCRIPT RELEASE

**Transcript Release**

I, _____, am a participant in the Cultural Impact Assessment for the Honokea Surf Village Project (herein referred to as "Project") and was interviewed for the Assessment. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading "CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS."

I agree that Keala Pono Archaeological Consulting and/or G70 may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading "OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."

**CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:**

**OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:**

| | |
|---|---|
| **Consultant Signature** | **Date** |
| **Print Name** | **Phone** |
| **Address** | |

## APPENDIX D: INTERVIEW WITH JOHN BOND

**TALKING STORY WITH JOHN BOND (JB)**

Ethnographer: Cathleen Dagher (CD)
Date: 2/15/2022

CD: So this is February 15, 2022, Tuesday and in about two minutes I'm going to be calling John Bond to discuss the Honokea, Kalaeloa project…Due to the Coronavirus this is not going to be an in-person interview, it will be conducted over the phone.

CD: Well let's start off. I know you know a lot about the Kalaeloa area, so let's just start with you and your relationship with that area.

JB: Okay, well I'm the president of Kanehili Cultural Hui, which is an organization founded by a Native Hawaiian cultural practitioner Michael Kumukauoha Lee, who was born in this area with relatives in ʻEwa. The family came from this area and has connections with Hawaiian royalty, which passed away and I don't want to go into great detail of who he's related to, but I used to write all kinds of legal documents and submittals for different projects, so I know a lot of his background and his certification documents and so forth. Anyway, Kanehili Cultural Hui is named for the area which is currently Kanehili Honouliuli, former MCS ʻEwa, the Barbers Point area.

CD: Oh okay. Was that the ʻili name?

JB: No the ʻili were usually smaller. You know like Pualoa or something like that. These were all larger geographic names. Kanehili was one of the plains of Ewa. I believe we can credit Hiʻiaka for naming Kanehili. It was used in some of her chants.

CD: Oh okay.

JB: So we know Kanehili, where it is, and then there's Kaupeʻa, and then above that Puʻu o Kapolei and all that. The different plains. There's like five plains out here, but Kanehili was noted for its birds. It's where a lot of royal feathers, where ʻōʻō bird feathers were collected from. Like you used to have stories about how they collected the birds but they were careful not to kill them. They plucked the feathers off one of the birds and then they let them go. So that was Kanehili's claim to fame in ancient Hawaii.

And also the lowland trails, which run through…recorded by a cartographer for the HMS Navy ship that came out here, which is another fantastic piece of snapshot evidence of what existed out here back in the ancient times. I mean right before, they arrived in 1825 and were able to do this probably hiking up into the hills of Makakilo to see it all. He doesn't describe walking through it but he probably did hike up the hills to look at stuff. So we have that wonderful snapshot and then of course we have just locations of Oneʻula and Kualakaʻi where people were known to live. I have read all of, pretty much all of the kūpuna histories that Kepā Maly collected from his relatives out here. The different family holdings and what people remembered as kids, walking on the beach and what they would see, how the water was, the trails, and all that stuff. I also talked to a lot of the ʻEwa villagers over the years. I recorded their oral histories. They all used to talk about walking down to the beach along these trails and along the way they'd see caves. The skeletons that were in them. They'd run past those ʻcause in those days they weren't covered up. It was just wide open.

CD: Wow.

JB: I've had ʻEwa villagers tell me that after heavy rains they would find bones washed out of the sinkholes. Hawaiian implements washed out because ʻEwa used to flood heavily before they put up that drainage canal in the ʻ60s or ʻ70s I believe out here. When they built the ʻEwa Golf Course and all that stuff. So my claim to fame is somewhat unique in that I claim pretty extensive knowledge, Hawaiian knowledge, even though I'm not Native Hawaiian. I also have pretty extensive military knowledge because that's my primary area of historical interest is military history and I've read pretty much all the EA's and EIS's that's been produced out here to gain a pretty good knowledge of the area. Also based on what I've done, which is walk through the whole area on foot for years and years, probably for the past 10 to 12 years. Sometimes alone, sometimes with Mike Lee and maybe Tom Berg with a video camera to just really see all the stuff that's out here and see how much stuff was never recorded by the Tuggles even though they did the additional job for the Navy BRAC.

The Tuggle reports are kind of like Post-It notes and in some cases their sub-contractors did pretty much just drive by stuff because when you go through the area now there's just a whole lot more there. They weren't able to put it in their reports or maybe the Navy didn't want that stuff put in the reports. It could have also been that. They pretty much kept stuff out of there they didn't want to hear about. There is a good report that I have a copy of, theoretically, it's similarly restricted but archaeologists can get a copy and it includes a lot of Kepā Maly's stuff but it's about 20 megabit. TCPs of, all of the TCPs, including Lualualei and everywhere else but it gets a lot into this area, the Kanehili area. But even the Air Station at Barbers Point, it was done as a preliminary, before the base was closed, report and then they later contracted someone and Kepā Maly to do a lot more.

CD: Is that public information? Is that available?

JB: It's not public. It is restricted and you know what the Navy does with a lot of their documents is they keep them in what's called draft form therefore they can claim that it doesn't exist and it cannot be FOIA'ed. (Freedom of Information Act). But I was able through my connections to get copies of various documents including the IARII people. The Tuggle group that's based out here.

CD: Oh yeah. The International Archaeological Research Institute? Those guys?

JB: Yeah.

CD: Okay.

JB: If you're an archaeologist you should be able to get a copy of just about all of these documents.

CD: Yeah. I have access to the Tuggles. I just didn't know about the TCP reports.

JB: Yeah that's a good…There's some good oral histories in there and it was done many years ago. A lot of these people are just gone now, so you got a lot of really early kūpuna stuff. People that have all passed away and that's just wonderful stuff to read. Let's see, what else. Another document, which is a large overview of the ʻEwa Plain is, the Tuggles did, again it's a similarly restricted document, but it's called the Synthesis of the ʻEwa Plain and it should be turned into a book of the ʻEwa Plain because it's just loaded with a lot (of history.) It's really the best collection of history from ancient times. In fact, I'm working on my own book, which I'm going to include parts of it. From the ancient times to the military period, the Tuggles put it all together in this several hundred page document. Which, if you ever have time to read it, I've never actually read the whole thing. It's so huge. It's just, you know, I believe most of the archaeology firms have

probably borrowed some stuff from it to create the usual spiels in EA's and EIS's about what Hi'iaka said or what somebody else said.

So you know, my other conclusion about this, I think I already said in the emails is that I'm not opposed to the project directly but it doesn't seem to me to be the right place. It's right by, you know, a major runway. The military is going to start using this area a lot more in the near future so you're going to have a lot of air traffic. A little later on, theoretically it's going to become a commercial airport, which it isn't now. So anyway, it's not a great place for that and again Haseko is building their own, somewhat similar project down there in a big dirty lagoon, which can never be connected to the ocean - at least not in the near future.

CD: Huh. Okay.

JB: Along the perimeter, I have, years ago, I was able to with the permission of the airport, get to drive all around that area. Actually, with Tom Berg driving and Michael Lee. And we went all through those parcels back there and we ended up extensively walking through 'cause it has quite heavy overgrowth, but found a lot of stuff. Found a lot of military gun batteries, parts of a crash, F4 Phantom, but that's not in this particular parcel you're talking about.

CD: Yeah.

JB: There's a gun battery in the parcel you're talking about. We did drive by and you can see a gun battery back in there. It looks really well preserved. And I did look at it on Google Earth and it's still there. I don't know if you guys have been in there yet, but…

CD: Oh. We did a recon, I'm not sure when, but they found some sites. Most of the identified features were military but they did find some sinkholes and a possible C-shape, which could be, you know military or traditional.

JB: Yeah that was a heavily utilized area because it was right near the, the Navy had two half circle revetments, which I have photographs of from World War II. Where they, it looked like they maintained or maybe armed the planes in that area. So nearby a lot of engines were buried. A group came in here and dug up all the engines, but yeah they probably, I'm sure there's a lot of military stuff back in there because it would have been considered a key defensive area during the war.

CD: To protect the runway? In that sense?

JB: Well because they had all the planes there and you know that concreted over engine cell test site. So they would have heavily guarded all that since it was considered to be critical to keeping the airplanes flying during the war, so they had a lot of military stuff in that area.

CD: Oh I see. What about trails? Are there traditional trails through there?

JB: You know I've never myself seen the trails through there but Tuggle's early trail map shows all the trails and I do think the Tuggles do have a map showing the trails going through there. And I can send you that map too.

CD: Oh, I would love it if you did. I think you've sent me them in the past but I don't know if I still have those copies.

JB: Yeah ‘cause when we start bringing up the trails, I of course, when I first moved out here I didn’t know about all that stuff and I was like, what the hell are all the trails, but then I was able to go through the Tuggle reports and saw the maps and they have several trails going down either side of Coral Sea Road and they rate the trails as Categories A and B.

CD: Oh, Apple’s A and B?

JB: There was a trail that runs on the west side of Coral Sea that runs all the way down, which hooks up through Shad Kane’s trail that runs down to Kalaeloa Heritage Park. But the primary trail that they show on there as the main trail runs down the east side of Coral Sea Road and I’ve seen a ton of stuff back there.

CD: Oh is that right?

JB: Super culturally rich area and I’ve advocated many times that it should become a National Park because there’s all kinds of caves back there, burial caves, it looks like maybe when they closed the base somebody went in there and put a bunch of rocks in some of the caves to keep people from looting them.

CD: So these are above ground caves? These aren’t sinkholes? These are above ground caves?

JB: Well, they’re actually large holes in the ground that are bigger than normal sinkholes. There’s a lot of sinkholes back there too. Very deep sinkholes. I’ve seen water in the sinkholes back there, so there’s underground pools of water. You can hear them running after a big storm. The water takes about six hours, four hours to reach down there, but there’s water running through there.

CD: Wow.

JB: I’ve got pictures of water in the sinkholes, but the caves are quite large. There’s evidence, definitely that somebody had broken out stalactites, stalagmites of calcite, which is that white milky mineral that forms inside caves and inside large caves. So somebody went in there and chipped out the calcite cave hanging stuff and chipped it all up into pieces and there’s a pile of them laying out there.

CD: Huh, why would they do that?

JB: Because people, or maybe the military dependents when the base was open or after the base was closed, there’s a lot of stuff to loot out of there. There used to be airplanes laying around out back there that people got to salvage. That’s why they pulled out all the engines.

CD: Oh I see.

JB: There were people back there, I know somebody that was a big bottle collector and it was just loaded with all kinds of rare bottles. I have some World War II Coke bottles myself that I found back there.

CD: Wow.

JB: You know, really small, early type Coke bottles that are really quite small. The Marines were really heavy Coke drinkers in those days and they actually had machines out there, everywhere. So there’s recorded in the command’s histories about just massive amounts of Coke bottles that everybody had. So there’s a lot of stuff out there. I’m sure coins from Coke machines, I mean in

the area where you guys are looking at. Because if they had any of that kind of revetment stuff going on, I'm sure they had tons of Coke machines, so you'd probably find anything from old quarters and dimes to bottle caps like they found in the ʻEwa Field or old bottles lying around in the grass and all that stuff.

CD: Wow, I've never heard of anyone finding money. That's interesting.

JB: Well you know when they did the solar farm over on the west side of the base as the first part of DHHL's thing, they went over there and they found that big pillbox. That's another issue, but that's now moved over by the airport. They found a pillbox from ʻEwa Field and they found all kinds of bottles and military gear and stuff. So whenever we have a lot of military, Navy, Marines sitting around doing something, you're going to find a lot of that stuff later.

CD: Sure, yeah.

JB: And you'll get the old Hawaiian stuff as well. In those days they weren't looking for Hawaiian stuff, so there's probably more artifacts to be found out there.

CD: Wow.

JB: I found a really good artifact when they were doing the Hunt KREP PV farm and it's clearly an ancient artifact. I took pictures of it and everything. Of course the Navy and Jeff Pantaleo is just a real big liar anyway, he claimed that it was nothing and it was just all natural. But I've got pictures of it, I can send it to you. I sent it to people and they say yeah. It would be identified probably as a bait thing for fisherman's bait or it could have been a thing for holding, for burning kukui nuts for going inside caves. Kind of like an ancient flashlight.

CD: Oh, yeah. I'd be interested to see photos, yeah.

JB: So there's a lot of stuff like that. I've found a lot of round, very smooth round, basalt type rocks and some coral rocks. They're very, very heavy, perfectly round and that you know, the bigger ones could have been used as weapons during warfare, but the smaller ones could have been used to hunt birds because the Hawaiians were very good at slingshot. Well, a sling. A sling is a very good weapon actually.

CD: Yeah. So there were a lot of birds out there?

JB: Well that's the question. They wouldn't kill a little bird, but they would have gone after a duck or a seabird or something like that. ʻCause that was considered a good meal. A duck or any other bird that had enough weight that they could turn into a nice meal for that day.

CD: Oh I see.

JB: But I'm sure there were things like ʻōʻō's and things they weren't killing, like other birds which were royal feather birds. But I have adopted a feeling of, I feel like I know very well what people were doing back there and living there. You know there's sinkholes with big giant ti leaves, ti plants. I've got pictures of those and you know the kupunas describe the holes being used to grow bananas and sweet potato and stuff like that. I've never seen myself, but there's a lot of evidence of people planting ancient stuff. Mike Lee identified a lot of plants. He said he had never seen these kinds of plants anywhere on Oʻahu and I've only seen plants like this on Maui.

CD: Oh is that right? Do you remember what kinds of plants?

JB: Yeah I have pictures of him with some of the stuff. I would take pictures whenever we did find stuff. It starts with an "M" [Maiapilo *Capparis sandwichiana*]. I can't remember the name. But it's kind of a pretty white flowery, kind of like an orchid almost, it's white. And of course we went down to the refuge areas where the, where some of the plants were actually being preserved down there. They were um, it's a Hawaiian word for blood. The ʻAkoko [*Euphorbiaceae*].

https://hawaiiannativeplants.com/ourplants/akoko/ ʻAkoko

https://en.wikipedia.org/wiki/Capparis_sandwichiana Maiapilo

CD: Oh that's the name of one of the plants?

JB: Yeah, it starts with a "k" but I can't remember. (Kaunaʻoa) There's rare native plants that still exist. Probably not on that other side of the road, but if you go down south on the east side of Coral Sea, oh ʻakoko. That's the name.

https://en.wikipedia.org/wiki/Cuscuta_sandwichiana Kaunaʻoa

CD: Did it have a traditional use? Did Michael say?

JB: Um, yeah Hawaiians used stuff for all kinds of things and ʻakoko was considered an important plant. I'm not sure. I can't remember what the exact use was but ʻakoko was made into a big deal when they did the BRAC and all that stuff. So Fish and Wildlife went back there and said, "Oh, we gotta save this," so they made a preserve area and then the money ran out and they sort of let it kind of die. So I just saw the paper that Fish and Wildlife got a 10 million dollar grant so I'm going to write to somebody and ask if they can look at refunding this program again for the ʻakoko. They ran waterlines back there and did all kinds of things. It was a nice area for these plants. In fact you can still walk back there and again, this was all on the east side of Coral Sea Road, but you'll see signs, faded signs that say Native Endangered Plant preserve and all that kind of stuff. Yeah there's a lot of stuff on the east side of Coral Sea that's just amazing. The west side got more torn up because that's where they put the Navy Air Station Barbers Point runways. Of course they concreted over all the engine cell area was just all poured with concrete so they pretty much just destroyed that. But you know, anything that wasn't concreted would have been military stuff back in there. And probably ancient trails. You know, to really see an ancient trail you have to go back and look for stones, upright stones, upright coral flags or flags that were in the ground to see which stone was which. I'm sure you can get down there and see that.

CD: So do you think this project is going to impact any of those sites and sinkholes?

JB: Well, sure. If they do what they show they're going to do, they're going to build parking lots and apparently develop the whole thing. It would absolutely impact all kinds of stuff.

CD: Yeah.

JB: I believe we're going to have to do something like what Aloha Solar did which was to do an HAR277 preservation plan.

CD: To set aside an area to preserve?

JB: Aloha Solar took about 40% of the property out of the development. They ended up preserving a whole bunch of the area because it was loaded with Hawaiian sites back there. Crash sites, planes and all kinds of things.
https://dbedt.hawaii.gov/hcda/aloha-solar-energy-fund-ii-llc-exhibits-and-request/

CD: Okay. I see.

JB: So yeah, they're going to have to do a preservation plan. It's going to be…areas are going to have to be permanently preserved I believe.

CD: Okay.

JB: And you know, if the archaeologists go back and do a good job, I'm sure they'll find a lot more stuff. Just like they did out on the west side for the other project. The more work, the more stuff you're going to find out there.

CD: Yeah exactly. Okay. Are you aware of any cultural concerns the community might have about that area?

JB: YES – This parcel is also in the Kepā Maly –HART Rail Honouliuli TCP called "Leina a ka'uhane" spirit leaping place that starts from Āliamanu crater and crosses MCAS Ewa-NASBP. The spirits leaped from there with the assistance of their Aumakua. Those that didn't make it were stuck in the Wiliwili grove sinkholes and caves of Kanehili and Kaupe'a. Kepā Maly did a highly detailed report under an FTA federal TCP contract. I will send to you the links.

CD: Okay.

JB: It's best known for being a military site for all the engine guys who were working on engines back there and all that kinds of stuff.

CD: So there must have been a lot of military buildings and stuff back in there.

JB: Uh yeah there would've been mostly the concrete gun batteries, which are typically, you know they're kind of a square or U-shape. And then we have a concrete, what most people think is a pillbox, but it's actually an engine shed. It's an engine shed with a big concrete flat top. And also very likely it has, and what hopefully you guys will be looking for is possibly the fourth 'Ewa Field pillbox. It could be laying around back there somewhere.

JB: I will send to you the info on the fourth concrete pillbox. They were extremely RARE and only four made. I have located three of them in Kalaeloa and I believe the fourth is likely on this parcel. They were portable pillboxes with hooks on the top. They were originally at MCAS Ewa by the main runway in 1942.

CD: Oh I see.

JB: I've found three of the four, but I've never found the fourth. But I always theorize that's where it is. Right in your area.

CD: Based on the positioning of the other three?

JB: Yeah ‘cause they originally had them around the runway at ‘Ewa Field and then as the war progressed around ‘43, they took ‘em all out. They took the four they had out to the four quadrants of the Navy airfield. So you’ll find one down in the far west, southwest side and it’s in excellent condition. There’s a really good battery back there in perfect condition. And they found the other one on the northwest quadrant when they were developing that solar farm project. That’s what got moved over to the airport, which is another issue in itself. And then Mike Lee and I, Tom Berg, found the third one on the southeast side of the Navy runway. It was the main, I forget…anyway. So there’s a gun battery back there. The fourth quadrant would have been the one up where your project is. So it’s really a likely chance that there is a concrete pillbox back there somewhere.

CD: I’m not sure if we’re going to do an inventory survey or not, but if we do, I’m sure we’ll find it. We just did a reconnaissance and they identified those 17 sites.

JB: They’re made of concrete so you wouldn’t miss ‘em but it’s very likely that it’s covered with a bunch of brush or trees or something. That’s what happened to the other one. You know, I can send you a picture of what it looks like.

CD: Yeah I’d like to see that. That’d be great.

JB: So I’d love to find the fourth one. If we find it, we’d love to preserve it. Even if we have to take it out of there, depending what happens.

CD: I see. And I guess I have one question. Did they store the engines in the one structure that you were talking about?

JB: The engine cell. It’s kind of like a long, a big giant horse stable thing. They would have mounted the engines in these stalls and hooked them up to the gasoline or whatever it required and they would fire them up. So they’d have something like 20, 22, stalls and all kinds of things there for putting the engines in. They would fire them up, test them and then they would take them back over to the other by the runway where they have the two horseshoe revetments where they’d put them back in the planes. If they didn’t work well, they took them over and dug a big hole where the ironwoods are, so on the other side of the road, and they buried them all there and people after the war went over there and took ‘em all out. They’re worth a lot of money to airplane people.

CD: I see. Okay. That’s pretty interesting.

JB: Yeah, you know there’s a bunch of stuff laying around all over. There’s a bunch of tools. This is in a different area, but down by the Coast Guard station on the left west side of the Coast Guard, they buried a huge amount of aircraft maintenance tools because apparently there was some concern. You’re not supposed to lose all the excess surplus going out. For some reason they didn’t want all these valuable tools getting in the hands of, God knows why, the civilians or somebody else.

CD: Yeah.

JB: That never really made any sense to me. So they basically destroyed them all by burying them out there.

CD: Wow.

JB: Somebody would go out there and try to secretly dig them up and get some if there was anything, but they would be rusty by now. There’s all kinds of stories like that, especially during

the war. Crashed airplanes, airplanes lying around, trailers, vehicles, buildings. All kinds of stuff. It was a big deal out here in the late '40s. Sorry, this is a tangent story, but they put thousands of airplanes over on the West Loch area and I got pictures of all of this stuff. You wouldn't believe the pictures. Thousands of airplanes lying around out there and all of the airplanes were disposed and buried out there. So there's a ton of buried airplanes all over the place.

CD: Wow.

[JB continues to talk about what happened to the planes after WWII]

JB: But I don't have any specific, wild stories about that parcel other than that it was heavily used for aircraft engines.

CD: Okay. Is there anything else you'd like to add?

JB: Um, that's really all I can think of, the trails, the pillboxes, stuff like that. And again, I've never had the chance to walk through there. I'd just drive by and see what's there, look at it, Google Earth and all that stuff.

CD: I know Mike Lee used to go down there to collect limu that he used in his healing practices.

JB: Yeah, I don't know if Mike ever used that area. He never talked about it.

CD: Well, yeah he went to the coast.

JB: Yeah into the coastal area. Limu and all that down there. I don't know if you've ever been to the beach. Have you ever been down to the far end past the Coast Guard Station, there's like a Navy recreation beach back there. Fisherman walk back there.

CD: Oh no, I've haven't been back there. Only to the solar farm.

JB: It's one of the most beautiful places I've ever seen on the 'Ewa coastline. It's incredibly beautiful and it's also got all of these incredibly well preserved World War II pillboxes. The best collection you'll ever see anywhere on the 'Ewa coast.

CD: Is that right? Huh.

[JB continues to talk about the beach and shoreline]

CD: Do you have anyone else that you'd recommend I should talk to?

JB: Well, the only people I know about these aircraft engines have all left the island and I don't know where they are.

CD: Or anybody who would know about the traditional aspects?

JB: Well just the usual suspects like Shad Kane, I'm sure you'll ask him.

CD: I did and he hasn't responded. I don't know if he's not feeling well. But okay.

[JB speaks about how most of the people with knowledge of 'Ewa have passed away and about Mike Lee and his family]

[CD begins to share what Mike Lee taught her about the ʻEwa Plains before he passed]

JB: The ʻopae ʻula shrimp are a rare native shrimp that's supposed to be on the endangered species list but for some reason, no one's ever done it. Early Hawaiians used the sinkholes as kind of like refrigerators because below ground it can get surprisingly cold. Actually they found places out here where you can find cold air coming out of some of the sinkholes.

CD: Oh is that right?

JB: It's because the sinkholes are connected to larger caverns that go all the way back up to the mountains.

CD: I remember him [Mike Lee] using that word refrigerator, but I just thought he meant to store it. I didn't realize it was because the water was so cold.

JB: Not necessarily the water, but the sinkholes themselves were dark and shady. They were at least 10 to 15 degrees colder than the surrounding area. So Hawaiians knew all those tricks because obviously when you lived in those days without TV or internet or anything, you were very conscious of every little thing that happened. You know, just every little thing they were aware of. That's why it's so interesting to read these Hawaiian stories because you learn about things that you just go out and you never thought anybody would do that but that's what they did.

CD: All right. Well that's all I have John. Thank you very much.

## APPENDIX E: INTERVIEW WITH MANA CACERES

**TALKING STORY WITH MANA CACERES (MC)**

Ethnographer: Gina McGuire (GM)
Date: 4/1/22

GM: Aloha e Mana. If we can start with your name, a little bit about your background, where you grew up, that would be great.

MC: Okay. Name is Mana Kaleilani Caceres. I was born in Orange County in California. My parents moved there right before I was born. After that I was raised in Washington State until I graduated from high school and moved back to Hawai‘i. I went to UH Hilo, eventually graduated. Met my wife there and started our family in Hilo. I think in 2004 we moved to O‘ahu. And we lived in Honouliuli since 2005, maybe. So we’ve been living in ‘Ewa ever since.

GM: Could you tell me a little bit more about your ‘ohana background?

MC: Okay. Yeah, my wife’s genealogy ties into some lines that were connected to the ‘Ewa Moku and Honouliuli. Of course, that’s long time ago ‘kine. My family’s, not really involved in, but you know, just familiar with the place, especially where the project is. My grandfather was retired military, so when I used to, when we were in California, Washington, when we flew in to visit, we used to stay over there. You know where Barbers Point is? Go shopping, the commissary was over there, all that stuff. He also used to take us, I don’t recall the names of the places back then, but I know we had to drive past the runways to get to some of the beaches. I’m not sure exactly where and my grandfather passed away and I can’t ask him and I doubt if my grandmother remembers, the exact areas. But those kind of things, just recreational.

GM: Okay. Could you tell me a little bit about your own relationship with this area?

MC: Like I mentioned, my wife and kid’s genealogy ties into ‘Ewa. We have been involved in iwi kūpuna situations, maybe the past ten or so years, you know every once in a while when there’s development going on, kind of in the same area as this new project. So that’s kind of why we’re familiar with that particular area. I’m not sure if you know the solar farm, that’s the neighbors, it’s kind of makai of Kalaeloa Heritage Park, I think. So kind of remembering the parcel, it’s through those consultations, that we’re able to become more familiar with the places in ‘Ewa. That was our first, kind of, introduction to kuleana in ‘Ewa. At the time Uncle Shad Kane was the O‘ahu Island Burial Council rep for ‘Ewa and then when he retired from that post that’s when I applied and was appointed by the governor to sit in that same seat that Uncle Shad sat on.

GM: Wow. So there’s been quite a few iwi in that area?

MC: The most immediate one, just in the vicinity is the solar farm one. I know there is a couple of burial sites that have been preserved as well as maybe, contemporary burial sites, not as close. I think, the other side, not in the immediate area.

GM: Okay, that’s good to know. Can you share, is there any important mo‘olelo, mele, oli, place names that we should know of?

MC: Not that I can recall. Of course a lot of the ‘ike that I have normally available I don’t have on me at this moment. A lot of it comes from mo‘olelo shared by Uncle Shad Kane, I don’t know if you’re familiar with the book he published a couple years ago, it’s called *Cultural Kapolei*. That was just kind of a compilation of writings that he did over the years, like you know, letters to the editor kind of thing. That’s all in one book. It’s a lot of mo‘olelo that came from that, it’s amazing. It talks

about place names and all that. Another person that has close ties to that area and has a lot of moʻolelos is Kawika McKeague. Yeah, his moʻokūʻauhau is from the area also. So whenever we're in that area and he says a moʻolelo, I'm always learning from both of them.

GM: Oh okay, I'll take a look at that book, it sounds great.

MC: Yeah, it's kind of cool, 'cause it's not... it's just writing over a period of x amount of years.

GM: As far as you remember and your experiences there, if you can tell us a little bit about how you've seen the area change.

MC: Like I mentioned earlier, my earliest memories is me and my brother visiting my grandparents and then, you know, getting access to Barbers Point, it's a military installation. Of course it's a lot of malihini, military malihini in there. That whole feel to it. And then being back here, its opened up, the military was gone already, and everything was kind of...so it went from this really restrictive place where you didn't really feel welcome to this place that was open but really run down, you know, graffiti, you didn't feel safe there type of thing. And then that was kind of the feel of that place for a while. We didn't want to go through that area unless we absolutely had to 'kine. Even when there was a post office over there we used to dread having to drive over there. And then you know, slowly, you know, with the community associations, involvement, the parcels there, it started to get more clean. You can see that it's changing a little. In that area. You know on that road that goes all the way to the end, where those cabins are and stuff like that, I think they recently finished some utility work on the beach side. If you drive down there on the weekend, my family, we're gonna start buying some fishing poles and stuff like that 'cause the area seems to be more inviting.

GM: That's good to hear.

MC: So you know, when we heard the plans on the news, about this surf village, of course we saw the backlash, people trying to protest it, you know [saying], "We don't need a surf thing when we can just surf at the beach," but then personally I see it as an alternative. I'm kind of excited for it.

GM: That's good to hear.

MC: I thought the wave pool was just gonna be a small thing like the water park but then when I saw some videos of the new technology that they're using, you can actually put a surfboard on those waves. Not that I surf or anything.

GM: So, you shared a little bit about this already, but if you want to expand or not, if you know of any traditional sites, historically significant buildings, cultural or archaeological sites. This can be in the property area or in the surrounding area, that we should know of.

MC: I did a site visit, kind of like across the street from the heritage park area. And Uncle Shad Kane was on that visit also. That was for another solar company, I think. And there's an area that he kind of explained as like a makahiki grounds, couple sites where there's traditional place to cook. You can't really make an imu over there 'cause of the ground but it almost looks like an oven kind of thing, that was kind of cool. A little bit closer to the property there was the iwi kūpuna, the burials. We see a lot of burials as well as just cultural sites inside of the, what do you call them, karst? The dips in the coral. So you see that a lot in the surrounding area so I'm curious to see what it looks like within this parcel. I'm not sure if it is, if you folks have done any surveys yet.

GM: Yeah, I don't know that but I can check back with you.

MC: Yeah, that's the types of the things we're always on the lookout is for the holes in the coral and the piles of rocks; sometimes underneath those will have something at the bottom of that.

GM: Do you know if the proposed development might impact a place of cultural significance or impact access to a place of cultural significance?

MC: The answer is I don't think so but I'm not sure about it, for certain if there is or isn't.

GM: Well you don't know 'til you're out there, right?

MC: Yeah, especially some of those areas are really overgrown with kiawe so a lot of sites are really hard to identify without first having cleared area.

GM: Mmm. I know you mentioned going fishing but are you aware of any other traditional gathering practices in this area and the surrounding area, past and ongoing?

MC: Yeah, Uncle Mike Lee used to always talk about, not so much anymore because of pollution and climate change, but you know, talk about the practice of collecting limu on the exposed coral at low tide at the beach. So he always used to say that that whole beach had limu. Not so much anymore but that's something that he spoke a lot about in this area.

GM: Oh, that's good to know.

MC: Yeah.

GM: You mentioned that you're kind of more excited for the project, but as development in the area continues, is there anything that could be done to lessen adverse effects for practitioners and community?

MC: Yeah, well the good thing about the developments that we've been involved with in the recent years in that area, is that a lot of 'em are solar farms so it's a lot easier for them to redesign their layout, where the panels will be, so we're able to have them shift around the solar panels so that all of the cultural sites can be preserved in place and weren't impacted by those developments. I imagine that would be a little bit harder, just having to excavate for this project, a little bit harder to accomplish that if something was found on site. But you know, we always try to find some solution. The good thing about that area too, is there's a lot of space. It's not like in town where you've got one development property ten feet away from the next person's wall.

GM: Yeah, so staying in conversation with you folks will be the main thing.

MC: Yeah.

GM: I only have two questions left. Are you aware of any community or cultural concerns within this area?

MC: I haven't heard anything from the residents that we know living there and we haven't heard any concerns. Since the military's left, I would think more people would be more open to have development in that area as long as it's done respectfully.

GM: Okay. And then I know you mentioned Uncle Shad Kane and Kawika McKeague, but if you know of any other kūpuna, kamaʻāina, or other cultural descendants who you recommend we talk story with.

MC: Those are the main ones that I lean towards myself when I'm trying to learn more about the area. The civic clubs would be good to look into, I don't know if its Kalaeloa Civic Club.

GM: I'll go look those up to. Those are all my questions unless there's anything you want to add.

MC: No, I think you've pretty much covered it but keep me posted for sure as the survey's under way. I'm kind of excited about it.

GM: I will, for sure. Thanks so much, Mana for your time!

## APPENDIX F: INTERVIEW WITH DIETRIX JON ULUKOA DUHAYLONSOD

**TALKING STORY WITH DIETRIX ULUKOA DUHAYLONSOD (DD)**

Ethnographer: Cathleen Dagher (CD)
Date: 2/3/2022

CD: So I'm interested in cultural practices in the vicinity of Barbers Point and cultural resources in that area. And so, starting off tell me about you. Your name, where you grew up…

DD: Okay. Aloha, my name is Dietrix John Ulukoa Duhaylonsod. I'm from Honokai Hale. Are you familiar with Honokai Hale?

CD: Um yeah, well sort of. I know where it is.

DD: Okay. So my dad's family is from Kahuku and to an extent Damon Tract. Most of the siblings grew up there but when he was young, he moved to Damon Tract where the airport is.

CD: Where is Damon Tract?

DD: It's Kaloaloa. It's where the airport is at.

CD: Oh, okay.

DD: Yeah, so until recently they had, they would have Damon Tract reunions every year but most of the elderly all passed away. The ones who were kids back then. But I remember going to those reunions and they'd say "from A Street we have this family and this family and from B Street…" it was all like this and it was so cool I wish it was in the age of technology so we could have recorded some of that but it's gone now.

CD: Yeah.

DD: There's hardly people from there anymore. But people know. People will know when you say Damon Tract. They'll say, "Ah Damon Tract brah." They all know who's from Damon Tract, but the ones who actually grew up there, there's only a handful left.

CD: I've never heard it called that before. Yeah, actually it's kind of recent that they started referring it to Kalaeloa again.

DD: Oh no, this is Kaloaloa.

CD: Oh where's that?

DD: The airport. Where the airport is at. The Honolulu Airport.

CD: I'm sorry. Okay I got you.

DD: There's a famous song for that place. So the Damon Tract people are from there. There's a lot of family names. You know if you say Damon Tract and the people will mention the family names there. My mom is from Mākaha and also in the Leilani-School Street area of Kalihi. But she was the eldest, raised with her grandparents. Took care of the rest of the cousins, you know, being the eldest. But she's rooted in Mākaha mostly. Her name was Francis. They called her Tita. And I miss her a lot. But anyways, my mom and dad, they wanted to raise their family in the countryside so they decided to, they were gonna build a new community there at Honokai Hale. So when they got

the house, well when they got the lot, they would come every week to see, you know how far the house has got and there were no neighbors, just kiawe trees and a white coral road. No streetlights. It was country.

CD: When was that? What year was that?

DD: This was early 1960-ish.

CD: Okay, okay.

DD: So over 50 years ago. And there's been five generations of our immediate family that have lived a portion of their life there, so there's a lot of aloha in that house. And there's a lot of aloha…now by the time I came around we had neighbors, so because there were no stores close by, there's nothing. Really, there's nothing.

CD: Wow.

DD: So the whole neighborhood, the whole community really was one family. That's another place where the elders are dying. I really want to get all the stories of the old time families there. To share what it was like growing up there with no stores and you know, with no Koʻolina. If you think about where it's located. To think that it was all kiawe around there and with a boundary of sugarcane too that came so far, but you know being out there it was, it was a beautiful place growing up.

DD: Yeah. So anyways that's where um…that's the place that has fed me and has raised my siblings and I. And till this day we still have a family house there. It's called the Corner Pocket. And we still gather there.

CD and DD discuss age and looking younger than actual age]

DD: I went to Mauka Lani Elementary, which is at the top of Makakilo Hill. At the time that was the school that was furthest. Nothing was above that. So where the fire station is at, that's where we went to elementary. Funny that when my oldest brother was a kid, the only school was Barbers Point Elementary because the base was there. So he went there and then as they started to build Honokai Hale and Makakilo they built Makakilo Elementary. So then he switched over to Makakilo Elementary, my other sister and my other older brother, they all went there. And Makakilo started to get so developed, they created the school at the top of Mauka Lani and said okay, all you guys from Honokai Hale, you go to Mauka Lani. So next thing you know when I came around, from kindergarten, my younger sister and…we all went to Mauka Lani.

That's the only elementary school I went to. And then they started building way at the top of the hill and they said okay, Honokai Hale, that top part is for Mauka Lani and so my younger brother transferred back down to Makakilo so they were all sent there and finally after everybody, everything was filled up, my youngest sister said you know what, Honokai Hale now goes to Barbers Point Elementary. So, funny how we made a big circle back.

And then back then the school bus would pick us up and take us to ʻIlima Intermediate in ʻEwa Beach and Campbell High School. It's funny because Nānākuli was like right here, but because the boundary line was at the power plant, they took us like way across the country to ʻEwa Beach. That was really interesting because I never knew anything about ʻEwa Beach. I was like wow, there's so many people here. You know, going to intermediate. All I knew was Nānākuli and some stores in Waipahu that we'd go to, but wow, we'd have to go to ʻEwa Beach. So my intermediate

and high school was at ʻIlima and Campbell and then I went to the University of Hawaiʻi at Mānoa. Got a double degree in Anthropology and Ethnic Studies and a certificate in ʻŌlelo Hawaiʻi.

CD: So where did you get groceries growing up? How far did you have to go?

DD: Groceries? We'd either have to go to Nānākuli or we'd have to go to Waipahu. And these were the old stores. Nanakuli Supermarket and Waipahu was Big Way or Times.

CD: Wow.

DD: Kapolei did not exist.

[DD talks about how they got groceries and relying on the neighbors]

CD: So you know where the project area is yeah at Barbers Point?

DD: Mmmhhmm

CD: Are you familiar with that area?

DD: Yeah, I'm familiar with that area.

CD: Can you tell me about traditional cultural practices or, I'm interested in cultural resources too. Like you know, did your family grow your own vegetables, did you subsist on traditional food, did you grow traditional crops? Could you guys grow crops out there or was it too dry?

DD: I mean, no. We all had our own little gardens. Everybody knew our mango tree.

CD: In your yard?

DD: Yeah. Yeah but growing up, the area we're talking about is by Barbers Point. That whole area was off limits. That was one of the biggest things. Striking things I remember because when we go to ʻIlima Intermediate, you know the first time I went to school, we'd have to go through the base. So, you know we're going through this gated place with somebody in uniform and it was very, it didn't feel like Hawaiʻi. It didn't make me feel comfortable. I mean even as a kid. It didn't feel threatening, but I was like, "What is this?" Because you could see the fences on two sides and then there's a guy, you could tell he's a guard and then we'd slow down and stop and they'd do the salute. As kids on the bus we'd joke and go, "Where we going?" So it was really weird. Anything within the fence line was, it felt like it wasn't Hawaiʻi. The whole landscape looked different. At least the places where the school bus would go through.

CD: Yeah.

DD: That was my growing up experience. It wasn't until 1999, with the base realignment, the closure, you know that's when we started to have access. Access there to our backyards.

CD: They opened it back up again, yeah.

DD: Prior to that I'd say I can count on one hand the times I went with somebody to the Navy Exchange or I just stayed in the car. My dad was a civil service worker, so we'd go on to go bowl, you know, but actually we went more often for bowling. I remember now.

CD: Went for what?

DD: For the bowling alley.

CD: Oh okay.

DD: That I do remember. He was a veteran, but he also worked on Barbers Point as a civil service worker. I forgot about that. So I'd go there only to the bowling alley and only to pass through on my way to and from school. And then I can count on one hand the times I went there accompanying somebody or somebody's parent. But it was a very foreign place.

CD: So you didn't have access to the beaches there and you couldn't go fishing there or have access to the coast there or anything like that?

DD: No. I didn't even know they had a beach. At the same time I really loved my beach. I really loved the coastline where Koʻolina is at now. Kahe Point and Tracks. Those are our beaches. Those are like right next door. This was a little further away whereas the beaches where Koʻolina is at, those were walking distance. We knew all the trails. We knew all the old trails through Koʻolina. But when I look at it, it was almost like, it was not only off limits, it was almost like a secret clubhouse for military people. You know they have their own beach to themself, they have their own…you know what I mean. They don't have to deal with us locals coming on there for whatever reason. I mean you can say security. I'm a combat veteran. I'm still in the military, so you know, I know how security is done in other states as far as base access, but I guess in Hawaiʻi it was even more so. We've got this place to ourself and that's the way I look at it. And then after 911 that all changed. It's tight security for everybody.

CD: Yeah. So you fish? Your family taught you how to fish?

DD: Yeah. I go in the water all the time. My dad, my papa. My dad was an avid fisherman. My papa was an avid fishman and a really good diver. My dad and my papa they were all ocean people. They were kanaka o ke kai, people of the sea. They really loved the water and my dad liked to crab too. We crabbed a lot.

CD: So that's your father and your father's father? That's who you're talking about?

DD: No. My father and well, my father's father too, but…

CD: So who's your papa, I'm sorry.

[CD and DD continue talking about his father, older brother, and papa fishing. ]

DD: But yeah, we grew up all in the water over there. I miss how the coast used to be.

CD: Let's see. Can you tell me anything about the Kalaeloa area then?

DD: Yeah, sure. So thank goodness that the place is now open and we can actually visit. So, besides Barbers Point, we have another big disruption in the landscape and that's the Industrial Park, Campbell Industrial Park. I say Barbers Point was a disruption because it was totally off limits right, so it might as well not even exist. And then I say Campbell Industrial Park is a disruption because look at what they did. It's an industrial park, right. But what you see is, you

have little pockets here and there that have survived that are beautiful examples of the unique landscape of our part of Oʻahu. And it was a very unique landscape.

It teaches us a good lesson because when the first Westerners came to our corner of the island, they really dismissed it. They said you know, basically I'm paraphrasing, but they said, "There's no way people can thrive in this area. It's you know so desolate, so hot." Relatively speaking, yeah, if you look at a green area and you can see the stream flowing on land and whatnot, yeah, of course, but you should never discount or dismiss anything or anyone as being no good. We know that the community did thrive in that area. So for a time, there was just seasonal habitation, right. People would just go there seasonally. And why? To gather the plentiful and abundant and rich marine resources. That was why. And eventually as the population increased on Oʻahu then those temporary habitation sites became, in the Kalaeloa area, became permanent habitation sites. But even in the time of the temporary habitation sites, I mean um…so I talked about one thing already. Why would they even do it if it's hot? Well, because you had such a rich, rich marine area and there's more to it and I don't want to say everything [laughs]. But I will say it's backed by tradition and that's why it was such a special place. But the other thing I didn't say was in order to do that, what are you going to need?

CD: You need food and fresh water.

DD: They got food via the water, right. The marine resources. But yeah. The other thing is water, fresh water. So like I said earlier if there's a lack of streams, then how can you survive? Well the way you survive is you gotta know where the water is. So what people don't realize is we have above-ground streams and we have underground streams. So those sinkholes was actually the key to life because those are the ways they were able to access the fresh water underneath, whether for drinking, which is a necessity, but also for bathing, you know after you jump in the water and you want to bathe. So you would need to know which sinkholes had access to water. For bathing but more importantly, which sinkholes had access to water for drinking.

CD: Yeah, because were some of them brackish?

DD: So our Hawaiian ancestors knew which ones. When you said brackish, you still can collect water from springs that open up into the open ocean. Yeah, you know what I mean. Where there is brackish water, there is fresh water close by.

[DD talks about the water in the area.]

DD: The point I'm making is that water was there, you just have to know. And you're not going to know unless you're intimate with the land. And that's the kind of relationship our Hawaiian ancestors had with the area. That intimate relationship with the land where they knew where to get water. But here's the interesting thing, when the military came and took over whatever they took over in the area, you know Kalaeloa and the adjacent areas, what is one of the first things they did? Well they covered all the sinkholes. Number one it's not conducive to what they want, you know. If you want to make a foundation for whatever you're building, just cover 'em all. And number two it's an eyesore. It's not, it's an eyesore, it's not beautiful. Right? Get rid of, just cover all of this, make it nice. What does, "Make it nice" mean when you got sinkholes? Cover it. So it's interesting how it's a very total opposite view of the sinkhole environment. On the one hand from the indigenous point of view, it's a part of the environment and it's actually the key to water, so you need to take care of this environment and the sinkholes in it. But on the very opposite 180 degree non-indigenous view, is that the sinkholes are an eyesore and they're an obstacle to progress. Progress is subjectively defined right. Progress is, "I need to have it all level and

covered." So two very different approaches, opposite approaches, I need to emphasize, when dealing with the landscape.

So from an archaeological point of view, well I mean I mentioned culturally, water, but for the sinkholes that did not have water, that was the number one place you would plant because of the moisture. You're sheltered from direct sunlight and so you know, you have these sinkholes that were used as gardens, right. In some cases the sinkholes were also used for burials because if, you know, if you don't have a lot of soil to dig, then you use the sinkhole as a burial, similar to a burial cave in other areas. So that's from the cultural point of view. From an archaeological point of view, we also realized from like the '70s that sinkholes were like the repositories for extinct faunal bones. You know, we find in Kalaeloa and the Barbers Point area we find water birds. You know. Some things like the Hawaiian eagle. Some things that no longer exist.

CD: What was that, Hawaiian what?

DD: Eagle.

CD: Wow, wow, is that right?

DD: So from an archaeological point of view, the sinkholes also hold these very precious records, archaeological records of the past. You know, that you're not going to find otherwise because it's in the sinkhole. It's been preserved there. So, I think what I'm getting at and what I'm leading to, which you'll probably ask later is the importance of really examining those sinkholes.

CD: Yeah. Well let me ask, they must have been of varying depths. If you could bury an individual in there and grow your crops, some of them must have been shallow, others were deeper, or did they have to…

DD: Yeah. Some were very deep. In fact my older brother, my older siblings, they remember some of the sinkholes near, closer to Honokai Hale where the harbor is at and some of them is like the favorite place of the Honokai Hale kids where they go swimming. And they call it the cave even though it was a sinkhole, but you know as kids you just call it, you know, a cave.

CD: So it was large. There really was a large pool.

DD: Yeah my brother will actually tell you, well you know how there's so many kids, so your older brother and kids his age will be swimming there and you'll say, "Well he got the fresh water so we're going to go swim in the ocean today." But there was enough of a water landscape that all the kids could go to and stay out of each other's area, you know. So yeah some were pretty huge and some were smaller.

CD: So could you elaborate a little bit on those marine resources please?

DD: So in the sinkholes themselves they have 'opae 'ula, which is the endangered red shrimp, right. There's at least two types.

CD: They were there naturally right?

DD: Yeah. They're in there naturally and also what we have learned in the last, say decade is that even though these holes have been covered, if you uncover them and let them breathe again, oh my God. The shrimp will come back.

CD: Is that right?

DD: They're living subterraneously.

CD: That's really amazing.

DD: Yeah, it's not a lost cause. You know people say, "Oh well, there's value to it." And taking care of the ones that are here and/or restoring the sinkholes back to what they used to be. But besides that, offshore you have everything. You have the fish from the pelagic fish to the reef fish. You have seaweeds, you have the wana, the crab. You have everything you can think of. They're all there. Those are the marine resources, you know besides salt. Sea salt.

CD: So are there any salt pans down there?

DD: Salt pans? You know, I grew up seeing the salt forming all along the coastline, but from a commercial point of view, or what has been in modern history, the area where it really became a business was between Hau Bush and…actually closer to the entrance of Pearl Harbor. That area. They had a salt factory going on out there. But from a subsistence point of view, you know, you can just, you know if you don't have like a major Kailua population over there, you don't really need to modify anything so that we have salt. You just go out and collect.

CD: That's what I was going to ask. Did your family go out and do that?

DD: You don't need a limu farm to go out and get limu if the limu is there.

CD: That's what I meant. I wondered if your family went out there and gathered salt or if they gathered limu. If you ate limu.

DD: My papa, the way he learned to pick limu is the same time he learned to dive. Because when he was a little kid he grew up in Pukoli'i in West Maui and his grandpa, his dad wanted a specific type of limu. So my papa was a little kid and he'd have to hold on, hold his breath, hold onto his body, and then pick the right type of limu and come back up. And that's how he learned how to pick the limu.

[DD requests to speak off the record.]

CD: …Do you think the proposed development will affect any place of cultural significance or access to a place of cultural significance? So you mentioned the trails. Are there trails out there? Are they still accessible?

DD: You know during COVID I saw remnants of the trails, but a lot of it has changed. The only reason I saw it was because, I don't know if you remember but no one was allowed to drive unless it was, you know you had to stay off the roads, stay home, remember that? I remember telling my family, "Well I guess I'll go down to the beach," and only as a kid I used to go walking to the beach. So here I am walking. Some of the trails are still there and some are not. It was, wow, you know, kind of weird reminiscing by myself, you know how it used to be. I would pause and I'd look. I'd pause and I'd look, so different, but to answer your question. Some of the trails are still there, some are not, but your bigger question of what you asked in the beginning was that is it a place of cultural significance. Whether it affects it or affects access to it.

So the first thing to ask is, "Is it a place of cultural significance?" So, you know this is subjective right, you could say. And to me the whole place is a place of cultural significance. I'm a hula

person, so the lens that I look through, the landscape, it's very significant. It's very significant. I look at the landscape and I know how Hi'iaka traveled through the area and where she stopped and I know the same about Kamapua'a, where he lived and the places he visited and what he did, so the places you're talking about, the project area is within that landscape, which to me is a place of cultural significance even though a lot of it has been built over, it's still a place of cultural significance despite the changed environment. And then you do have some places that are not built over and it reinforces more than a place that's built over, it reinforces the idea of the natural and cultural landscape. And the place you're at, even though it's previously disturbed, it's open and it lends to the mo'olelo of Hi'iaka wandering through the wide expanse, you know. I realize people can say, well it's already been bulldozed over and that's true too, but I'm telling you my feeling that by not having a building it lends to the mo'olelo of her traveling through the wide expanse with Ka'iona above guiding her. Ka'iona is known to guide wanderers or those that have been known to be lost. But with that said, I do realize that it's already been disturbed.

So the other thing we spoke about is the sinkholes. If I was home, I'd ask to visit because I would like to see what sinkholes are there. If sinkholes are there, that, number one, is 100% proof that you do have some of the original landscape. It's not all disturbed, right? It's been disturbed but the fact that you have a sinkhole there, it's the original landscape that was there one thousand, two thousand years ago. To me as a keiki o ka 'āina, a child of the land, that's super important to me. Every single sinkhole that's still around is super important because in contrast, you have so many that have been filled over.

So the next question then is, what are in the sinkholes? You know? Do you discount it because it's a small sinkhole? Because you don't see a rock alignment around? Because you don't see a burial in it you discount it? Just like the first Westerners that came around they said, "Oh this isn't important." I would prefer that some effort would be taken into looking into the sinkholes and seeing if anything is there. You know? What if you do find another sea eagle there or something that hasn't been discovered. To find that kinds of things within the last 20 years, oh my God. The sinkholes are a hiding place.

CD: They are. They're like the historical record.

DD: Yeah. So I would prefer that even if it's a small sinkhole that these things really be, like, I mean really investigated. When you find these things in an excavation you find them by sifting. You don't do it by only glancing into that sinkhole or one meter by one meter and saying, "Ah." But I understand that it's also, you know, I don't know how many hours have been budgeted to do that kind of work and I have to say, not just with Keala Pono, but the way SHPD approaches this, and I like the people at SHPD, I really do, but nobody until this day has really been a champion of the sinkholes. Actually there was one archaeologist and I saw his presentation at the Bishop Museum and at the end I asked, are you saying we should investigate all sinkholes and preserve the ones that are here? He said, "Oh yes!"

CD: Was that Burt Davis?

DD: Ah, I can't remember. I wish I remembered.

CD: Yeah he did a lot of work at Barbers Point. He was one of the guys that found some of that aviary faunal remains. He found some of those ancient birds.

[DD continues to speak about the importance of investigating and preserving sinkholes.]

DD: I would hope that you folks could explore these sinkholes and really check them. And you know Cathy, I'll go an extra step because this part is, you need a trillion dollars, but I'm going to say it. In the past, what was done to the sinkholes, a lot of it was just covered. They were covered. So my thing is, I honestly, honestly believe that there's so much out there, but what we do as archaeologists is we look at the landscape and first of all we say there's no mounds, no terraces, whatever so there's nothing there. If there's sinkholes we kinda look in 'em and we can't see anything, but what I'm getting at is what would be the real pono thing to do is to do ground penetrating radar, which I know you guys won't do this, nobody would do this. But what I'm saying is to reopen the sinkholes that have not been bulldozed or jackhammered because they are still repositories as well and in the case of those places where the water was there, the 'opae 'ula came back so that's kind of like a lesson saying, "Never say that it's been covered and it's no good." You open it, 'opae 'ula come back, you open it and you might find other things.

CD: That's a trip. It's amazing. I never would have thought that.

DD: I'm not being a stickler. I mean I'm not saying Keala Pono has to do it or G70 has to do it. I would like that to happen if it's feasible but I don't know if they would pay for this kind of…I don't know if people care.

CD: Well, I think that work could be done in an inventory survey, I think. I would imagine but I don't know.

DD: But even in an inventory survey, you might budget for what we assume it's going to take. When you don't see surface features, I don't think you're going to budget and extra hour or two for each sinkhole.

[CD and DD continue speaking about budgeting for investigating sinkholes.]

DD: It's the approach we in Hawai'i have taken to sinkholes because we're so used to looking at large scale heiau and mounds and above ground features that nobody bothers to see the value of the sinkholes but that sinkhole was the key to survival in our area.

CD: Right.

DD: It in itself is a cultural feature but it's not as exciting as an alignment and a wall and a terrace. It's the culture, it's a mindset.

[CD and DD continue speaking about investigating sinkholes.]

DD: I do know in the ancient history also that when the power dynamics was as such, the ali'i from Honolulu, from the Kona District, they would get a lot of tribute in the form of produce from the 'Ewa District. And an important way was just across the mouth of Pearl Harbor. You had canoes right, so you load up the canoes and send it across that small channel and it's there in Honolulu, and so forth. So yeah, the 'Ewa District and the Honouliuli Plain was a place of both land and marine resources. As you know Honouliuli stretches to the mountains too.

CD: Yeah. Let me ask you something else. Did your family, because they were so remote, did you use the limu for medicinal purposes or were there any resources out there that your family utilized whether you ate them or used them for other purposes?

DD: Um, medicine. Not medicine. My great-grandma, she was special. She was a healer but it was all through prayer. But back then, you know Vicks healed everything [laughs]. But no, not medicine, just food.

CD: Okay. Let's see, what's next. While development of the area continues, what can be done to lessen the adverse effects of any cultural practices? Well that's the other thing. Are there cultural practices conducted in that area? Were there or are there still that you know of and you feel comfortable talking about?

DD: So the main cultural practice would be, um what is that…subsistence gathering, which is mostly on the marine side. But I know there is a movement nowadays for people to reconnect with the old ways of visiting the landscape and acknowledging the moʻolelo and the ancestors that walked the land and the things that they did. I guess that's a way of saying again, I wouldn't discount a landscape that's quote, unquote "devoid" of rock shelters, of mounds, and terraces, and say well, what's there. Because in the act of visiting and remembering, that's a cultural practice for a lot of the schools. To go out and to visit and to learn and to see. That's also an important part of teaching, you know, the next generation. You know, Aunty Nettie over at Lanikūhonua used to say, there's a big difference in telling the kids there's a sinkhole as opposed to taking them there and saying this is how it looks. This is how the landscape looks with several sinkholes, as opposed to describing it. So, that in itself is a cultural practice to me, to be able to physically share it. To be able to have access to the sinkhole and say, "Let's try and grow things in them like they did in the old days." We haven't reached that yet, but I see it around the corner.

But as far as mitigation, what I would suggest is to really look at the landscape and like, I mean if you have sinkholes here and there. If it doesn't have to be destroyed, is there a way to use those pockets? To share some of the original landscape with the visitors or is it just gonna be a plastic, a plastic money generating thing? From an economic point of view I can see why this would be a non-issue, like who cares, but I care. So from a mitigation point of view, it would be really nice if they could leave a corner so that they're educating all the visitors that come. Have fun at this water park and all that, but you know, when you have lunch come in this little ancient Kalaeloa area, ancient Kualakaʻi area and have your lunch and see the sinkholes. You know, to have that educational opportunity sharing the natural beauty of the area. That would be a nice mitigation rather than just continuing the old way of, well it's just easier, let's bulldoze everything. Let's cover everything. Whether we need that square footage or not, let's just cover everything. Because it's, you know, it's easier for them to do. Just come with a tractor, just bulldoze everything.

Another mitigation thing would be to dedicate some of the activities there to teaching the visitors about the cultural aspect of surfing, of sliding on the waves, which is what it translates to, sliding on the waves. Um, and just the cultural significance and the history of it all. I do have two nephews that they descend from the Kahanamokus, one of their great-great grandpas is a brother to Duke Kahanamoku. So they could and they should. It's a really good opportunity to share how surfing started. And there's so much about surfing, so much cultural richness about surfing that you could share. I got people telling me that they thought this originated with the surfers in California [laughs] [Note: DD was showing CD the "shaka"]. I'm not going to go into that long story right now, but yeah whatever. But you got two ways of mitigation, of honoring our Hawaiian community there. One way is through the surfing thing and then the other way is keeping, reserving a part, you know, with the natural landscape and encouraging people to see the beauty. Because when people don't see the beauty in other places and other people, that's where the problem begins. You gotta teach people and encourage them to see the beauty in other places and other people than what you've been grown to view.

CD: That's right. And not to expect it to look like where you came from.

DD: Exactly. There's lessons all around. [laughs]

CD: Let's see, what about spiritual practices? That's one thing I wanted to bring up. You keep mentioning, you know, that there aren't visible surface features, but that doesn't mean that there weren't activities conducted there. They just didn't need to build structures to do it. That's a really important thing. Do you know anything about that?

DD: Well, you know, when you talk about intangible things like that, when our hālau goes out and goes to places and we chant and greet and say thank you and we say excuse me and we say please, these are all things that you might define as spiritual. These are intangible. I don't know if I'm walking there and I'm reconnecting with the land and there's sinkholes there or you guys are replanting native plants of the area, you know, we're going to be doing the same kinds of protocol as opposed to if it's just a building there. So you know, you can interpret it whichever way. You can say just the fact by allowing it to exist it's conducive to spiritual and cultural things and on the other side of the token, just the nature of destroying everything is not conducive. It halts. It halts it all. If you're going to just bulldoze the whole thing. The only chant I can do there is going to be a cry, a lamentation. Well, I mean you could still say aloha, but it's just not the same. Otherwise any other specific cultural practices, I cannot say because I don't know. Being that that place was fenced off for so long, I don't know if people went to that specific spot to get medicinal plants or to do a specific ceremony. I cannot say that people didn't at that spot because it's been off limits for such a long time. But I can say that these spots that are often overlooked are still special to people who are connected to the place. And they will acknowledge it culturally. It doesn't have to be this Diamond Head for us to remember it or even Kūkaniloko, which is very special. It's just the everyday natural landscape that culturally rooted people will still find significant and special.

CD: Yeah. Well do you think this project is going to impact cultural practices?

DD: No. Just I mean, just in the way I mentioned. I cannot say. If I knew someone was gathering medicinal plants there, then I would say yeah it'll impact. If I knew someone was going there to greet the sun every day, then I would say it would impact, but the fact that if you destroy the natural landscape, it's not conducive. You're destroying any opportunity to reconnect. Does that make sense?

CD: Yeah.

DD: I'm not, I'm not. I cannot say I'm against the project. You know it's an economic thing. People got their reasons. If you got the money and you bought it, you cannot really fight against that. But it's just being conscientious of what you do, you know? I'm not trying to say you can't build, but just be conscientious. Check what's there. Really investigate what's there and then if you have natural sinkholes, my goodness, if you don't have to dig 'em up or, you know, destroy it with a jackhammer, then leave it. Especially, if I had the money, you know me, I like to keep as much landscape as possible. These little pockets, these little pockets here and there are really important. Especially someplace like Kapolei, the second city. Little pockets are super important because it's like little oases here and there that are showing. Even though they're not huge, if you have enough of 'em, it will give you a window of how it used to be. But if you destroy the few that you have left, you really just don't have an option. There's just nothing left.

CD: And you need the open spaces just to free your mind.

DD: Here's the other thing. Here's the other thing and it's not so much related to the culture thing. The only thing that kinda like gives me second thoughts is the question of what else are they going

to do with the former Barbers Point and what I'm getting at is maybe a surf park is not the best plan. But it doesn't mean you shouldn't do it because it's not the best plan, but I mean there's a lot of other things you could be doing. But if I know that they're going to build a cultural center on the property somewhere or they're going to build, do other things that'll encourage cultural practitioners or encourage the teaching of the history of the area, if I know they're doing that somewhere else to a certain extent on the Barbers Point lands, then well, okay go build your surf park. But like if you're only building this plastic thing and then another…and then next thing you know you have no sense of place. You have no sense of Kalaeloa, Kualakaʻi, and West Honouliuli, and Kaupeʻa and Kanehili, and Hoakalei and Hilo One, and it's all built over and there's no sense of that place then I'm against it. Because the surf park is contributing to it. But by itself, I'm not against it. I understand why they want to do it but just, you know for me that's not the best use of that parcel, but if you're addressing these other important things like other projects in the area, then I'm okay with it. You know, because I know you're making space for the cultural aspect of the area for other projects. Does that make sense?

CD: You'd like a more balanced approach to the development and you'd like it to be well thought out and not just a hodgepodge, "You know I have some money so I'll just do this here and I got some money so I'll do that there." You'd like it to be a little bit better thought through and that there's some structure to it.

DD: Yeah because if they don't plan on it now, what you'll end up having is one plastic thing after another and then all of a sudden, well all the land's taken. It's too late. So I'm not saying don't make the surf park because that's not the best thing. It's not the best thing, but okay, I hope in the big scheme of things they make room for some natural landscape and other things.

CD: You'd like a more thoughtful approach. A little more balance and if they're going to put a surf park then they should try to tie in the culture to the surfing.

DD: Yeah. And I know right next door they have the Kalaeloa Heritage Park. And they might say well, what does it matter since they got the heritage park and that stuff. But whatever, I like sinkholes, so…[laughs]

CD: Sounds like it [laughs]. This has been really great. Thank you so much. Wait, before you go…do you know anyone else I could talk to? Any kūpuna, kamaʻāina that I could talk to that might be interested?

DD: Yeah. I mean um, there's some people…Who else do you have on your list?

CD: …Shad Kane, but he's old now and I contacted him a couple of times and he hasn't responded, so I'm thinking maybe he just doesn't want to.

[CD and DD continue to speak about her list and that one of the people on the list might have passed away]

DD: You could talk to um Uncle Glen Kila. Um, you could talk to Aunty Nettie [Tiffany]. They're hard to get a hold of…And Uncle Glen [Kila] learned from Aunty Nettie's mom. And also, it's kind of a conflict of interest, but Kawika McKeague.

CD: Oh Kawika, yeah.

DD: Yeah, but he works at G70. Um, let me think who else, let me see…That's all right now that I can think of.

[CD makes some closing remarks and talks about another project she was involved in nearby]

DD: I have one more question if you can get back with me on this. Can you ask them who came up with the name Honokea?

CD: Honokea, the surf park?

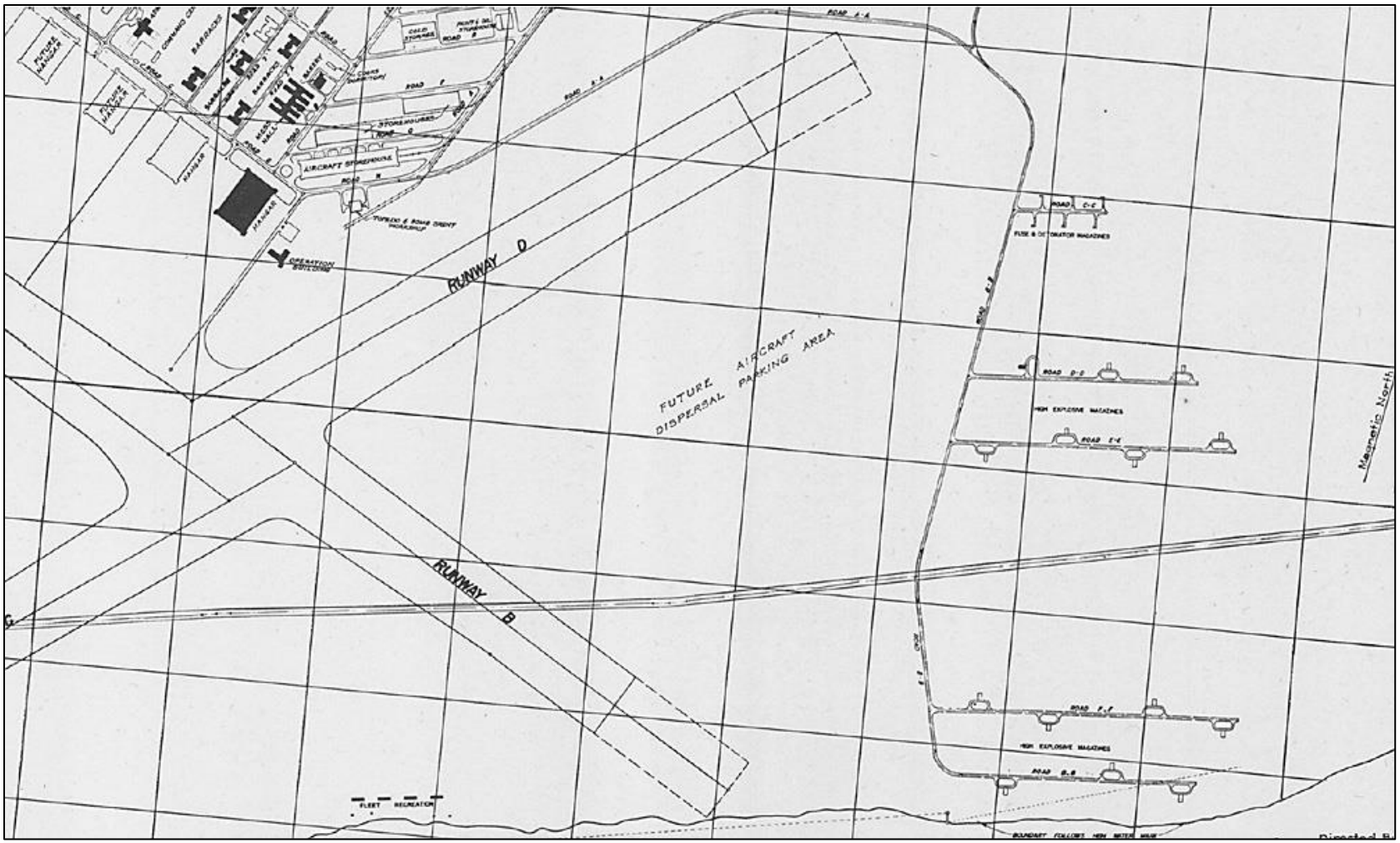
DD: Yeah, I'm just curious. Curious where they got that name from and who came up with that name and why they came up with that name.

CD: Okay. Does it mean something? Does it mean something special?

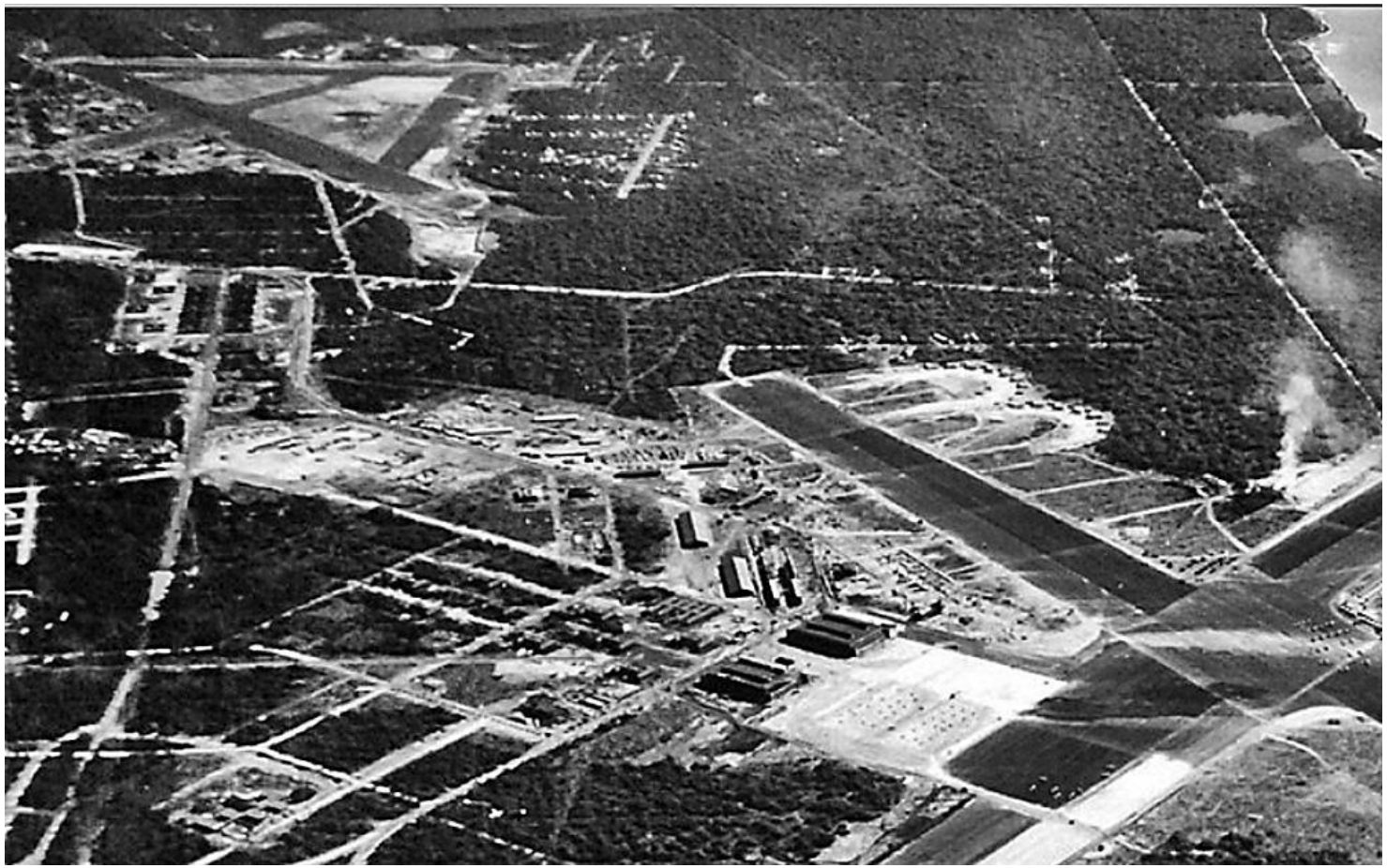
DD: It's "white bay." And yeah I'm just curious on how they got that name.

[CD and DD continue to talk about the name before the recording ends]

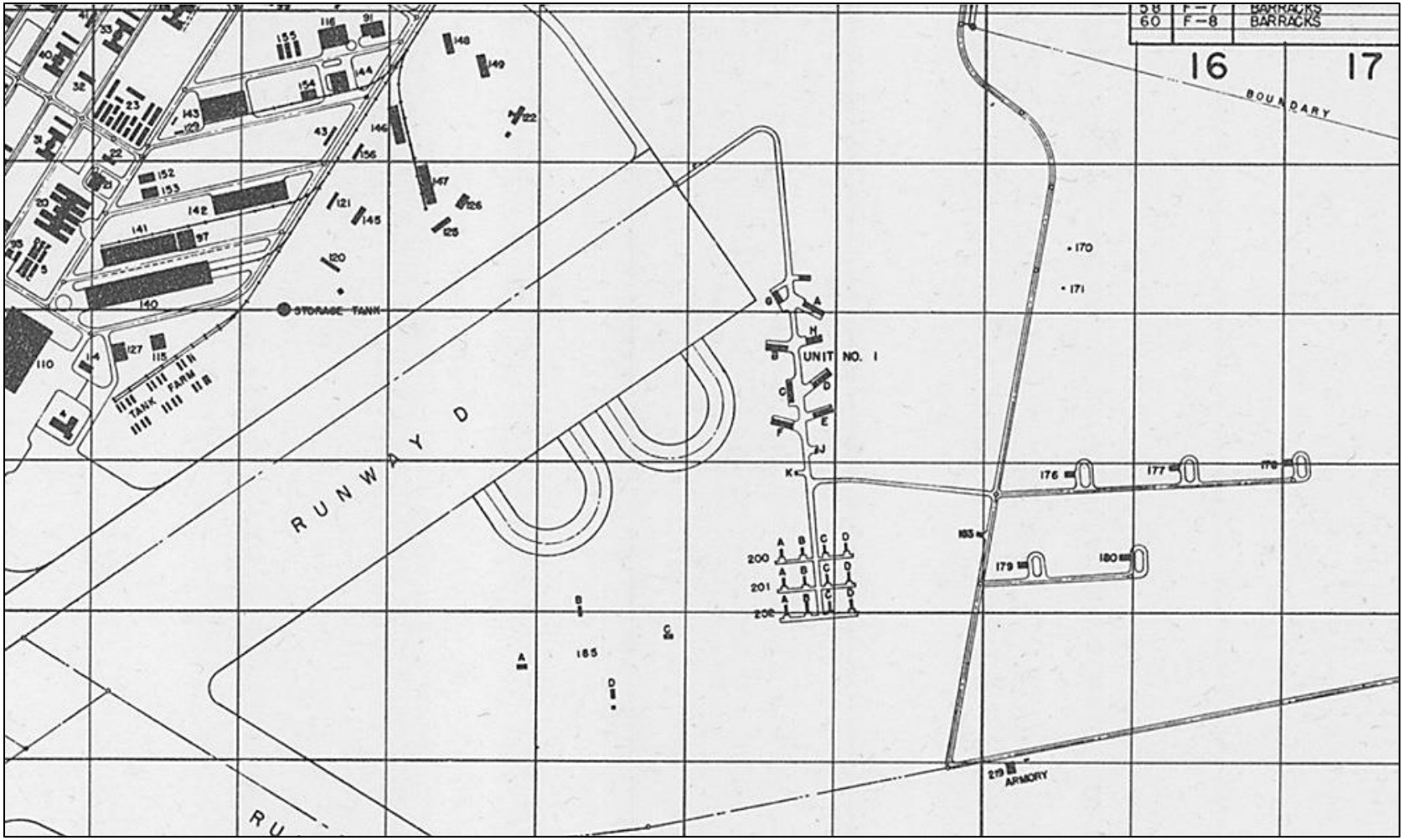
# APPENDIX G: A SELECTION OF SUPPLEMENTAL MATERIALS PROVIDED BY JOHN BOND



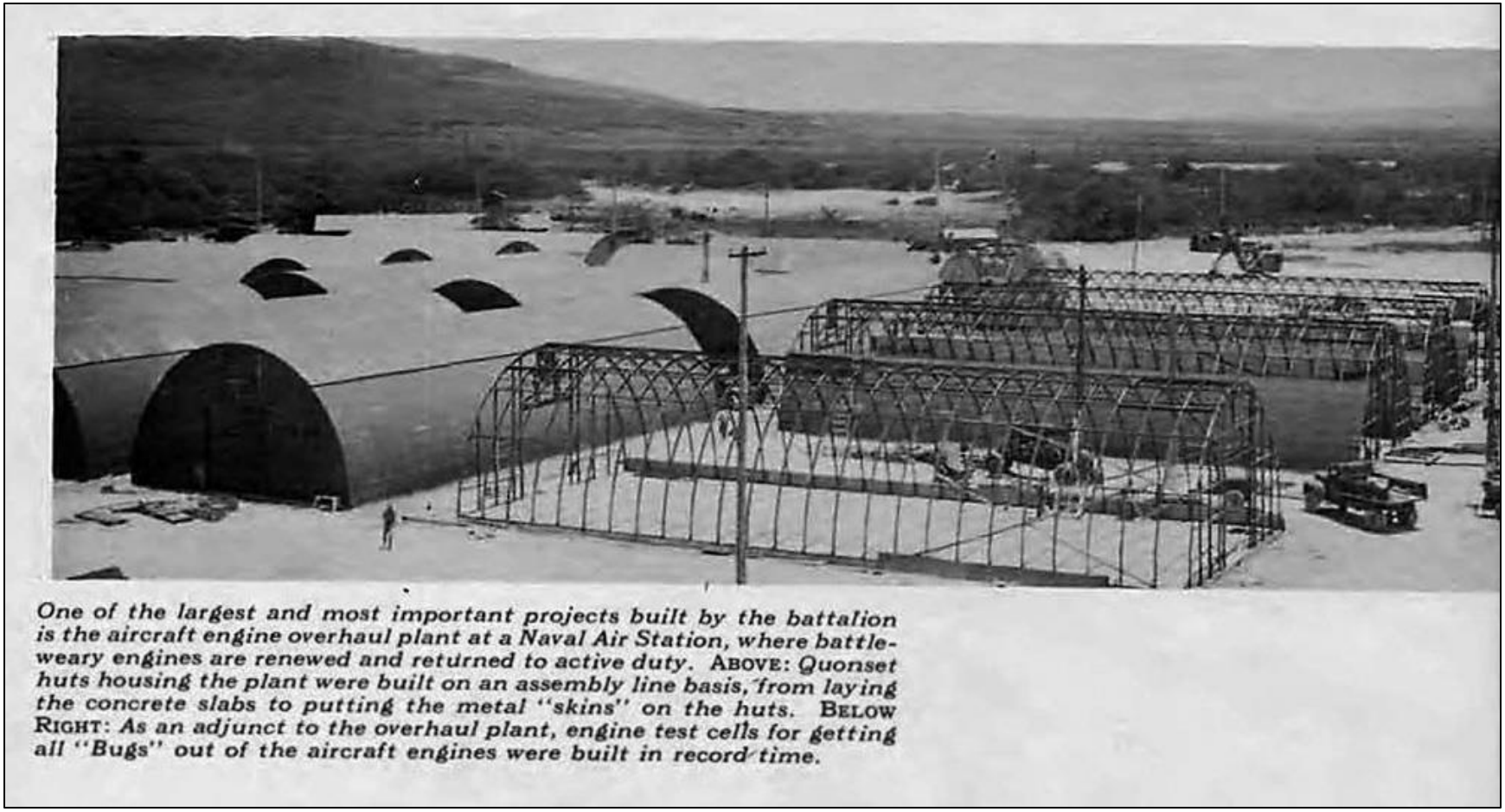

**Portion of a 1942 map of the project area.**



**Portion of a 1942 aerial photograph that shows the initial Pacific Naval Airbase construction consortium (CPNAB) Quonset huts along the road leading to Runway 22.**

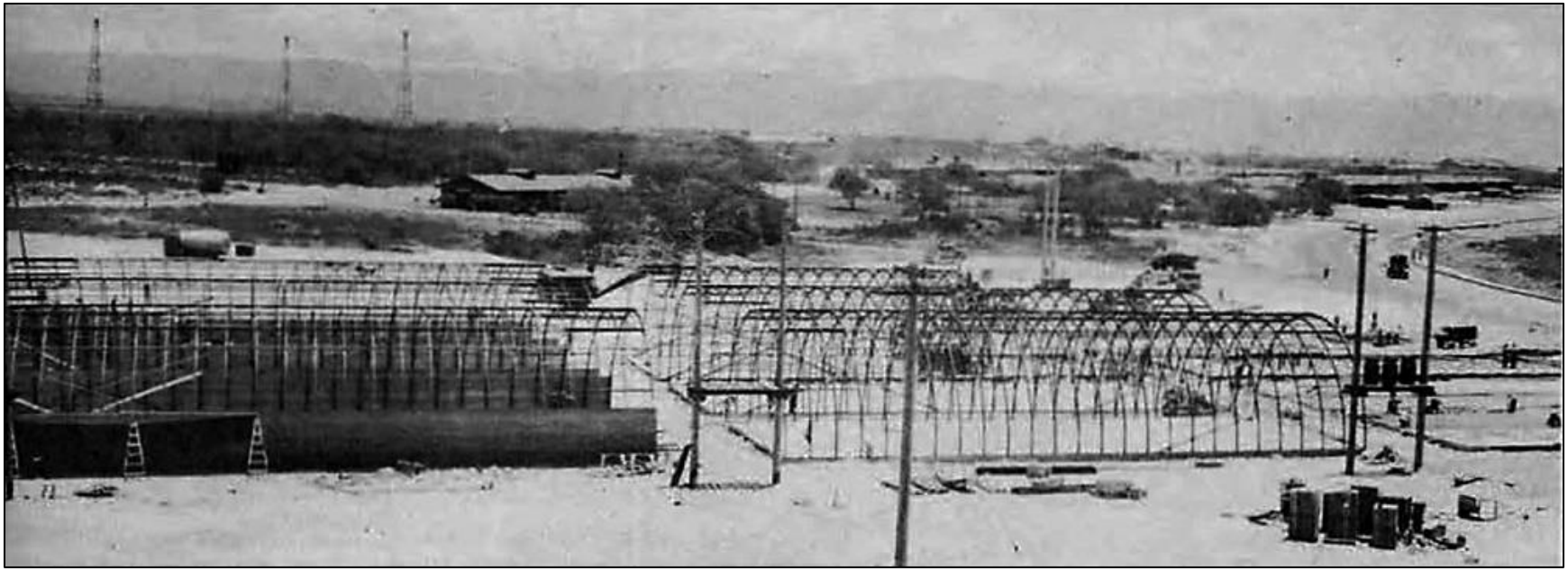



**Portion of a 1943 map of the project area. John Bond notes that early base maps identify the buildings within the project area for engine work and torpedoes.**

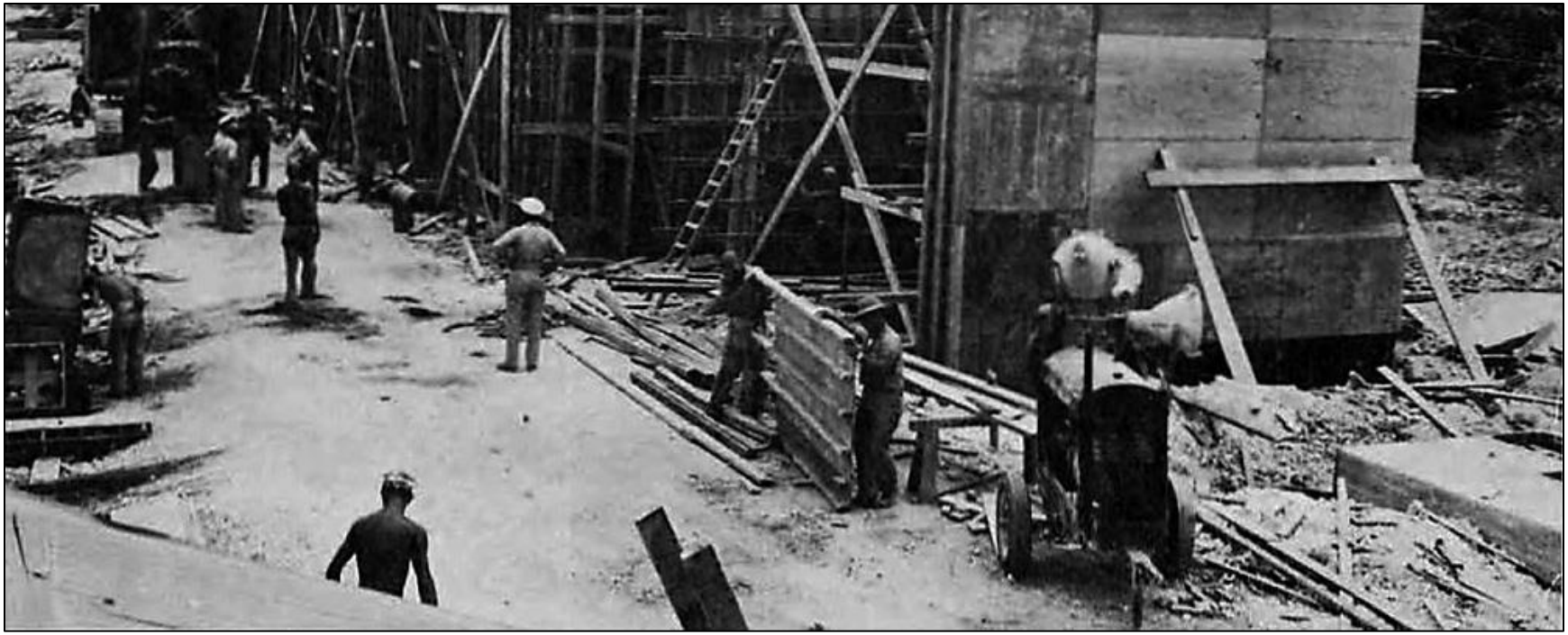


*One of the largest and most important projects built by the battalion is the aircraft engine overhaul plant at a Naval Air Station, where battle-weary engines are renewed and returned to active duty.* ABOVE: *Quonset huts housing the plant were built on an assembly line basis, from laying the concrete slabs to putting the metal "skins" on the huts.* BELOW RIGHT: *As an adjunct to the overhaul plant, engine test cells for getting all "Bugs" out of the aircraft engines were built in record time.*

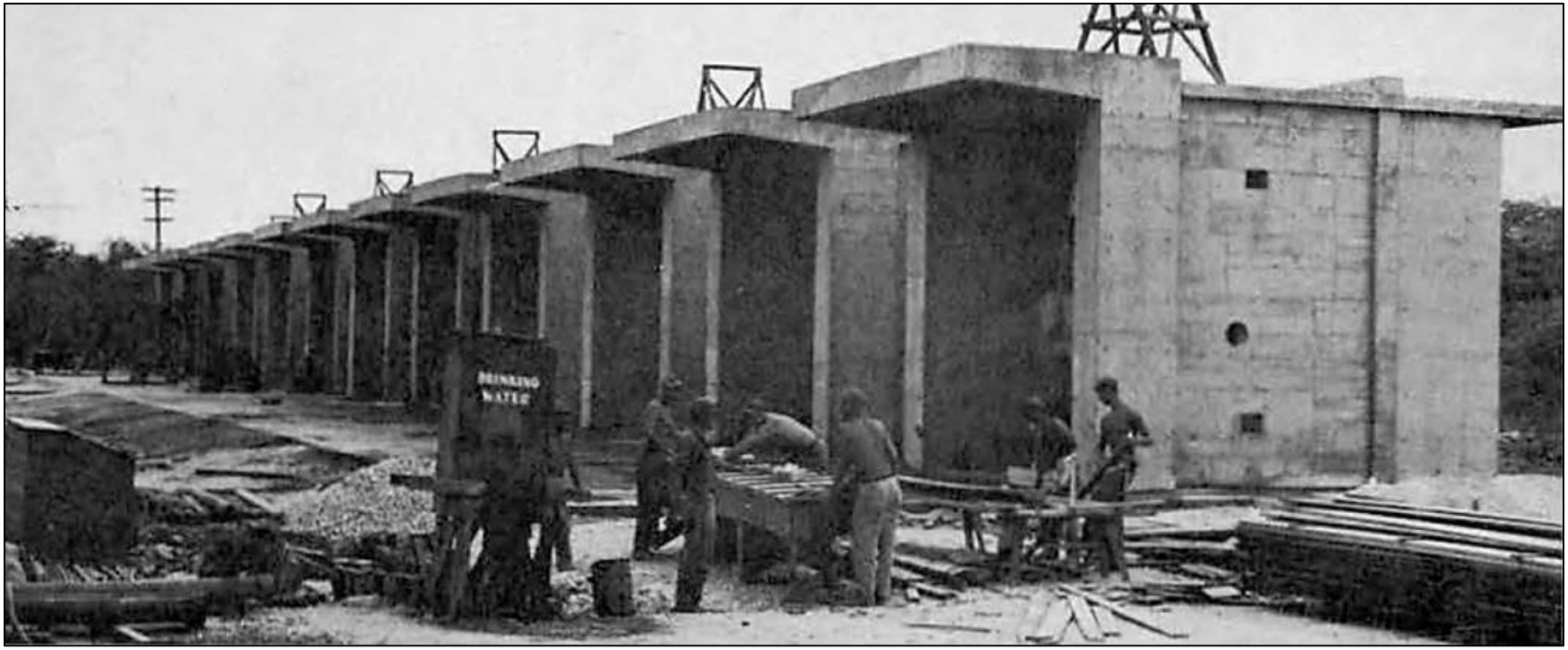
**1943 photograph of the engine test cell site on the project area. John Bond notes that the facility test cells were oriented towards the primary prevailing trade winds. Initially the construction was for an immediate wartime need as the larger later facility was being designed in 1942.**



**1943 photograph of the engine test cell site on the project area.**

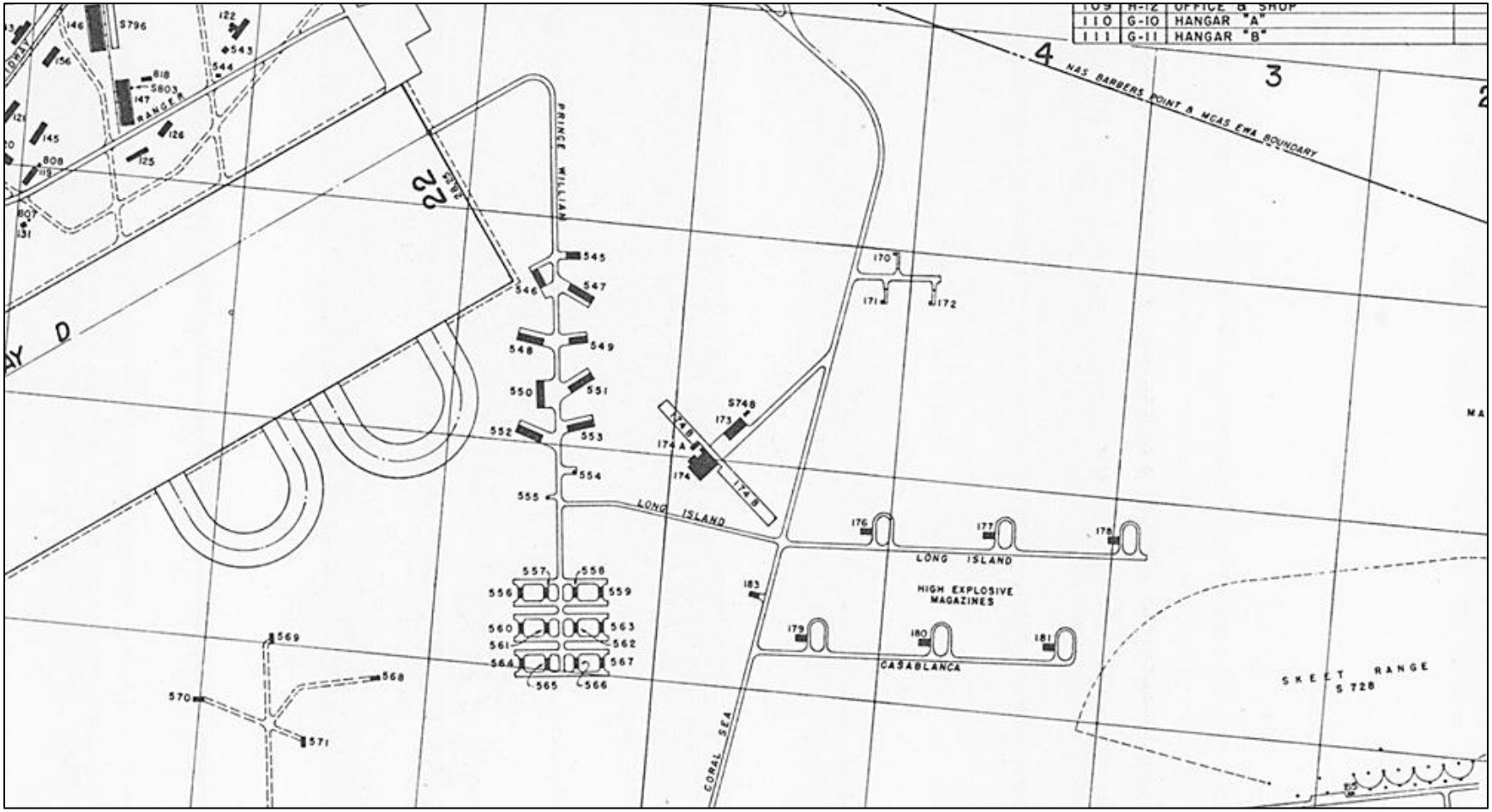


**1943 photograph of military construction, likely the project area.**

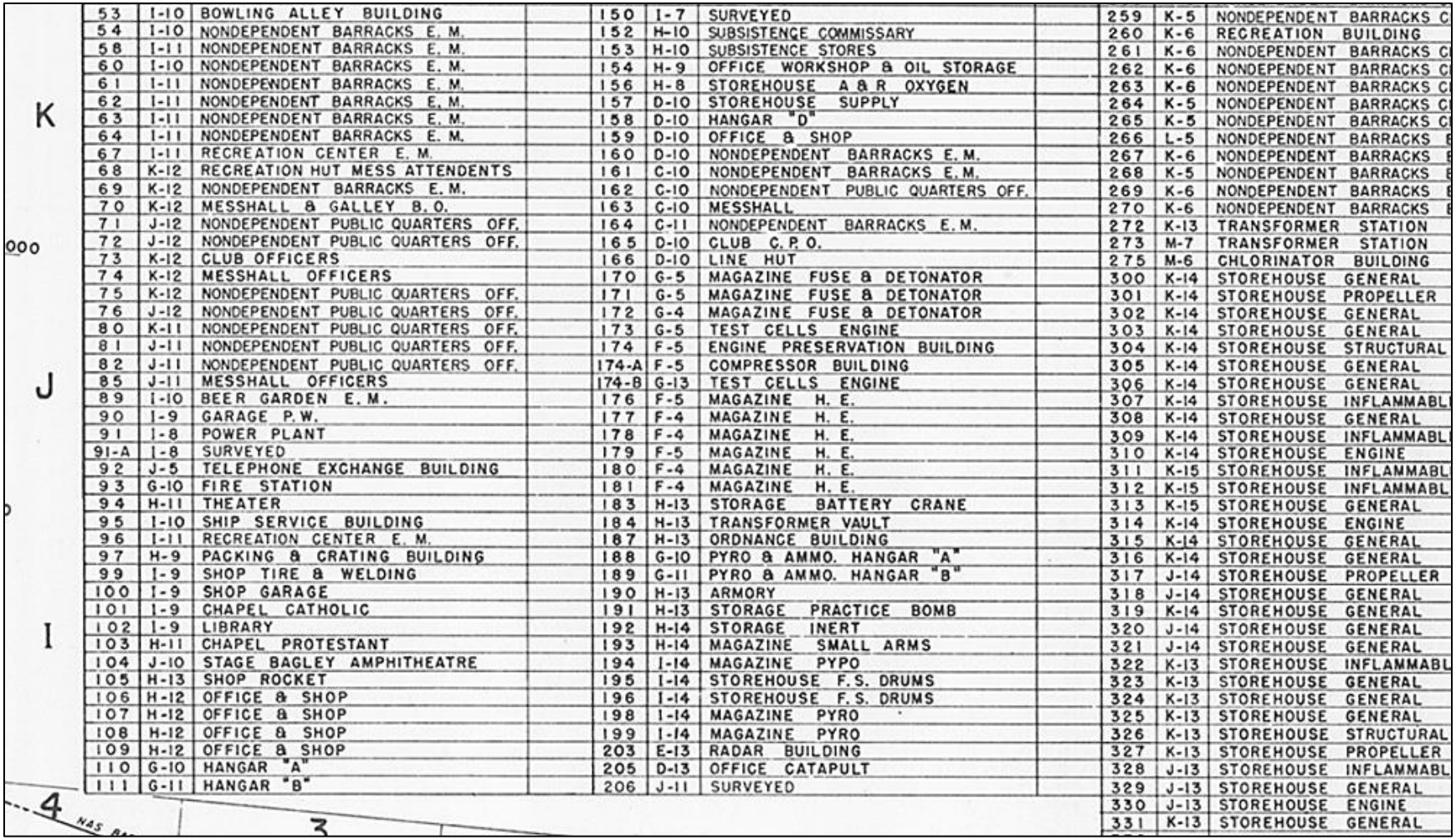


**1943 photograph of military construction, likely the project area.**

**1948 aerial photograph of the project area.**

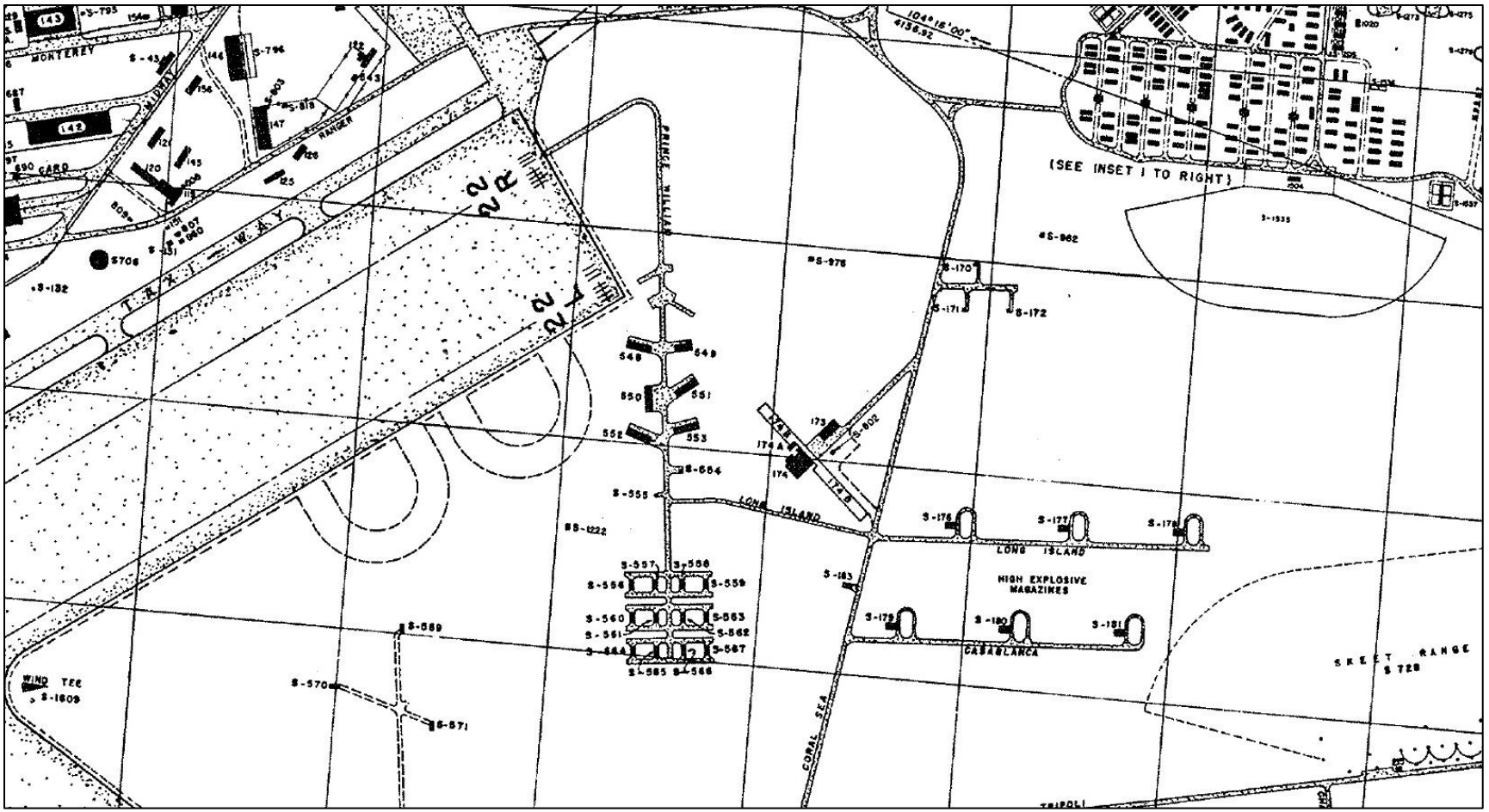



**Portion of a 1949 map of the project area.**



| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 53 | I-10 | BOWLING ALLEY BUILDING | | 150 | I-7 | SURVEYED | | 259 | K-5 | NONDEPENDENT BARRACKS C |
| 54 | I-10 | NONDEPENDENT BARRACKS E. M. | | 152 | H-10 | SUBSISTENCE COMMISSARY | | 260 | K-6 | RECREATION BUILDING |
| 58 | I-11 | NONDEPENDENT BARRACKS E. M. | | 153 | H-10 | SUBSISTENCE STORES | | 261 | K-6 | NONDEPENDENT BARRACKS C |
| 60 | I-10 | NONDEPENDENT BARRACKS E. M. | | 154 | H-9 | OFFICE WORKSHOP & OIL STORAGE | | 262 | K-6 | NONDEPENDENT BARRACKS C |
| 61 | I-11 | NONDEPENDENT BARRACKS E. M. | | 156 | H-8 | STOREHOUSE A & R OXYGEN | | 263 | K-6 | NONDEPENDENT BARRACKS C |
| 62 | I-11 | NONDEPENDENT BARRACKS E. M. | | 157 | D-10 | STOREHOUSE SUPPLY | | 264 | K-5 | NONDEPENDENT BARRACKS C |
| 63 | I-11 | NONDEPENDENT BARRACKS E. M. | | 158 | D-10 | HANGAR "D" | | 265 | K-5 | NONDEPENDENT BARRACKS C |
| 64 | I-11 | NONDEPENDENT BARRACKS E. M. | | 159 | D-10 | OFFICE & SHOP | | 266 | L-5 | NONDEPENDENT BARRACKS |
| 67 | I-11 | RECREATION CENTER E. M. | | 160 | D-10 | NONDEPENDENT BARRACKS E. M. | | 267 | K-6 | NONDEPENDENT BARRACKS |
| 68 | K-12 | RECREATION HUT MESS ATTENDENTS | | 161 | C-10 | NONDEPENDENT BARRACKS E. M. | | 268 | K-5 | NONDEPENDENT BARRACKS |
| 69 | K-12 | NONDEPENDENT BARRACKS E. M. | | 162 | C-10 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 269 | K-6 | NONDEPENDENT BARRACKS |
| 70 | K-12 | MESSHALL & GALLEY B. O. | | 163 | C-10 | MESSHALL | | 270 | K-6 | NONDEPENDENT BARRACKS |
| 71 | J-12 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 164 | C-11 | NONDEPENDENT BARRACKS E. M. | | 272 | K-13 | TRANSFORMER STATION |
| 72 | J-12 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 165 | D-10 | CLUB C. P. O. | | 273 | M-7 | TRANSFORMER STATION |
| 73 | K-12 | CLUB OFFICERS | | 166 | D-10 | LINE HUT | | 275 | M-6 | CHLORINATOR BUILDING |
| 74 | K-12 | MESSHALL OFFICERS | | 170 | G-5 | MAGAZINE FUSE & DETONATOR | | 300 | K-14 | STOREHOUSE GENERAL |
| 75 | K-12 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 171 | G-5 | MAGAZINE FUSE & DETONATOR | | 301 | K-14 | STOREHOUSE PROPELLER |
| 76 | J-12 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 172 | G-4 | MAGAZINE FUSE & DETONATOR | | 302 | K-14 | STOREHOUSE GENERAL |
| 80 | K-11 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 173 | G-5 | TEST CELLS ENGINE | | 303 | K-14 | STOREHOUSE GENERAL |
| 81 | J-11 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 174 | F-5 | ENGINE PRESERVATION BUILDING | | 304 | K-14 | STOREHOUSE STRUCTURAL |
| 82 | J-11 | NONDEPENDENT PUBLIC QUARTERS OFF. | | 174-A | F-5 | COMPRESSOR BUILDING | | 305 | K-14 | STOREHOUSE GENERAL |
| 85 | J-11 | MESSHALL OFFICERS | | 174-B | G-13 | TEST CELLS ENGINE | | 306 | K-14 | STOREHOUSE GENERAL |
| 89 | I-10 | BEER GARDEN E. M. | | 176 | F-5 | MAGAZINE H. E. | | 307 | K-14 | STOREHOUSE INFLAMMABL |
| 90 | I-9 | GARAGE P. W. | | 177 | F-4 | MAGAZINE H. E. | | 308 | K-14 | STOREHOUSE GENERAL |
| 91 | I-8 | POWER PLANT | | 178 | F-4 | MAGAZINE H. E. | | 309 | K-14 | STOREHOUSE INFLAMMABL |
| 91-A | I-8 | SURVEYED | | 179 | F-5 | MAGAZINE H. E. | | 310 | K-14 | STOREHOUSE ENGINE |
| 92 | J-5 | TELEPHONE EXCHANGE BUILDING | | 180 | F-4 | MAGAZINE H. E. | | 311 | K-15 | STOREHOUSE INFLAMMABL |
| 93 | G-10 | FIRE STATION | | 181 | F-4 | MAGAZINE H. E. | | 312 | K-15 | STOREHOUSE INFLAMMABL |
| 94 | H-11 | THEATER | | 183 | H-13 | STORAGE BATTERY CRANE | | 313 | K-15 | STOREHOUSE GENERAL |
| 95 | I-10 | SHIP SERVICE BUILDING | | 184 | H-13 | TRANSFORMER VAULT | | 314 | K-14 | STOREHOUSE ENGINE |
| 96 | I-11 | RECREATION CENTER E. M. | | 187 | H-13 | ORDNANCE BUILDING | | 315 | K-14 | STOREHOUSE GENERAL |
| 97 | H-9 | PACKING & CRATING BUILDING | | 188 | G-10 | PYRO & AMMO. HANGAR "A" | | 316 | K-14 | STOREHOUSE GENERAL |
| 99 | I-9 | SHOP TIRE & WELDING | | 189 | G-11 | PYRO & AMMO. HANGAR "B" | | 317 | J-14 | STOREHOUSE PROPELLER |
| 100 | I-9 | SHOP GARAGE | | 190 | H-13 | ARMORY | | 318 | J-14 | STOREHOUSE GENERAL |
| 101 | I-9 | CHAPEL CATHOLIC | | 191 | H-13 | STORAGE PRACTICE BOMB | | 319 | K-14 | STOREHOUSE GENERAL |
| 102 | I-9 | LIBRARY | | 192 | H-14 | STORAGE INERT | | 320 | J-14 | STOREHOUSE GENERAL |
| 103 | H-11 | CHAPEL PROTESTANT | | 193 | H-14 | MAGAZINE SMALL ARMS | | 321 | J-14 | STOREHOUSE GENERAL |
| 104 | J-10 | STAGE BAGLEY AMPHITHEATRE | | 194 | I-14 | MAGAZINE PYPO | | 322 | K-13 | STOREHOUSE INFLAMMABL |
| 105 | H-13 | SHOP ROCKET | | 195 | I-14 | STOREHOUSE F.S. DRUMS | | 323 | K-13 | STOREHOUSE GENERAL |
| 106 | H-12 | OFFICE & SHOP | | 196 | I-14 | STOREHOUSE F.S. DRUMS | | 324 | K-13 | STOREHOUSE GENERAL |
| 107 | H-12 | OFFICE & SHOP | | 198 | I-14 | MAGAZINE PYRO | | 325 | K-13 | STOREHOUSE GENERAL |
| 108 | H-12 | OFFICE & SHOP | | 199 | I-14 | MAGAZINE PYRO | | 326 | K-13 | STOREHOUSE STRUCTURAL |
| 109 | H-12 | OFFICE & SHOP | | 203 | E-13 | RADAR BUILDING | | 327 | K-13 | STOREHOUSE PROPELLER |
| 110 | G-10 | HANGAR "A" | | 205 | D-13 | OFFICE CATAPULT | | 328 | J-13 | STOREHOUSE INFLAMMABL |
| 111 | G-11 | HANGAR "B" | | 206 | J-11 | SURVEYED | | 329 | J-13 | STOREHOUSE GENERAL |
| | | | | | | | | 330 | J-13 | STOREHOUSE ENGINE |
| | | | | | | | | 331 | K-13 | STOREHOUSE GENERAL |

**Key to the 1949 map presented above.**




**Portion of a 1951 map of the project area.**

**Portion of a 1964 aerial photograph of the project area.**

**Ca. 1980s aerial photograph of the project area.**

**Photograph of a type of pillbox that might be found within the project area.**


**Photograph of a type of pillbox that might be found within the project area.**

Appendix F

# Archaeological Literature Review and Field Inspection

Keala Pono

PO Box 1645
Kāne‘ohe, Hawai‘i 96744

December 24, 2021

Kawika McKeague
G70
111 S. King Street, Ste 170
Honolulu, Hawai‘i 96813

Re: Archaeological Literature Review and Field Inspection for the Proposed Honokea Surf Village in Kalaeloa, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu

Aloha e Mr. McKeague,

This letter informs you that as of December 16, 2021 fieldwork for an Archaeological Literature Review and Field Inspection (ALRFI) for the proposed Honokea Surf Village is complete. The project area is located on TMK: (1) 9-1-013:068 in Kalaeloa, O‘ahu, on former Barbers Point Naval Air Station lands (Figure 1). This work was done at the request of G70 to gather information on surface archaeological features in advance of the proposed project. A total of 17 archaeological sites were identified, composed of at least 51 individual features (Figures 2–3, Table 1), as well as 12 areas of unmodified sinkholes (Table 2).

The field inspection consisted of a pedestrian survey of 100% of the 19.361-acre project area shown in Figure 1. This was conducted on December 16, 2021. Archaeologists present for the survey include Steven Eminger; Kaylee Gaunt, BA; and Robin Kapoi, BA. Eminger served as field supervisor, managing the field inspection. Windy McElroy, PhD was the principal investigator, overseeing the project as a whole and performing a site visit during the field inspection.

Archaeologists were spaced 5–10 m apart, depending on terrain and vegetation. Much of the project area is open terrain with flat ground. Visibility was good to fair in portions of the project area (Figure 4), and fair to poor in other parts (Figure 5). The dominant vegetation consists of koa haole, mature kiawe trees, and grass.

A total of 17 archaeological sites were identified (see Figures 2 and 3). All sites were marked with a 3-meter accurate Garmin GPSmap 62st GPS unit, and selected features were digitally photographed with a Samsung S10 Galaxy camera. The red and white scale in the photos is marked in 10-cm increments. Archaeological sites were given temporary site numbers with a prefix of H for Honokea, and all features were marked in pink flagging tape with a metal tag. Biodegradable orange flagging tape was used to mark survey transect boundaries.

Brief descriptions of the sites are as follows:

- Site H1 is located in the central portion of the property (see Figure 2). The site consists of a large concrete slab that is partially fenced in chain link; concrete cradles that may have supported a water or fuel tank (Figure 6); raised concrete pads on the larger slab, with the remains of metal pipes along their perimeters (Figure 7); metal poles; and old asphalt roads. These are likely vestiges of historic military use of the property. The roads, large concrete slab, and a structure on the concrete slab are visible in a 1951 aerial image of the Naval Air Station at Barbers Point (Figure 8) and a 1953 USGS map (Figure 9). The road and concrete slab can also be seen on a current aerial image (Figure 10).

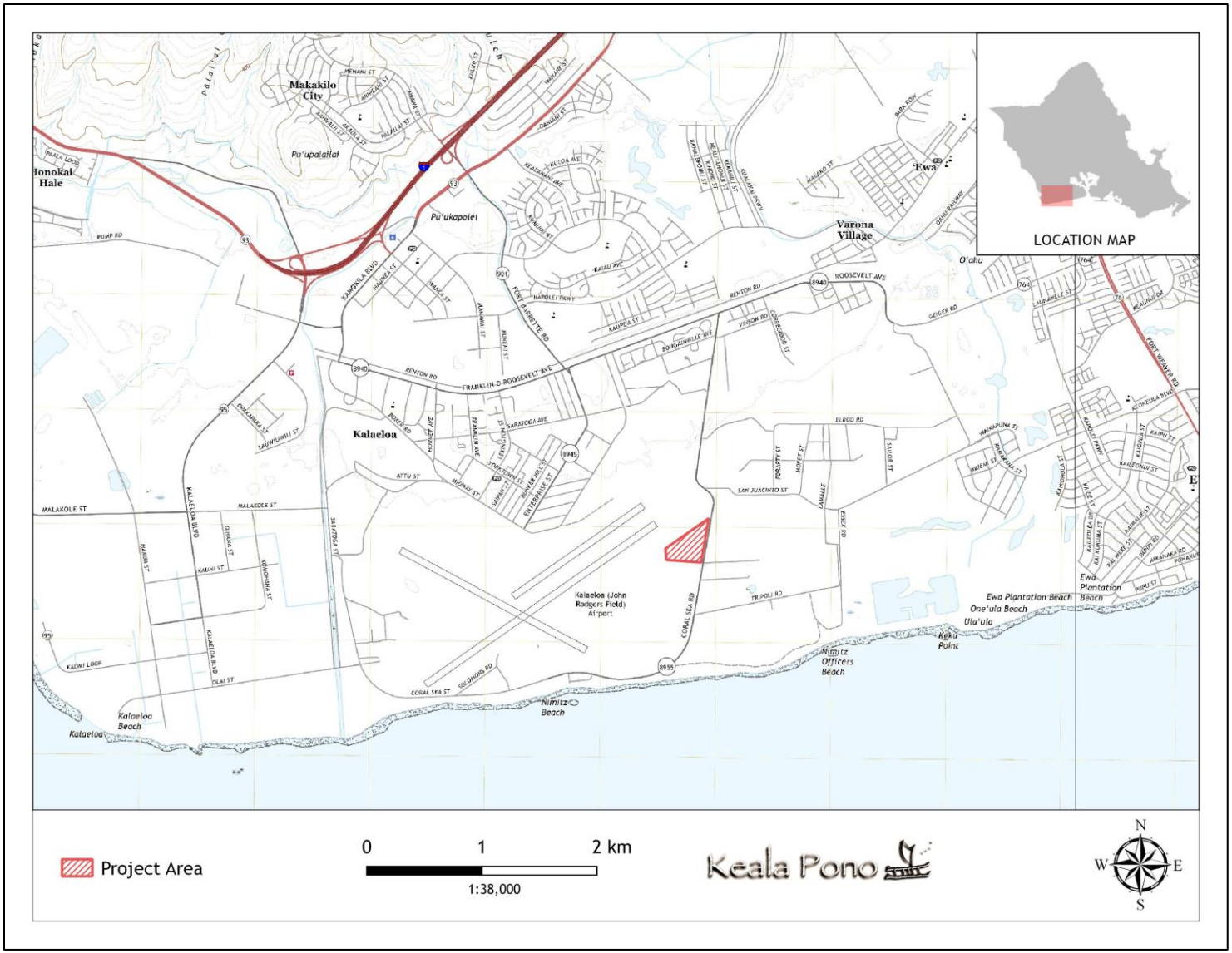



**Figure 1. Location of the Honokea Surf Village project area.**

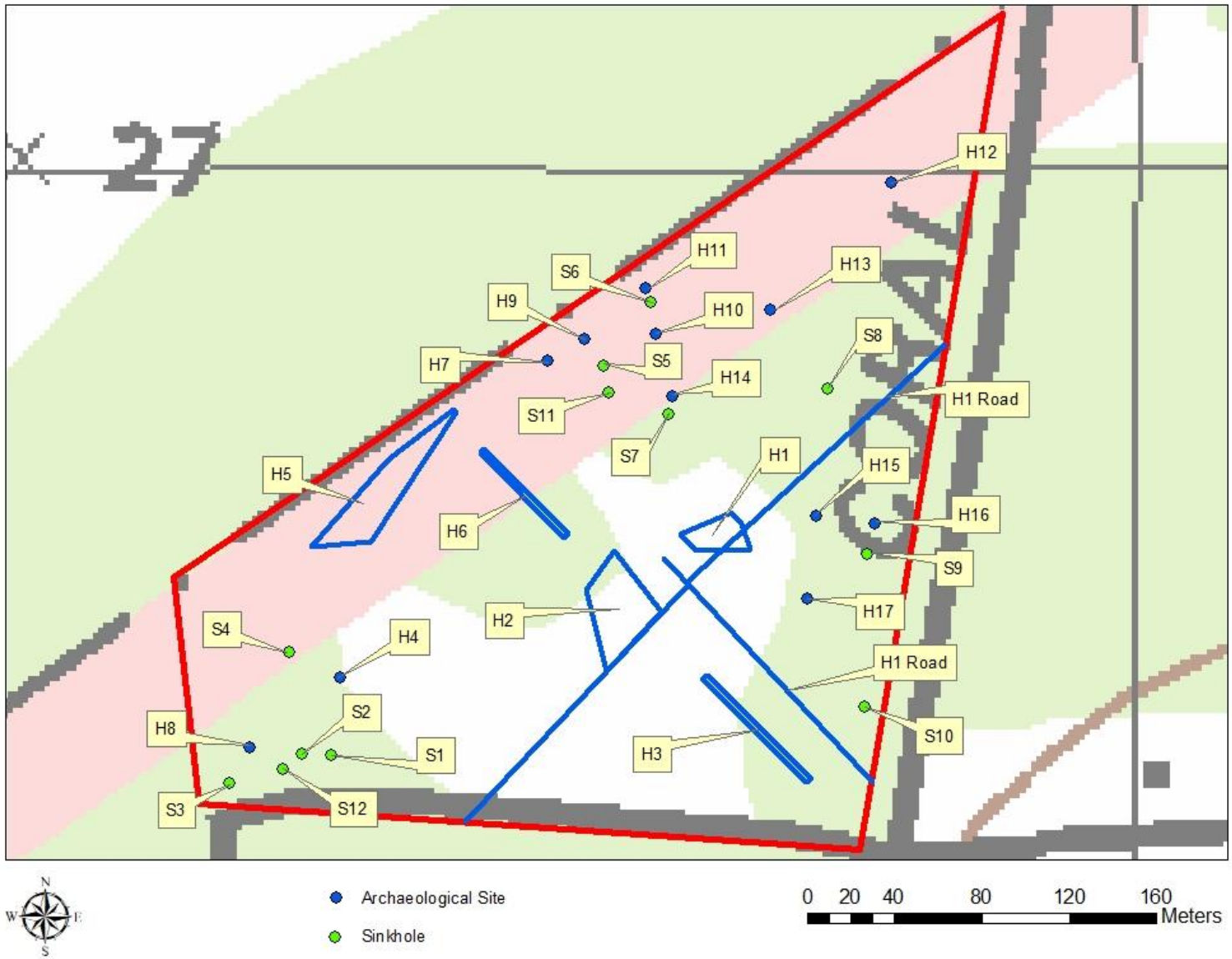



**Figure 2. Location of archaeological sites on a USGS quadrangle map.**

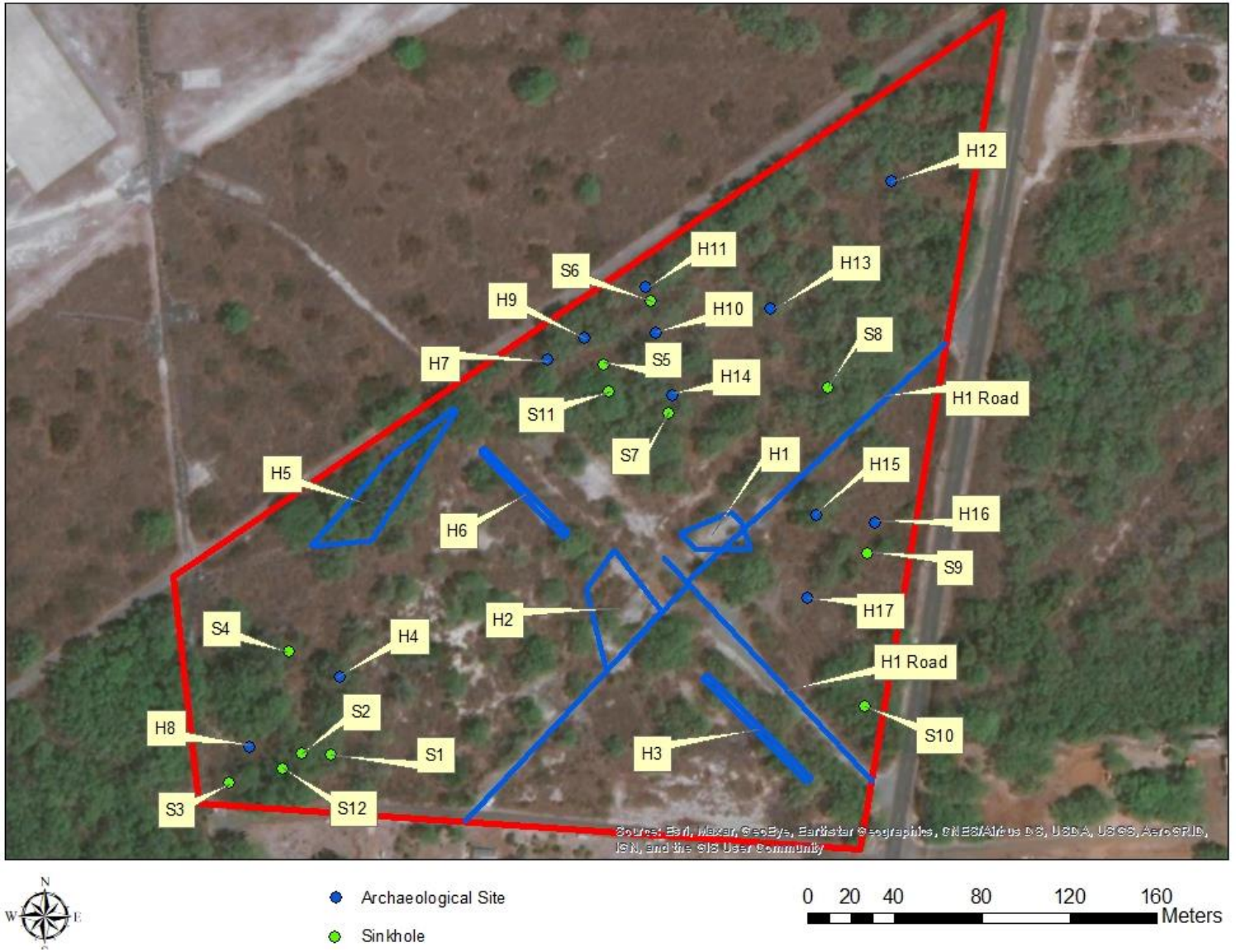



**Figure 3. Location of archaeological sites on an aerial image.**

**Table 1. Archaeological Sites Identified During Field Inspection**

| Temp. Site Number | Description | Approx. Number of Features | Age | Function |
|---|---|---|---|---|
| H1 | Concrete slabs, pads, cradles, asphalt roads, metal poles | 5+ | Historic | Military |
| H2 | Concrete slab, wall, sumps, drains, manhole | 9+ | Historic | Military |
| H3 | Concrete slabs, sumps, metal drain | 9+ | Historic | Military |
| H4 | Filled-in pit | 1 | Historic | Military |
| H5 | Concrete columns with thick concrete chunks, heavy rebar, metal plates | 6+ | Historic | Military |
| H6 | Concrete slabs | 5+ | Historic | Military |
| H7 | Concrete and metal push pile | 1 | Historic | Military |
| H8 | Railroad track | 1 | Historic | Military |
| H9 | Coral mound | 1 | Undetermined | Undetermined |
| H10 | Metal posts and possible historic debris | 2+ | Historic | Military |
| H11 | Possible C-shaped structure | 1 | Undetermined | Undetermined |
| H12 | Sinkhole with stacked coral | 1 | Undetermined | Undetermined |
| H13 | Small, filled-in sinkholes with coral mounds | 5 | Undetermined | Undetermined |
| H14 | Historic debris | 1 | Historic | Military |
| H15 | Historic push pile with concrete column | 1 | Historic | Military |
| H16 | Concrete debris | 1 | Historic | Military |
| H17 | Metal debris | 1 | Historic | Military |

**Figure 4. Example of open area with scattered vegetation, Orientation is to the northwest.**

**Figure 5. Example of heavier vegetation. Orientation is to the northwest.**

**Figure 6. Concrete cradles of Site H1, facing southeast.**

**Figure 7. Raised concrete pads of Site H1, facing north.**


**Figure 8. 1951 aerial image of the Barbers Point Naval Air Station.**

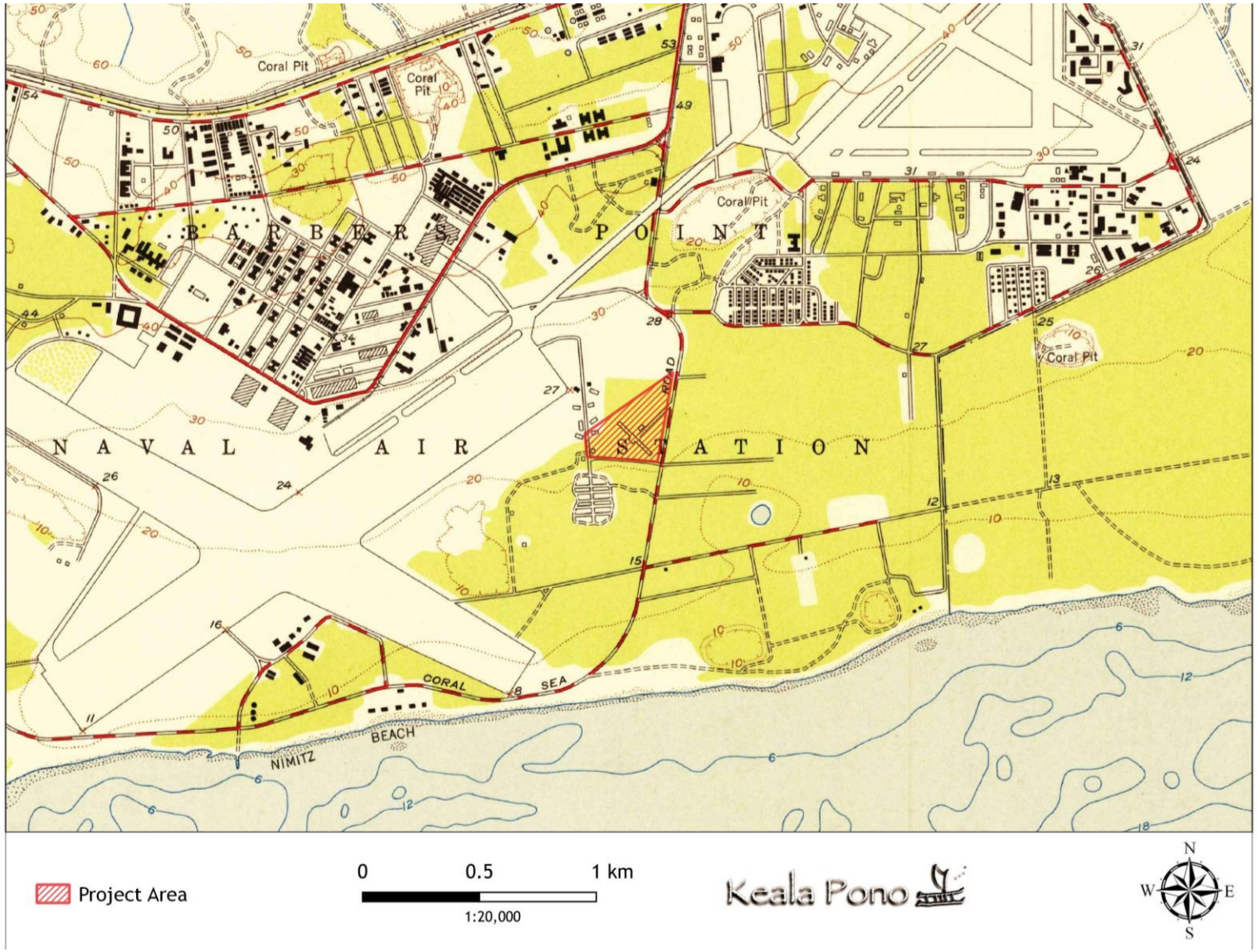



**Figure 9. Portion of a 1953 USGS ‘Ewa quadrangle map.**


**Figure 10. Current Google Earth image of the southeast corner of the project area. Note the asphalt roads and concrete features of H1 and H2. The project area is outlined in red.**

- Site H2 is also located in the central portion of property, to the southwest of Site H1 (see Figure 2). The site includes a concrete slab; remains of a concrete perimeter wall at the southeast edge of the slab; five concrete sumps within the concrete slab, each with sloping floors leading to common drains; drains composed of metal pipe; and a concrete and metal manhole (Figure 11). An old electric pole with substantial ceramic insulators is nearby, possibly indicating that high voltage power was carried to the former structures of this site. Site H2 is visible on a historic aerial image and map and a current aerial photo of the area (see Figures 8–10).

- Site H3 is located in the southeast corner of the project area and extends in a linear trajectory towards Site H2. The site includes a concrete slab with heavy duty rebar (Figure 12); several similar plain concrete slabs in alignment; a metal drain now filled in with concrete; two additional concrete slabs; and four possible concrete sumps that appear as notches out of the side of the concrete slabs. Site H3 is also visible on the historic aerial image and map (see Figures 8 and 9).

- Site H4 is situated on the southwest side of the project area (see Figure 2). It consists of a filled-in pit. The circular pit has vertical walls that extend down through the exposed natural coral shelf on the surface (Figure 13). Several bricks and a metal pipe fragment were observed in the area. The pit may have once functioned as a well.

- Site H5 is located on the northwest side of the parcel (see Figure 2). It consists of concrete columns with thick concrete chunks, heavy rebar, and metal plates (Figure 14). At least four concrete columns were observed, as well as a large concrete block with a metal shackle and link.

- Site H6 is just southeast of Site H5 (see Figure 2). It consists of three small and two large concrete slabs. Each of the small slabs exhibits metal plates in their corners, and the metal plates have threaded metal rods extending up from their corners (Figure 15). The two larger concrete slabs each had an interior wall of concrete that is now broken off to roughly the level of the slabs. All of the slabs are in line with each other and are also in line with Site H3. They can be seen on the historic aerial image and map (see Figures 8 and 9).

- Site H7 is located near the north boundary of the property (see Figure 2). The site is composed of a push pile with concrete and metal debris. The push pile is elongated in morphology and runs northwest to southeast.

- Site H8 is situated near the southwest corner of the parcel (see Figure 2). It consists of railroad track remains. The tracks are approximately 5 m long each and run parallel to each other (Figure 16). There are triangular metal plates at one end welded to the track in an upright position.

- Site H9 is located near the north boundary of the property (see Figure 2). The site is a mound of fairly uniform-sized coral cobbles (Figure 17). No formal stacking is evident, although no soil is incorporated into the mound that might suggest a push pile.

- Site H10 is a rock terrace located to the east of Site H9 (see Figure 2). It consists of metal posts and debris that is possibly historic in age. The posts support horizontal bars that are parallel with each other (Figure 18). Debris noted in the area include a rusted wheelbarrow, an old trash can, and a rusted shovel blade.

- Site H11 is near the north boundary of the property (see Figure 2). The site is a possible C-shaped structure made of coral (Figure 19). There are some areas of the C-shape that may be stacked, although most of the structure is piled to a low height. The structure may be associated with a sinkhole that is located nearby (S6, see below).

**Figure 11. Manhole (foreground and center) and concrete slab (background) of Site H2, facing northeast.**

**Figure 12. Concrete slab with heavy rebar of Site H3, facing northwest.**

**Figure 13. Filled-in pit of Site H4, facing west. Note the brick in the foreground.**

**Figure 14. Concrete column with heavy rebar of Site H5, facing west.**

**Figure 15. Concrete slab with metal plates of Site H6, facing northwest.**

**Figure 16. Railroad tracks of Site H8, facing southwest.**

**Figure 17. Site H9 coral mound, facing north.**

**Figure 18. Metal posts of Site H10, facing southeast.**

**Figure 19. Site H11, possible C-shaped structure, facing northwest.**

- Site H12 is located near the northeast corner of the parcel (see Figure 2). It consists of a small sinkhole with coral piled and stacked around its opening (Figure 20). The base of the sinkhole appears to extend laterally, although the opening is not large enough to enter.
- Site H13 is situated in the northern part of the project area (see Figure 2). The site includes five mounds made of coral, dispersed among several small filled-in sinkholes. The mounds generally have little structure, except for one mound that exhibits stacking (Figure 21).
- Site H14 is in the northern part of the project area (see Figure 2). It consists of a scatter of debris mostly made of metal, including curved metal sheets (Figure 22), various pipes, wire, and cable, as well as an old style rubber hose or tubing.
- Site H15 is located toward the east side of the parcel (see Figure 2). The site is composed of a push pile with a concrete column and auto parts. Coral bedrock chunks and soil are incorporated into the pile. The column has twisted cable reinforcement rather than the rebar that is typically seen in other parts of the project area.
- Site H16 is on the east side of the project area, to the east of Site H15 (see Figure 2). It consists of a jumbled pile of historic debris. Large concrete chunks with rebar are strewn about in the pile.
- Site H17 is situated to the south of Sites H15 and H16 (see Figure 2). The site is composed of a large, circular metal object of unknown function (Figure 23).

In addition to the sites listed above, 12 unmodified sinkholes were noted (Table 2). These were given numbers prefixed with S, for sinkhole and mapped with GPS (Figure 2). Example photos of the sinkholes are presented in Figures 24 and 25. While these sinkholes show no evidence of human modification and do not appear to be habitable, extinct bird remains and other faunal material, human burials, historic material, and agricultural deposits have been found during excavation of sinkholes elsewhere on the ‘Ewa Plain.

**Table 2. Unmodified Sinkholes Identified During Field Inspection**

| Sinkhole Number | Description |
|---|---|
| S1 | Natural crack in the coral shelf |
| S2 | Sinkhole with a straight, round shaft |
| S3 | Well-like sinkhole with a straight shaft |
| S4 | Sinkhole with a straight shaft |
| S5 | Two small sinkholes, one filled in |
| S6 | Sinkhole with a straight shaft |
| S7 | Small filled-in sinkhole |
| S8 | Small sinkhole with a straight shaft |
| S9 | Sinkhole with a straight shaft |
| S10 | Sinkhole with a small opening that may lead to a larger chamber |
| S11 | Large sinkhole that is inaccessible but appears to run laterally |
| S12 | At least 5 small, shallow sinkholes |

In sum, 17 archaeological sites were identified during a field investigation of TMK : (1) 9-1-013:068 in Kalaeloa, O'ahu. The sites are composed of at least 51 individual features and are mostly historic military remnants,such as the vestiges of structures that are seen on historic maps and aerial photos. This was expected, given the intensive military usage of the Barbers Point Naval Air Station. In addition, 12 sinkhole areas were noted. While the sinkholes are unmodified and not habitable, excavation might reveal past usage or the remains of extinct fauna. If ground disturbance is to be conducted on the property, an Archaeological Inventory Survey (AIS) is recommended to fully document the sites and sinkholes.

Thank you for the opportunity to carry out this important work.

Windy Keala McElroy, PhD
Principal, Keala Pono Archaeological Consulting

**Figure 20. Site H12 sinkhole with stacked and piled coral perimeter, facing northwest.**

**Figure 21. Stacked coral mound of Site H13, facing south.**

**Figure 22. Rusted iron sheets of Site H14, facing northeast.**

**Figure 23. Site H17 metal debris, facing north.**

**Figure 24. Sinkhole S1, facing north.**

**Figure 25. One of the sinkholes of S12, facing northwest.**

Appendix G

# Mobility Analysis Report

# Honokea Surf Village:

## Mobility Analysis Report (DRAFT)

Prepared for:

Group 70 International, Inc.

April 25, 2022

FEHR PEERS

SD21-0428

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## Appendices

# 1. Executive Summary

This report presents the results of the Mobility Analysis Report (MAR) for the proposed Honokea Surf Village Project (Project) located in the Kalaeloa community in the Ewa region of O'ahu. The Project proposes the development of approximately 19.4 acres for a recreational area inclusive of a surf lagoon, supporting recreational uses (e.g., "lazy river" for stand-up paddleboarding, volleyball courts), and overnight bungalows. Regional access to the site is provided by Franklin D. Roosevelt Avenue with direct site access provided by Coral Sea Road. The Project is expected to be completed and fully operational by the end of 2024.

*Study Methodology* – The study first forecasts 2024 traffic volumes without the development of the project, and then forecasts volumes with the development of the proposed project uses. It documents estimated traffic movements at the analyzed intersections and then determines average delay times and the resulting level of service (LOS) ratings. Potential impacts on the pedestrian, bicycle, and transit facilities and services were evaluated.

*Vehicle Trip Generation* – The project is estimated to generate 802 new weekday daily vehicle trips, including approximately 92 new vehicle trips during the weekday morning peak hour, and 140 new vehicle trips during the weekday afternoon peak hour. The project is also estimated to generate 898 new Saturday daily vehicle trips, including approximately 96 new vehicle trips during the Saturday morning peak hour, and 152 new vehicle trips during the Saturday afternoon peak hour. The study focused on the weekday commute peak hours since traffic volumes and/or delays on major streets in the area are generally higher at those times compared to weekend days.

*Intersection Analysis* – The traffic impact analysis was evaluated pursuant to guidelines established by the State of Hawai'i Department of Transportation - Highways Division Planning Branch (HDOT), as well as for the City and County of Honolulu Department of Planning & Permitting (DPP) Traffic Review Branch (TRB). AM and PM peak hour analysis was conducted for the one (1) existing intersection and three (3) future intersections. The existing intersection currently operates at a desirable operating level (LOS D) during both AM and PM peak hours.

*Baseline (2024) Conditions* – For the baseline (2024) analysis without the Project, the Franklin D. Roosevelt Avenue/Coral Sea Road intersection was analyzed. The baseline intersection conditions include growth in background traffic in the study area, but they do not include any planned capacity improvements. While the background traffic growth is expected to increase delays in 2024, the existing study intersection is expected to continue operating at a desirable LOS D during both the weekday AM and PM peak hours.

*Baseline (2024) + Project Conditions* – For the baseline (2024) + Project, three proposed project driveways were evaluated in addition to the Franklin D. Roosevelt Avenue/Coral Sea Road Intersection. According to the significance criteria used in this report, the Project is not expected to result in any significant vehicular impacts at any of the study intersections.

The proposed project is not expected to generate a substantial number of bicycle and pedestrian trips to and from the project site. Therefore, the project is not expected to result in any significant active transportation impacts.

The closest bus stops to the project site are located near the Franklin D. Roosevelt Avenue/Coral Sea Road intersection and are beyond the typical maximum walking distance (0.5-mile) for most transit patrons. While the Project may generate a small increase in transit ridership, it is not anticipated to increase it to a level that would substantially affect existing transit facilities and services.

*Recommendations* – To address existing and future mobility issues in the vicinity of the site, we recommend the following as part of Project implementation:

- Relocation of all gates or ticket booths controlling parking facilities to provide at least 100 feet of on-site vehicle storage to minimize the potential for vehicle queues to extend back onto Coral Sea Road
- Reconfiguration of the southwest corner of the Main Parking lot to allow re-circulation to all areas of the parking lot and to provide ADA-accessible parking that does not require guests in those spaces to cross the vehicular circulation aisles
- Determine the appropriate setback on Coral Sea Road to accommodate both a planned shared use path for bicyclists and pedestrians, as well as any potential widening that may be required for a two-way center left-turn lane (if needed to support other future Kalaeloa development)
- Installation of No Parking signs on both sides of Coral Sea Road at least 1,000 feet mauka and makai of the project site boundaries to minimize the potential for guests to park off-site to avoid parking fees collected at the Project site

# 2. Introduction

This Mobility Analysis Report (MAR) presents the results of the transportation study conducted by Fehr & Peers for the Honokea Surf Village Project (Project) located in the Kalaeloa community within the Ewa region of O'ahu adjacent to the existing Kalaeloa Heritage Park. This chapter includes a description of the assumptions and methods used to conduct the study, as well as a discussion of the results.

The MAR assists with the development of the project site plan including providing input on required transportation infrastructure (e.g., roadways) and multi-modal facilities to provide access to the site. Also, the MAR identifies the impacts of the proposed project on the surrounding transportation system and was conducted per the requirements of the State of Hawai'i Department of Transportation – Highways Division Planning Branch (HDOT), which has jurisdiction over Coral Sea Road adjacent to the site, as well as the City & County of Honolulu Department of Planning and Permitting (DPP) Traffic Review Branch (TRB), which has purview over planning issues related to Franklin D. Roosevelt Avenue. It is important to note that the Hawaii Community Development Authority (HCDA) has land use planning authority within the Kalaeloa community.

## 2.1 Project Description

The project site is located on the Ewa side of O'ahu just east of the Kalaeloa Airport. Regional access to the site is provided by Franklin D. Roosevelt Avenue with local access provided by Coral Sea Road. The site is bounded by the Kalaeloa Airport on the west and north side, Coral Sea Road on the east side, and Kalaeloa Heritage Park on the south side.

The proposed project is the redevelopment of TMK (1) 9-1-013:068, a land area of approximately 19.4 acres, for a recreational area inclusive of a surf lagoon, supporting recreational uses (e.g., "lazy river" for stand-up paddleboarding, volleyball courts), and overnight bungalows. Access to the Project is proposed via three full-access driveways on Coral Sea Road.

According to the project team, the proposed site development is expected to be completed and fully operational by 2024.

**Figure 1** illustrates the proposed Project site plan.

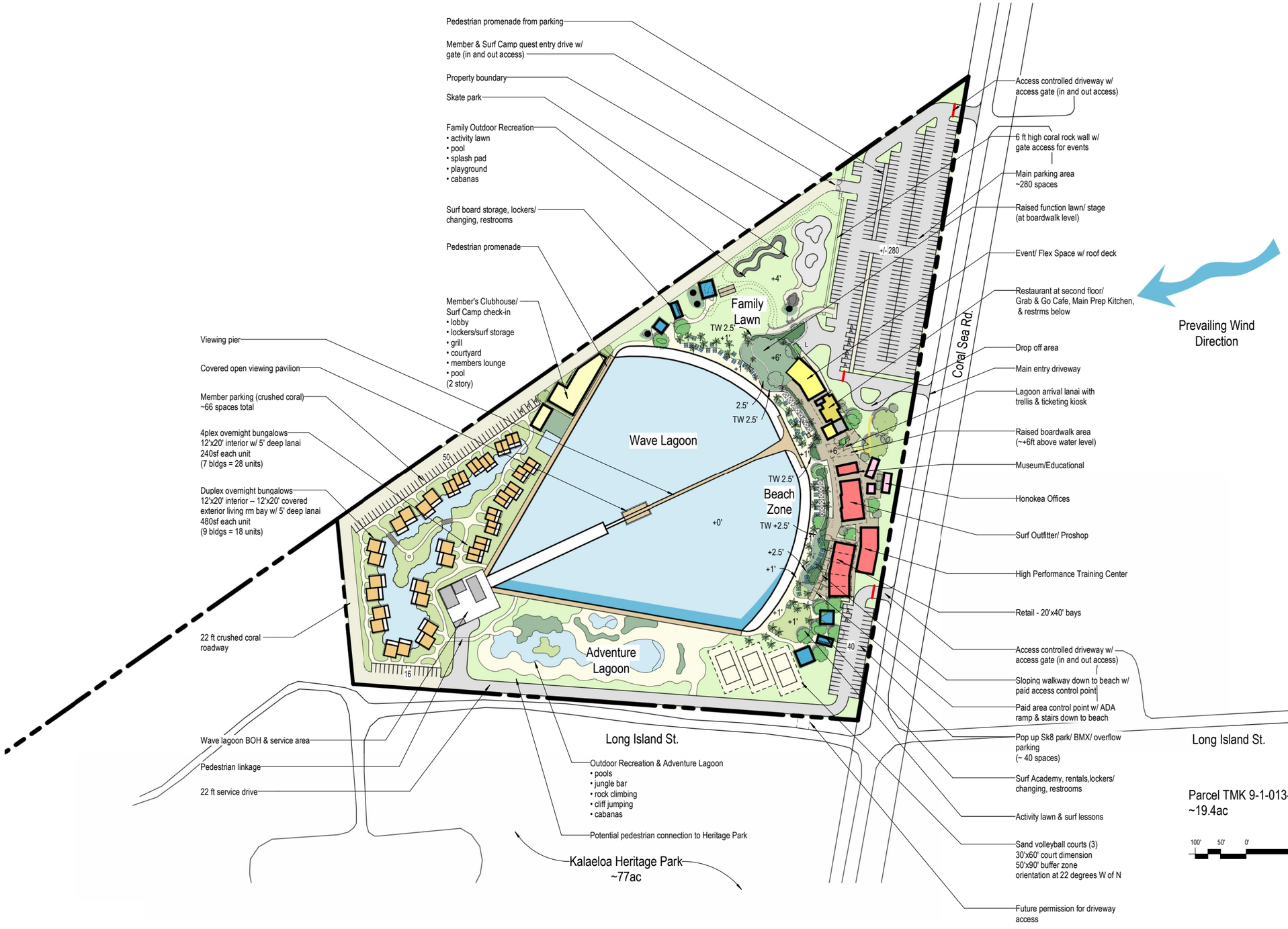



Figure 1

## Project Site Plan

## 2.2 Project Study Area

The transportation analysis focused on evaluating the potential project-related traffic impacts at one (1) existing intersection and three (3) future intersections in the vicinity of the proposed project.

The analyzed intersections are listed below:

*Existing Intersections*

1. Franklin D Roosevelt Avenue / Coral Sea Road

*Future Intersections*

2. Coral Sea Road / North Driveway
3. Coral Sea Road / Main Driveway
4. Croal Sea Road / South Driveway

Vehicle turning movement count data collection at the existing intersection was conducted on February 9, 2022. The study intersections were evaluated during the highest one-hour of travel demand of the morning (7:15 to 8:15 AM) and evening (4:00 to 5:00 PM) peak periods. The total number of bicyclists and pedestrians crossing each street leg were also counted at the study intersection. In addition, roadway segments counts were collected between February 9 and February 15, 2022 on Coral Sea Road adjacent to the project site to assess the daily variation in traffic.

## 2.3 Analysis Scenarios

The operations of the study intersections were evaluated during the morning and evening peak hours for the following scenarios:

Existing (2022) Conditions – The analysis of existing traffic conditions was based on 2022 counts collected for the weekday peak hours. The existing conditions analysis includes a description of key area streets and an assessment of bicycle, pedestrian, and transit facilities and services in the study area.

Baseline (2024) Conditions – Future traffic volumes in the anticipated completion year of full project buildout were projected by increasing the existing volumes using an annual growth factor to account for ambient growth. This scenario does not include any project traffic.

Baseline (2024) Plus Project Conditions – Traffic projections from baseline Conditions plus traffic estimated from the completion and full occupancy of the project. The impact of the project under this scenario was also assessed for bicycle, pedestrian, and transit facilities and services.

## 2.4 Traffic Analysis Methods

The analysis of roadway operations performed for this study is based on procedures presented in the *Highway Capacity Manual 6th Edition* (HCM 6), published by the Transportation Research Board in 2016. The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, which is the least congested operating conditions, to LOS F, which is the most congested operating conditions. LOS E represents "at-capacity" operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions. The methodology for unsignalized intersections is described below. Unsignalized intersections in this report refer to uncontrolled or stop sign-controlled intersections.

### 2.4.1 Unsignalized Intersections

Unsignalized intersection operations were evaluated using the method contained in Chapter 20: Two-Way Stop-Controlled Intersections of the HCM. LOS ratings for stop-sign-controlled intersections are based on the average control delay expressed in seconds per vehicle. A two-way or side-street-controlled (SSSC) intersections, the average control delay is calculated for each minor-street-stopped movement and the major street left turns; not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. For approaches with multiple lanes, the control delay is computed for each movement; the movement with the worst (i.e., longest) delay is presented for two-way stop-controlled (TWSC). The average control delay for unsignalized intersections is calculated using Synchro 11.0 analysis software. Delays are correlated to the LOS designations shown in **Table 1**.

**Table 1: Unsignalized Intersection Level of Service Criteria**

| LOS | Description | Delay in Seconds |
|---|---|---|
| A | Little or no delay | ≤ 10.0 |
| B | Short traffic delay | > 10.0 to 15.0 |
| C | Average traffic delays | > 15.0 to 25.0 |
| D | Long traffic delays | > 25.0 to 35.0 |
| E | Very long traffic delays | > 35.0 to 50.0 |
| F | Extreme traffic delays with intersection capacity exceeded | > 50.0 |

Source: *Highway Capacity Manual 6th Edition*, Transportation Research Board, 2016.

### 2.4.2 Significant Impact Criteria

The analysis of future conditions compares the baseline or "no project" condition with conditions that include project-generated traffic assuming full build-out and occupancy. This is done to determine whether the addition of project traffic is expected to result in a significant impact on the surrounding roadways. The minimum desired operating standard for a signalized or roundabout intersection is LOS D for the overall intersection, and this guideline is employed by both HDOT and DPP TRB. Additionally, a significant impact is defined to occur when the operation of an intersection changes from LOS D or better to LOS E or F. Also, when evaluating intersection movement or approach LOS at any location, other factors should be considered in the analysis, such as traffic volumes and potential secondary impacts on pedestrians, bicyclists, and transit travel.

Each of the identified significant impacts could be further categorized as either a cumulative impact or a project-specific impact. At a signalized or roundabout intersection, if the addition of project traffic is expected to degrade desirable service levels (LOS D or better) to undesirable service levels (LOS E or F), then the new development is considered to have a project-specific-impact. Alternatively, if the intersection LOS is determined to be LOS E or F without the project and the project adds traffic to this location, causing the delay to increase by five (5) seconds or more, then this result would be characterized as a cumulative impact.

For unsignalized intersections, the criterion for a project impact is the same as for signalized intersections regarding LOS as described above, but one or more signal warrants must also be met. The signal warrants used for this evaluation are those described in Chapter 4C of the Manual of Uniform Control Devices (MUTCD, 2009) published by the U.S. Department of Transportation Federal Highways Administration (FHWA). However, the project is determined to have a potentially significant cumulative impact when it adds traffic to a study location which includes a controlled approach operating at an unacceptable level (i.e., LOS E or F) *and* one or more volume-based signal warrants are met.

The State of Hawai'i and DPP TRB does not publish formal impact criteria for pedestrian, bicycle, and transit impacts. For this analysis, these impacts are evaluated based on whether a proposed project would: 1) conflict with the existing or planned pedestrian, bicycle, or transit facilities and services, or 2) create substantive walking, bicycling, or transit use demand without providing adequate and appropriate facilities for non-motorized mobility. Existing facilities for pedestrians, bicycles, and transit users were inventoried to evaluate the quality and scope of facilities/services currently in place. The assessments of planned pedestrian, bicycle, and transit facilities were conducted using the information in planning documents, such as the Oahu *Bike Plan (2019)*, *Statewide Pedestrian Master Plan (2013), etc*. For these modes, if the proposed project is expected to conflict with existing or planned improvements to pedestrian and bicycle facilities, or if the project is expected to generate a substantial demand which could warrant additional transit service,

then the project would be determined to have a project-specific impact to non-motorized modes of transportation.

# 3. Existing Conditions

This chapter describes the study area's existing transportation network and includes a discussion of the roadway, bicycle, pedestrian, and transit facilities. Overall, the assessment of the existing conditions relevant to this study establishes the scenario against which the future baseline and proposed project changes may be compared.

## 3.1 Roadway System

The key roadways providing access to the site are described below.

***Franklin D. Roosevelt Avenue*** is a two-lane undivided collector road extending from west of Kamokila Boulevard to Essex Road. East of Essex Road, this facility is designated as Geiger Road. The posted speed limit is 35 miles per hour (mph), and no designated areas for on-street parking are provided (although it is not expressly prohibited). Land planning for uses fronting this roadway is currently under the control of HCDA, while planning for the roadway cross-section is under the auspices of DPP TRB.

***Coral Sea Road*** is a two-lane local road serving between Roosevelt Avenue and Solomons Road. Coral Sea Road provides access to a number of beach areas including Nimitz Beach, Eisenhower Beach, and White Plains Beach (via Tripoli Road), as well as southern access to the Kalaeloa Airport. The posted speed limit is 35 miles per hour (mph), and no designated areas for on-street parking are provided (although it is not expressly prohibited). HDOT currently maintains and operates Coral Sea Road within the study area, but this corridor is ultimately planned to be relinquished to the City and County of Honolulu as the area redevelops.

## 3.2 Transit Facilities

TheBus operated by the Oahu Transit Service provides the only bus route, Route 41, near the project area. Route 41 serves between Kapolei on the east side and Ewa Beach on the west side. Service on this route is provided every 30 minutes on weekdays and 60 to 75 minutes on weekends. The closest stops are located approximately 1.3 miles north of the project site on the east side of the Franklin D. Roosevelt Avenue and Coral Sea Road Intersection. This distance is well beyond the typical ½-mile maximum walking distance for most people to use transit.

## 3.3 Pedestrian Facilities

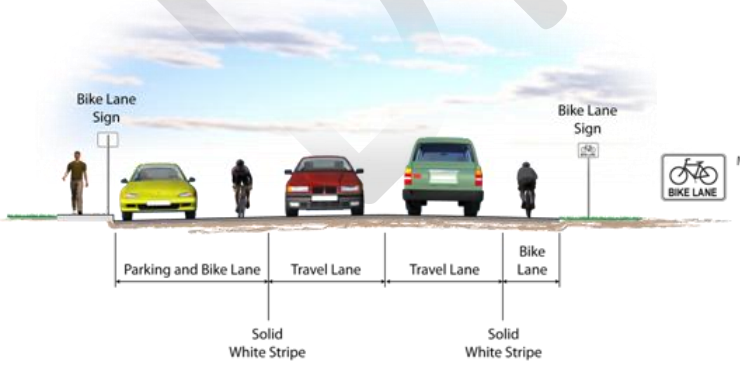
Pedestrian facilities consist of crosswalks, curb ramps, and pedestrian signals at signalized intersections, as well as sidewalks and paths near segments between intersections. No sidewalks are provided on either side of Coral Sea Road near the project site.

## 3.4 Bicycle Facilities

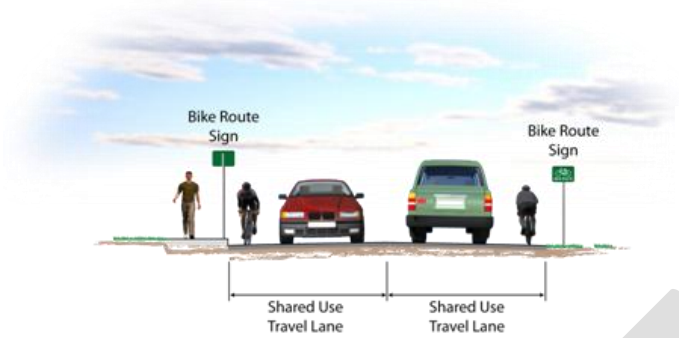
Bicycle facilities generally consist of four types of facilities, which are outlined below:

- *Bike or Shared Use Paths* provide a separate right-of-way and are designated for the exclusive use of bicycles and pedestrians (or exclusively bicycles) with the vehicle and pedestrian cross-flow minimized. Generally, the recommended pavement width for a two-directional bike or multi-use path is ten (10) feet.


- *Bike Lanes* provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.

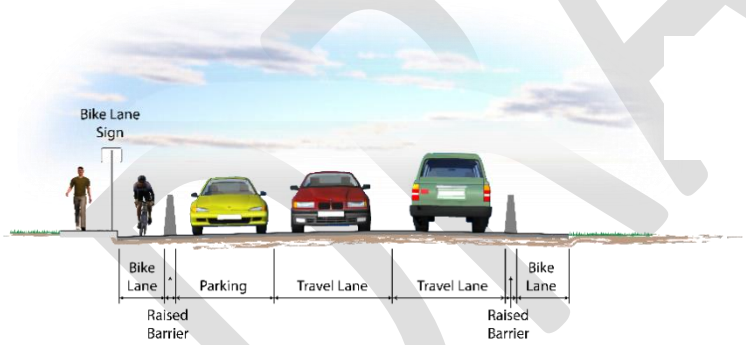



- *Bike Route or Signed Shared Roadways* provide for a right-of-way designated by signs or shared lane pavement markings, or "sharrows," for shared use with pedestrians or motor vehicles.





- *Separated Bikeways of Cycle Tracks* provide a restricted right-of-way with physical separation and are designated for the use of bicycles with a raised barrier such as curbs or bollards. Separated bikeways are generally five (5) feet wide with a three (3) foot minimum horizontal and vertical separation area. Adjacent vehicle parking is permitted, and vehicle/pedestrian cross-flow is restricted to selected locations (e.g., driveways) indicated by breaks in the barrier and buffer.




No bicycle facilities or signage are provided indicating cycling routes along Coral Sea Road.

## 3.5 Existing Traffic Operations

One (1) intersection was studied under existing conditions: Franklin D. Roosevelt & Coral Sea Road

Based on the intersection turning movement counts collected on February 9, 2022, the AM peak hour traffic in the study area occurs from 7:15 and 8:15 AM and the PM peak hour occurs between 4:00 and 5:00 PM for the study intersection. Existing lane configurations were obtained through field observation. Traffic count data sheets are provided in **Appendix A.**

Roadway segment counts were collected between February 9 and February 15, 2022, on Coral Sea Road near the Project site. Roadway segment counts are used to compare vehicle activity on weekdays and weekends along Coral Sea Road. **Table 2** provides the comparison results. Roadway segment count sheets are provided in **Appendix A**.

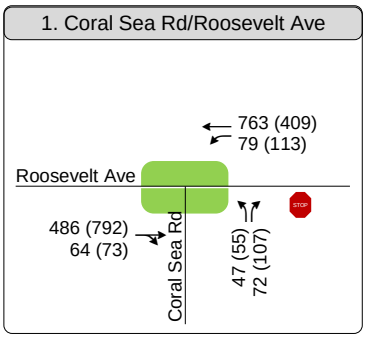
**Table 2: Segment Volumes on Coral Sea Road**

| Weekday | Average Daily Traffic [a] |
|---|---|
| Monday | 3,203 |
| Tuesday | 3,152 |
| Wednesday [b] | 2,817 |
| Thursday | 2,761 |
| Friday | 3,757 |
| Saturday | 4,390 |
| Sunday | 3,283 |
| *Average T-Th volume* | *2,910* |
| *Adjustment factor* | *+ 3%* |

*a. Data collection between February 9 and February 15, 2022*
*b. Intersection volumes collected on Wednesday*

According to **Table 2,** the average volume of traffic on Tuesday, Wednesday, and Thursday (i.e., typical traffic count days) was identified to be 3% more than the Wednesday volume (when intersection data was collected). Therefore, existing volumes at the study intersection were increased by 3% to represent an average weekday. The volume on Saturday was higher on Coral Sea Road given the direct access it provides to beach areas, but the overall volumes on major roadways including Roosevelt Avenue tend to be lower on Saturdays than on weekdays.

**Figure 2** shows AM and PM peak hour turning movement volumes used in the analysis.


Study Intersections

Project Site

AM (PM) Peak Hour Traffic Volumes

Lane Configuration

AM PM A-C D E F Level of Service (LOS)

Figure 2

## Peak Hour Traffic Volumes
## Existing (2022) Conditions

The results of the existing LOS analysis are presented below in **Table 3,** and the corresponding LOS calculation sheets are included in **Appendix B**. The results of the calculations indicate that the study intersection operates at a desirable service level (LOS C or better) during both AM and PM peak periods.

**Table 3: Existing Intersection Level of Service**

| Study Intersection | Traffic Control | Peak Hour | Existing (2021) Conditions | |
|---|---|---|---|---|
| | | | Delay (sec/veh) [a] | LOS |
| 1. Franklin D Roosevelt & Croal Sea Road | Side Street Stop Control | Weekday AM | 21.6 | C |
| | | Weekday PM | 21.7 | C |

*a. Vehicle delays are reported for the northbound left-turn movement as the critical movements*

## 3.6 Field Observations

Field observations conducted in February 2022 showed that traffic moves well throughout the study area during the AM and PM peak hours. No significant vehicle queues were observed during the field visit at the intersection of Franklin D. Roosevelt and Coral Sea Road. The calculated existing peak hour intersection operating levels at the study intersections shown in **Table 3** are representative of field conditions.

While no sidewalk facilities were observed near Franklin D Roosevelt Avenue and Coral Sea Road, some pedestrians were observed walking on the grass shoulders on both sides of Coral Sea Road. During the field observations, several bicyclists were observed riding on the shoulders along Coral Sea Road.

# 4. Baseline (2024) No Project Conditions

To evaluate the potential impacts of traffic generated by the proposed project on the surrounding street system, it was necessary to first develop estimates of future traffic conditions in the area without the project. Baseline traffic conditions without the project reflect traffic increases due to regional growth and development. This scenario is referred to as baseline or "no project" conditions. The forecasted future traffic volumes were then used as a baseline to identify impacts on the roadway system from the project. The development of this baseline traffic scenario is described in this chapter.

## 4.1 Baseline (2024) Street Roadway Improvements

Planning documents were reviewed to identify developments or future construction projects that are expected within the study area. Previous documents (including some that Fehr & Peers have contributed to) indicate that some roadway segments in Kalaeloa will be widened to accommodate future planned development. At this time, however, no future capacity improvements are currently funded or planned for construction within the timeframe of the proposed project opening year of 2024. Therefore, no change was assumed in the condition of roadway infrastructure near the project.

## 4.2 Baseline (2024) Traffic Volumes

A growth factor was applied to existing traffic volumes to account for future study area growth. A background annual growth rate of 1% was used. The growth rates were compounded over the three-year timeframe (2022 to the end of 2024) and applied to each of the existing intersections turning movement traffic volumes. Because little or no new development is anticipated along the Coral Sea Road corridor, application of the growth factor to volumes using Coral Sea Road results in conservative volume estimates.

**Figure 3** illustrates the forecasted peak hour traffic volumes for the Baseline (2024) No Project Conditions.

## 4.3 Baseline (2024) No Project Levels of Service

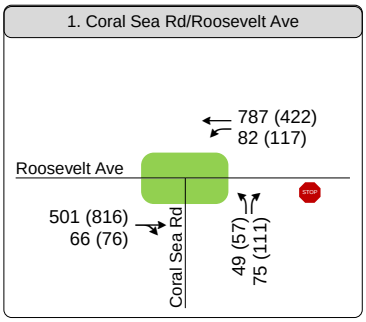
Levels of service (LOS) calculations were conducted using the volume data in **Section 4.2** and the existing lane configurations and traffic control to evaluate the operating levels of the study intersections under Baseline (2024) No Project Conditions with the forecasted growth in traffic. The results of the LOS analysis are presented in **Table 4**. The corresponding LOS calculation sheets are included in **Appendix C**.

The analysis results indicate that all study intersections are expected to continue operating at LOS C or better under Baseline (2024) No Project Conditions. The changes in delay from Existing Conditions are the result of the addition of the forecast traffic growth.

**Table 4: Baseline (2024) No Project Intersection Level of Service**

| Study Intersection | Traffic Control | Peak Hour | Baseline (2024) Conditions | |
|---|---|---|---|---|
| | | | Delay (sec/veh) [a] | LOS |
| 1. Franklin D Roosevelt & Coral Sea Road [a] | Side Street Stop Control | Weekday AM | 22.6 | C |
| | | Weekday PM | 22.8 | C |

*a. Vehicle delays are reported for the northbound left-turn movement as the critical movements*


Study Intersections

Project Site

AM (PM) Peak Hour Traffic Volumes

Lane Configuration

AM PM A-C D E F Level of Service (LOS)

Figure 4

## Peak Hour Traffic Volumes
## Baseline (2024) No Project Conditions

# 5. Project Traffic Estimates

This chapter describes the anticipated number of vehicle trips and directionality of those trips that would result from implementation of the proposed project. Future traffic added to the roadway system by the project is estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. The first step estimates the amount of project-generated traffic which will be added to the roadway network. The second step identifies the direction of travel to and from the project site and the proportion of traffic on each potential travel path. The new trips are assigned to specific street segments and intersection turning movements during the third step. This process is described in more detail in the following sections.

## 5.1 Trip Generation

The vehicle trip generation for the proposed project was estimated using a combination of standard trip rates from the *Trip Generation Manual* (11th Edition, 2020) published by the Institute of Transportation Engineers (ITE) and data provided by the project team.

Based on **Table 5**, the proposed project is expected to generate a total of 802 net new daily vehicle trips on a weekday, including 92 net new vehicle trips during the AM peak hour (80 inbound/12 outbound) and 140 net new vehicle trips during the PM peak hour (27 inbound/113 outbound). On an average weekend, the project is estimated to generate 898 net new daily vehicle trips including 96 net new vehicle trips during the AM peak hour (82 inbound/14 outbound) and 152 net new vehicle trips during the PM peak hour (30 inbound/122 outbound).

## Table 5: Project Vehicle Trip Generation Estimates

| Number of Visitors and Employees by Mode[a, b, c] | | Daily Rate[d] | Peak AM Rate[e] | Peak PM Rate[e] | Daily Trips | AM Peak Hour Vehicle Trips | | | | | PM Peak Hour Vehicle Trips | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | % | | Trips | | Total | % | | Trips | | Total |
| | | | | | | In | Out | In | Out | | In | Out | In | Out | |
| ***Guest (Weekday)*** | | | | | | | | | | | | | | | |
| Personal Vehicle[f] | 604 | 2 | 4% | 13% | 440 | 70% | 30% | 13 | 5 | 18 | 21% | 79% | 13 | 45 | 58 |
| Ride-share[f] | 44 | 4 | 4% | 13% | 64 | 50% | 50% | 2 | 1 | 3 | 50% | 50% | 5 | 4 | 9 |
| Tour Bus[g] | 214 | 4 | 4% | 13% | 20 | 70% | 30% | 1 | 0 | 1 | 30% | 70% | 1 | 2 | 3 |
| ***Guest (Weekend)*** | | | | | | | | | | | | | | | |
| Personal Vehicle[f] | 714 | 2 | 4% | 13% | 520 | 70% | 30% | 15 | 6 | 21 | 21% | 79% | 15 | 53 | 68 |
| Ride-share[f] | 51 | 4 | 4% | 13% | 76 | 50% | 50% | 2 | 2 | 4 | 50% | 50% | 5 | 5 | 10 |
| Tour Bus[g] | 254 | 4 | 4% | 13% | 24 | 70% | 30% | 1 | 0 | 1 | 30% | 70% | 2 | 2 | 4 |
| ***Employee (Weekday & Weekend)*** | | | | | | | | | | | | | | | |
| Personal Vehicle | 135 | 2 | 25% | 25% | 270 | 90% | 10% | 62 | 6 | 68 | 10% | 90% | 7 | 61 | 68 |
| Shuttle[h] | 15 | 4 | 25% | 25% | 8 | 90% | 10% | 2 | 0 | 2 | 10% | 90% | 1 | 1 | 2 |
| *Total Weekday* | | | | | *802* | | | *80* | *12* | *92* | | | *27* | *113* | *140* |
| *Total Weekend* | | | | | *898* | | | *82* | *14* | *96* | | | *30* | *122* | *152* |

*a. The annual number of visitors per the market study provided by the project team is estimated at 330,000 guests (6,347 guests/week). Based on the input from the project team, the average weekday visitors is estimated at [(6,347 guest/7 day) X 95% =] 862 guests per weekday. Average weekend visitors are estimated at [(6,347 – (5 X 862)) / 2 =] 1019 guests per weekend day.*

*b. The total number of personnel on both weekdays and weekends is estimated at 150 per day working in 2 shifts (75 morning trips and 75 evening trips). Shift change is assumed to happen mid-day (between noon to 3 pm) outside of peak hours.*

*c. Based on the input from the project team, mode-share is assumed as follows:*
*Visitors: 70% personal vehicle, 5% ride-share, and 25% Tour Bus*
*Employee: 90% personal vehicle, 10% Employee shuttle*

*d. Personal vehicles and employees are assumed to make 1 inbound and 1 outbound (total of 2 trips) per day. Ride-share, Tour Bus, and Shuttles are assumed to make 2 inbound and 2 outbound (total of 4 trips) per day.*

*e. AM and PM daily rates are calculated based on ITE Trip Generation Manual 11th edition, Land Use 482 Water Slide Park, Peak hour of the adjacent street traffic:*
*AM Rate/Daily Rate = 0.08/2.27 = 3%*
*PM Rate/Daily Rate = 0.28/2.27 = 13%*

*f. Average Vehicle Occupancy for guests with personal vehicles and ride-sharing is assumed at 2.75 passengers per vehicle*

*g. Average Vehicle Occupancy for Tour Bus is assumed at 50 visitors per Tour Bus*

*h. Average Vehicle Occupancy for Employee Shuttles is assumed at 10 employees per employee shuttle*

## 5.2 Trip Distribution and Assignment

The geographic distribution of trips generated by the proposed project is dependent on characteristics of the street system serving the project site, the level of accessibility of routes to and from the project site, residential areas from which the visitors would be drawn, lodging area from which out-of-state travelers would be drawn. The resulting overall trip distribution pattern estimates for the peak hour project-generated traffic are shown in **Figure 4** and are listed below:

- 50% to/from the east along Franklin D. Roosevelt Avenue
- 50% to/from the west along Franklin D. Roosevelt Avenue

Using the estimated trip generation and the distribution patterns discussed above, the traffic generated by the proposed project was assigned to the individual turning movements at intersections within the street network. Considering that the Intersection of Franklin D. Roosevelt Avenue / Coral Sea Road is busiest during the weekdays, the project weekday volume is used to analyze conditions at this intersection. For all other intersections along the Coral Sea Road (project driveways), the traffic is estimated to be higher during the weekend (see **Table 2**) and therefore, the project weekend volume is assigned to all driveway intersections along the Coral Sea Road.

**Figure 5** details the project's trip assignment at each study intersection.

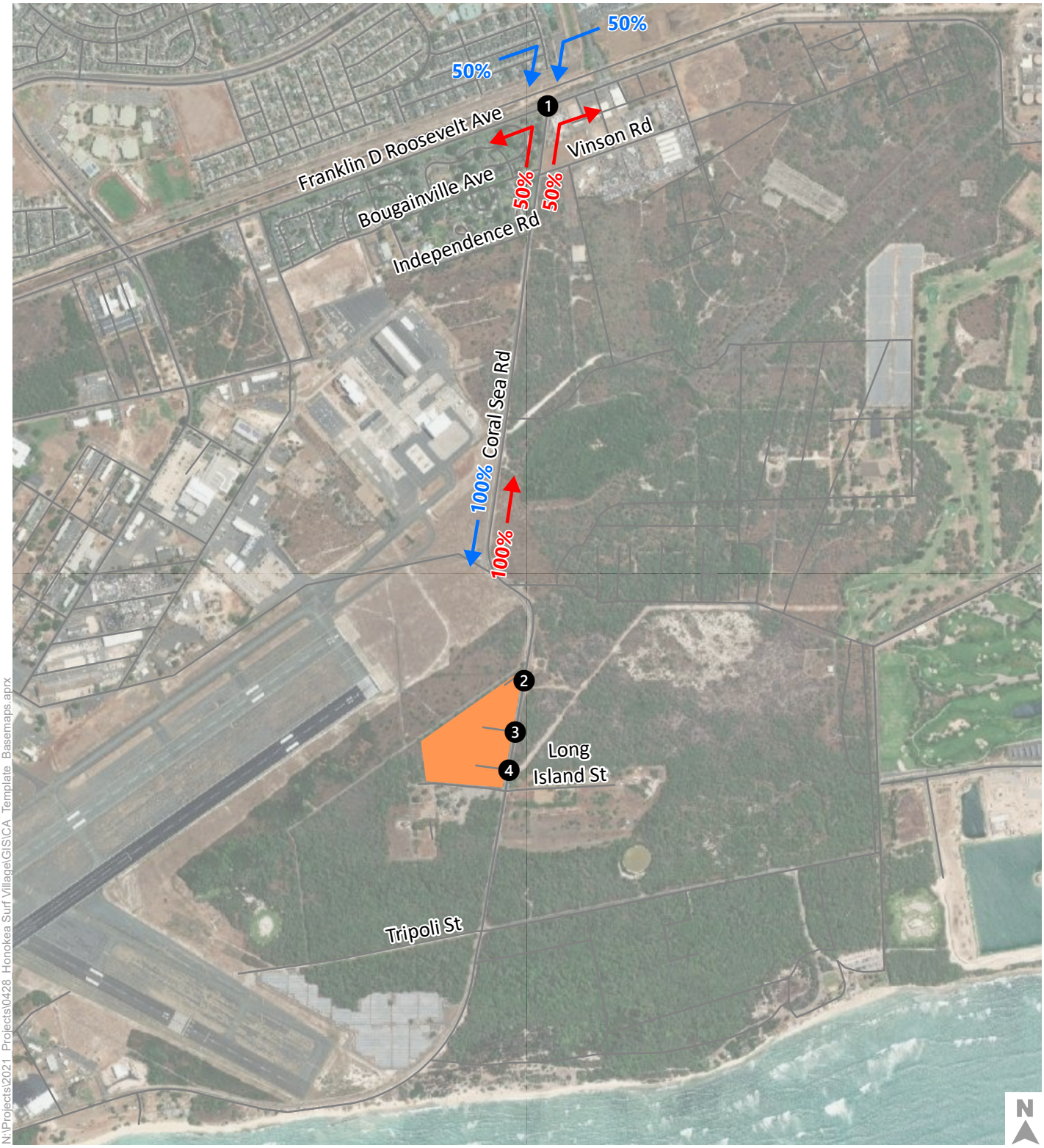
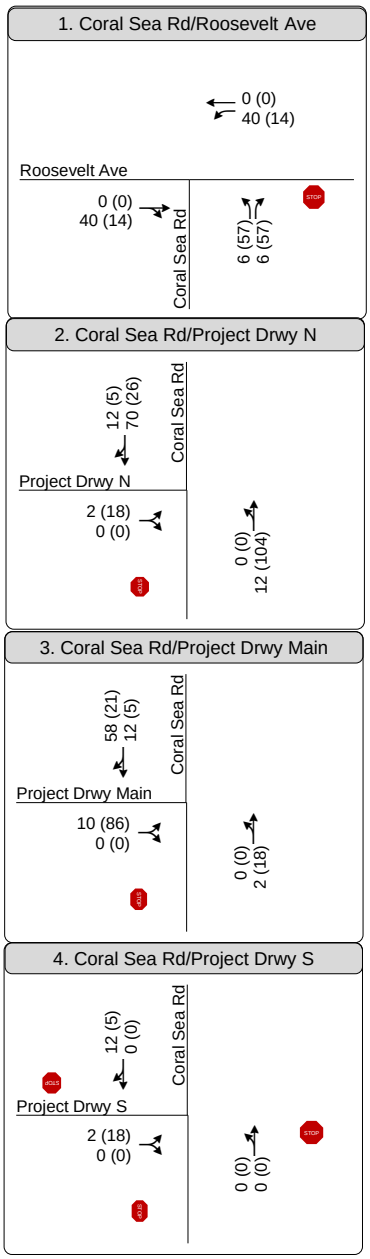



Figure 4

Project Site (Solid Orange Optional)

## Project Traffic Distribution


Study Intersections

Project Site

AM (PM) Peak Hour Traffic Volumes

Lane Configuration

AM PM A-C D E F Level of Service (LOS)

Figure 6

## Project Trip Assignment

# 6. Baseline (2024) Plus Project Conditions

This section describes the analysis of potential impacts on the roadway system due to projected future increases in traffic, including traffic generated by the project in 2024. The Baseline (2024) Plus Project roadway network is the same network assumed under the Baseline No Project scenario with the addition of three project driveways along Coral Sea Road. The analysis compares the project levels of service (LOS) at each study intersection with and without the addition of project-generated trips to determine potential impacts on the transportation network.

## 6.1 Project Driveway Configurations

As noted in the project description, site access will be provided via three driveways on Coral Sea Road. Given the relatively low site-generated peak hour traffic volumes, as well as the low volume on Coral Sea Road, no separate turn lanes on either the driveway or the Coral Sea Road approaches were assumed for this analysis. Thus, all approaches to these intersections were initially assumed to include shared lanes (i.e., shared left/right lanes on the driveways, and shared left/through and through/right lanes on Coral Sea Road.

## 6.2 Baseline (2024) Plus Project Intersection Level of Service

**Figure 6** presents the forecasted Baseline (2024) Plus Project AM and PM peak hour volumes. The peak hour volumes were used to analyze operations using the LOS methodology described in **Section 2.4**.

The LOS analysis results for the study intersections under both Baseline (2024) No Project and Plus Project conditions are presented in **Table 6**. Detailed LOS results for intersection movements and corresponding LOS calculation sheets are included in **Appendix D**.

The results indicate that under Baseline (2024) Plus Project conditions, all study intersections are anticipated to operate at LOS D or better during the AM and PM peak hours with the addition of project-generated traffic. The good operating levels of LOS C or better at all of the driveway intersections indicate that no separate turn lanes are needed on Coral Sea Road in the project driveways. This is especially true for the driveways, where little or no traffic is expected to travel to and from Coral Sea Road in the makai direction (i.e., from Tripoli Road).

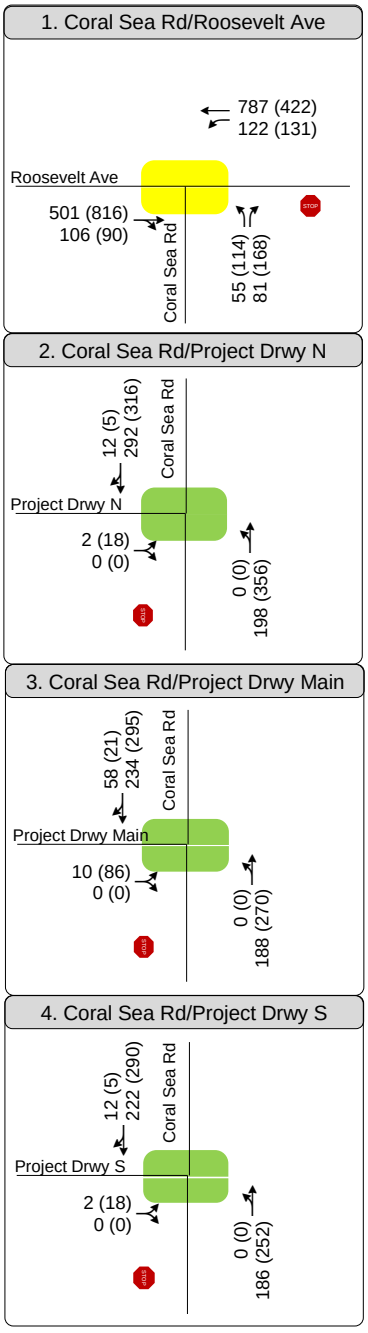
**Table 6: Baseline (2024) Plus Project Intersection Level of Service**

| Study Intersection | Traffic Control | Peak Hour | Baseline (2024) | | Baseline (2024) + Project | | Δ |
|---|---|---|---|---|---|---|---|
| | | | Delay [c] | LOS | Delay [c] | LOS | |
| 1. Franklin D. Roosevelt & Coral Sea Road [a] | Side Street Stop Control | Weekday AM | 22.6 | C | 26.7 | D | 4.1 |
| | | Weekday PM | 22.8 | C | 32.3 | D | 9.5 |
| 2. Coral Sea Road & Project Driveway North [b] | Side Street Stop Control | Weekend AM | - | - | 12.2 | B | - |
| | | Weekend PM | - | - | 14.8 | C | - |
| 3. Coral Sea Road & Main Project Driveway [b] | Side Street Stop Control | Weekend AM | - | - | 11.8 | B | - |
| | | Weekend PM | - | - | 15.1 | C | - |
| 4. Coral Sea Road & Project Driveway South [b] | Side Street Stop Control | Weekend AM | - | - | 11.4 | B | - |
| | | Weekend PM | - | - | 13.0 | B | - |

*a. Vehicle delays are reported for the northbound left-turn movement which is the critical movement*

*b. Vehicle delays are reported for the eastbound left-turn movement out of the site which is the critical movement*

*c. Delays are reported in seconds/vehicle*


Study Intersections

Project Site

AM (PM) Peak Hour Traffic Volumes

Lane Configuration

AM PM A-C D E F Level of Service (LOS)

Figure 7

## Peak Hour Traffic Volumes
## Baseline (2024) Plus Project Conditions

## 6.3 Potential Traffic Impacts

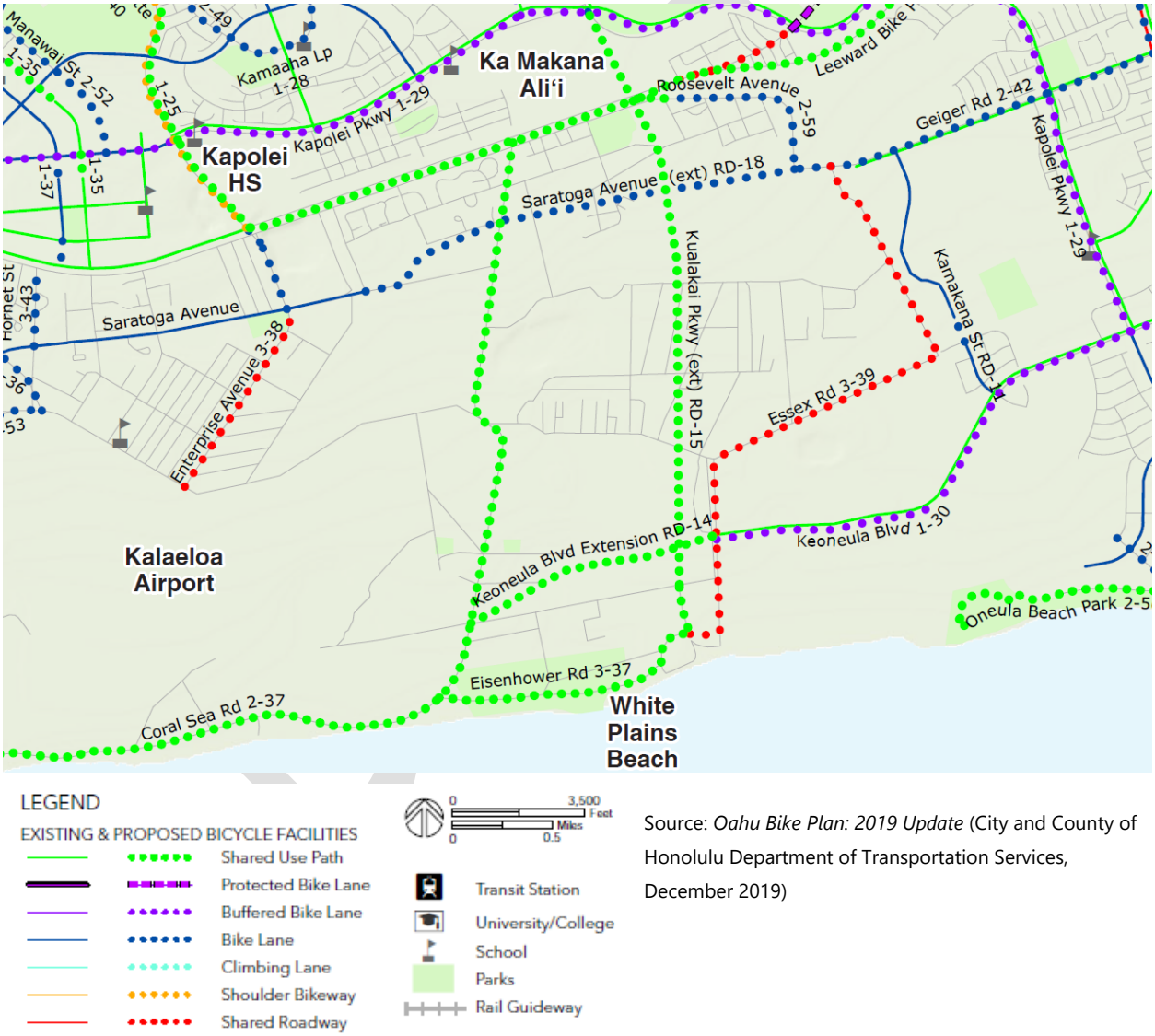
Based on the significance criteria and the results of the operations analysis presented in **Section 6.2**, the development of the proposed project is determined to have no significant impact at any of the study Intersections.

# 6.4 Active Transportation and Transit Impacts

## 6.4.1 Planned Active Mode Improvements

Some pedestrian and cycling facilities and transit route improvements are planned for the project area and vicinity. According to the *Oahu Bike Plan* (City and County of Honolulu Department of Transportation Services, 2019), a shared-use path is planned on Coral Sea Road adjacent to the project site. The areawide bike plan, which includes paths for pedestrians in some cases, is illustrated in **Figure 7** below.

*Figure 7: Planned Active Transportation Improvements*




Source: *Oahu Bike Plan: 2019 Update* (City and County of Honolulu Department of Transportation Services, December 2019)

### 6.4.2 Planned Transit Improvements

No bus transit improvements are planned on Coral Sea Road adjacent to the project site. Bus service is periodically adjusted to respond to demand and to improve service and access for transit patrons.

In addition to bus transit service, a new rail service is planned with several stops in the Ewa region. The Honolulu Authority for Rapid Transportation (HART) is in the process of constructing a new, driverless, urban rail system along the south shore of Oahu. The current phase of the project extends from West Oahu-Farrington to Downtown Honolulu near Ala Moana Center, and the closest station will be the Kualaka'i Station in East Kapolei, approximately 2.8 miles from the project site. The first rail segment between Kapolei and Hālawa may be open to the public in the next several years but a schedule for that and the full system into the Primary Urban Center of Honolulu has not been defined at this time. **Figure 8** shows the proposed transit improvement.

*Figure 8: Planned Transit Improvements*


Source: https://honolulutransit.org/about/route-map/

### 6.4.3 Potential Active Mode and Transit Impacts

Implementation of the proposed project is not expected to conflict with any existing transit, pedestrian, or bicycle facilities, and it should not preclude the implementation of any other potential enhancements to walking biking, or transit activity (e.g., a path or sidewalk along with a facility where it does not currently exist). Accordingly, no significant active transportation or transit impacts are anticipated. Recommendations to ensure compatibility with future improvements on Coral Sea Road is included in Chapter 8: Project Mitigation.

# 7. Site Access, Circulation, and Parking

## 7.1 Site Access Assessment

Primary vehicular site access will be provided via three driveways along Coral Sea Road. An additional future driveway is shown on the site plan that would access Long Island Street on the south side of the project boundary just west of Coral Sea Road. The additional driveway is not included in the current permitting process and is not addressed in this study.

The North and Main Driveways will primarily serve the main 280-space guest parking area located in the mauka-Diamond Head corner of the property. A gated access roadway connects to the main lot that will provide access to the 50-space parking lot for the overnight bungalows. The Main Driveway includes a passenger loading area for guests to be dropped off and picked up by private vehicles, shuttles, or vehicles operated by ride-hailing companies such as Lyft or Uber.

The South Driveway will serve a 40-space lot in the makai- Diamond Head corner of the property and is intended for use as an overflow lot and could be used as a pop-up skate park/BMX area. This access point also connects to a frontage/service road along the makai, west and mauka edges of the property that provides access to the wave lagoon service areas, a 16-space parking area, and a 50-space parking area for the overnight bungalows. Due to relatively low traffic volumes and desirable operating levels during peak periods, no additional vehicular access points are needed or recommended.

All proposed driveways on Coral Sea Road are proposed as stop-controlled approaches but will also include gate control for inbound and outbound traffic. The gate for the Main Driveway is located approximately 150 feet from Coral Sea Road beyond the passenger loading area, and no issue with vehicle queuing is anticipated. The gates at the other two driveways are shown approximately 25 feet from Coral Sea Road or just inside the property line.

As noted under **section 6.2**, the LOS C peak hour operations of the driveway intersections on Coral Sea Road do not require additional capacity in the form of separate turn lanes into and out of the site.

## 7.2 On-Site Circulation & Parking

Several parking lots are proposed at various locations on the Project site. The main parking lot is located at the northeast corner of the site providing approximately 280 parking spaces. The lot will be the primary parking location for daily visitors and park users. An additional 40 spaces are located on the southeast side of the project site serving as overflow parking. Parking for members and overnight bungalow users is provided on the west side of the Project site near the lodging area including 66 parking spaces.

All lots include perpendicular parking stalls which maximize access from both directions of travel. In the main lot, the majority of parking spaces are accessed via two-way circulation aisles that do not include dead-end aisles, which allows drivers to circulate while looking for available spaces. However, the makai end of the westernmost aisle is effectively a dead-end aisle in that a makai-bound driver looking for parking in this area does not have a designated turnaround area to return to the main lot. In addition, the accessible parking spaces require guests in these spaces to cross the main drive aisle to access the building entrances. Recommendations to ameliorate both of these issues are included in Chapter 8: Project Mitigation.

# 8. Project Mitigation

## 8.1 Active Transportation

To accommodate the planned shared-use path on Coral Sea Road, the Project sponsor should coordinate with HCDA and/or DPP TRB as appropriate to determine the appropriate setback for development. In addition, the Project driveways should be designed so that the path crossing locations of each driveway provide adequate sight distance for drivers and pedestrians/bicyclists. This includes the placement of monument signage, fencing, and other potential impediments to visibility. In addition, designated bicycle parking areas for both guest and employee bicycle parking should be provided to encourage the use of non-automobile travel and minimize vehicle trips to and from the site.

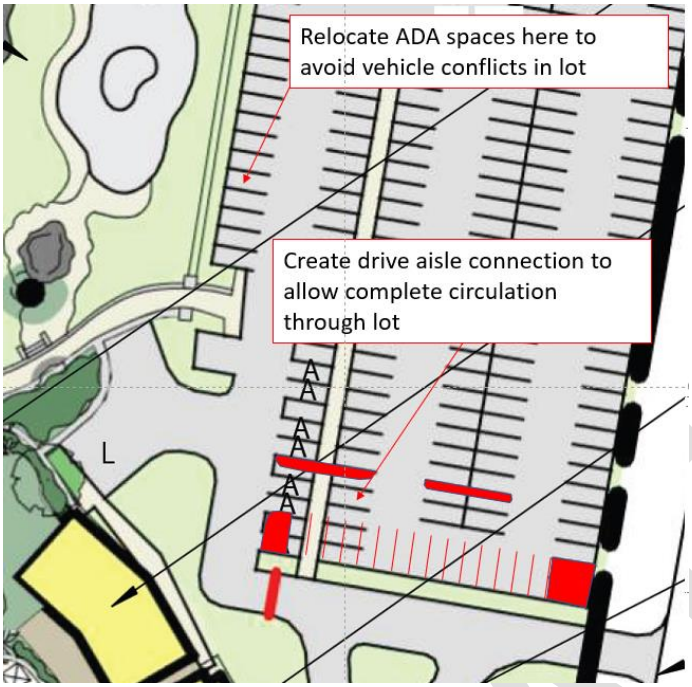
## 8.2 Site Access and On-Site Circulation

The intersection operations analysis showed that no separate turn lanes are required at any of the Project driveways on Coral Sea Road. However, planning for future development within the Kalaeloa community by HCDA is ongoing, and it is possible that the configuration of Coral Sea Road could include a center two-way left-turn lane in the future. The Project sponsor should coordinate with HCDA and/or DPP TRB to ensure that site development does not preclude widening of Coral Sea Road if it is needed to support the Kalaeloa Master Plan.

To minimize the potential for vehicles entering the parking lots to queue back onto Coral Sea Road, we recommend that all on-site gates or ticketing booths include at at least 100 feet of on-site vehicle storage for four (4) vehicles to queue. This recommendation may require modification of the parking aisles at the mauka end of the lot to provide the recommended storage and still maintain two-way circulation to all parking aisles (i.e., to avoid any dead-end aisles).

As noted in **section 7.2**, the current layout in the main parking area on the site plan includes an effective dead-end aisle just past the on-site gate on the Main Driveway. To eliminate this issue, we recommend modifying the site plan to include a new circulation aisle to access the adjacent parking aisles. In addition, the ADA-accessible parking spaces should be located adjacent to the pedestrian entrance to the site. This will avoid having ADA-space drivers and passengers from having to cross the parking/driveway aisles to access the site entrance. Both modifications are shown in **Figure 9** below.

*Figure 9: Recommend Parking Lot Modifications*




## 8.3 Parking

While on-site parking is provided and on-street parking is not expressly prohibited along Coral Sea Road, it is expected that some drivers will park their vehicles along the wide grass areas on both sides of Coral Sea Road to avoid any on-site parking fees levied by the Project. Since there are no sidewalks or enhanced pedestrian crossings, safety concerns may arise from visitors walking along or across Coral Sea Road prior to the implementation of the planned shared-use path. In addition, unregulated on-street parking could result in potential safety issues for vehicle travel (e.g., reduced sight distance). Accordingly, we recommended that parking prohibition signage be installed along Coral Sea Road until future Coral Sea Road active transportation improvements are implemented by other, parking prohibition signage is installed along the Coral Sea Road.

# Appendix A: Traffic and Segment Counts

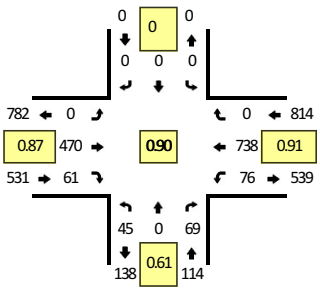
Type of peak hour being reported: Intersection Peak

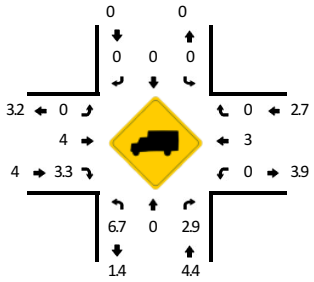
Method for determining peak hour: Total Entering Volume

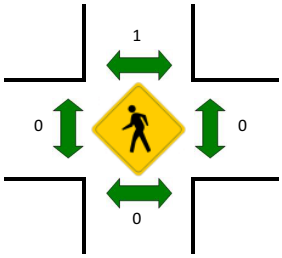
**LOCATION:** Coral Sea Rd -- Roosevelt Ave
**CITY/STATE:** Kapolei, HI

**QC JOB #:** 15692501
**DATE:** Wed, Feb 9 2022

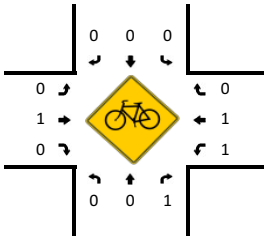
**Peak-Hour: 7:15 AM -- 8:15 AM**
**Peak 15-Min: 7:45 AM -- 8:00 AM**

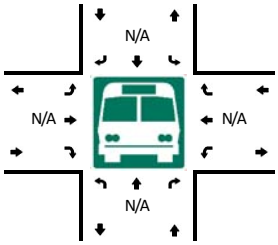


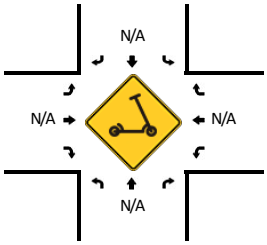












| 15-Min Count Period Beginning At | Coral Sea Rd (Northbound) | | | | Coral Sea Rd (Southbound) | | | | Roosevelt Ave (Eastbound) | | | | Roosevelt Ave (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 7:00 AM | 9 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 69 | 29 | 0 | 37 | 139 | 0 | 0 | 297 | |
| 7:15 AM | 13 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 23 | 0 | 25 | 180 | 0 | 0 | 347 | |
| 7:30 AM | 6 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 112 | 13 | 0 | 17 | 202 | 0 | 0 | 369 | |
| 7:45 AM | 18 | 0 | 28 | 1 | 0 | 0 | 0 | 0 | 0 | 126 | 11 | 0 | 18 | 205 | 0 | 0 | 407 | 1420 |
| 8:00 AM | 7 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 138 | 14 | 0 | 16 | 151 | 0 | 0 | 336 | 1459 |
| 8:15 AM | 5 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 15 | 0 | 27 | 133 | 0 | 0 | 271 | 1383 |
| 8:30 AM | 10 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | 23 | 0 | 23 | 111 | 0 | 0 | 262 | 1276 |
| 8:45 AM | 9 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 85 | 17 | 0 | 22 | 124 | 0 | 0 | 270 | 1139 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 72 | 0 | 112 | 4 | 0 | 0 | 0 | 0 | 0 | 504 | 44 | 0 | 72 | 820 | 0 | 0 | 1628 |
| Heavy Trucks | 4 | 0 | 8 | | 0 | 0 | 0 | | 0 | 24 | 0 | | 0 | 28 | 0 | | 64 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 4 | | | | 0 | | | | 0 | | | 4 |
| Bicycles | 0 | 0 | 4 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:57 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

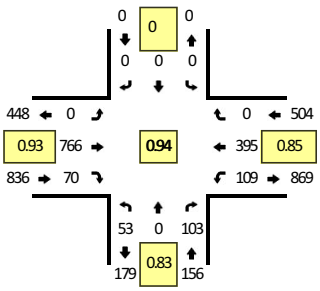
Type of peak hour being reported: Intersection Peak

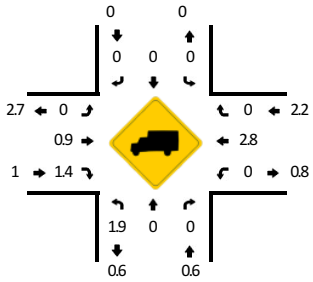
Method for determining peak hour: Total Entering Volume

**LOCATION:** Coral Sea Rd -- Roosevelt Ave
**CITY/STATE:** Kapolei, HI

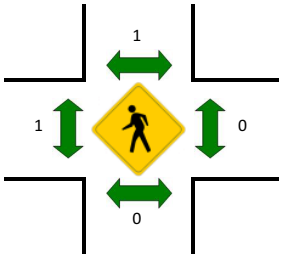
**QC JOB #:** 15692502
**DATE:** Wed, Feb 9 2022

**Peak-Hour: 4:00 PM -- 5:00 PM**
**Peak 15-Min: 4:30 PM -- 4:45 PM**

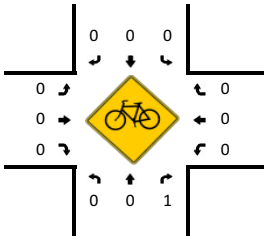


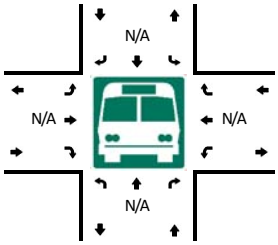




Quality Counts
DATA THAT DRIVES COMMUNITIES

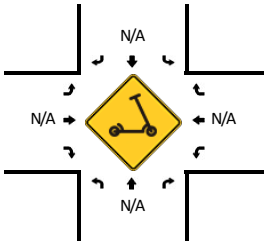











| 15-Min Count Period Beginning At | Coral Sea Rd (Northbound) | | | | Coral Sea Rd (Southbound) | | | | Roosevelt Ave (Eastbound) | | | | Roosevelt Ave (Westbound) | | | | Total | Hourly Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 4:00 PM | 16 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 190 | 18 | 0 | 29 | 93 | 0 | 0 | 372 | |
| 4:15 PM | 13 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 200 | 24 | 0 | 26 | 96 | 0 | 0 | 381 | |
| 4:30 PM | 16 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 187 | 14 | 0 | 26 | 122 | 0 | 0 | 396 | |
| 4:45 PM | 8 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 189 | 14 | 0 | 28 | 84 | 0 | 0 | 347 | 1496 |
| 5:00 PM | 9 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 189 | 24 | 0 | 21 | 76 | 0 | 0 | 353 | 1477 |
| 5:15 PM | 13 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 203 | 11 | 0 | 22 | 83 | 0 | 0 | 354 | 1450 |
| 5:30 PM | 12 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 168 | 15 | 0 | 26 | 99 | 0 | 0 | 349 | 1403 |
| 5:45 PM | 13 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 176 | 20 | 0 | 24 | 105 | 0 | 0 | 358 | 1414 |

| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | |
| All Vehicles | 64 | 0 | 124 | 0 | 0 | 0 | 0 | 0 | 0 | 748 | 56 | 0 | 104 | 488 | 0 | 0 | 1584 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 8 | 0 | | 0 | 16 | 0 | | 24 |
| Buses | | | | | | | | | | | | | | | | | |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | 0 |
| Bicycles | 0 | 0 | 4 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 4 |
| Scooters | | | | | | | | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:57 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** NB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 AM | | | 7 | 1 | 4 | 4 | 15 | 5 | 6 | |
| 12:15 AM | | | 5 | 3 | 2 | 3 | 9 | 1 | 4 | |
| 12:30 AM | | | 7 | 2 | 4 | 4 | 4 | 4 | 4 | |
| 12:45 AM | | | 3 | 0 | 1 | 1 | 10 | 11 | 5 | |
| 01:00 AM | | | 6 | 1 | 1 | 3 | 4 | 4 | 3 | |
| 01:15 AM | | | 5 | 4 | 2 | 4 | 5 | 2 | 4 | |
| 01:30 AM | | | 3 | 10 | 2 | 5 | 3 | 1 | 4 | |
| 01:45 AM | | | 1 | 4 | 1 | 2 | 6 | 0 | 2 | |
| 02:00 AM | | | 3 | 0 | 2 | 2 | 4 | 4 | 3 | |
| 02:15 AM | | | 1 | 1 | 1 | 1 | 1 | 4 | 2 | |
| 02:30 AM | | | 0 | 1 | 0 | 0 | 2 | 3 | 1 | |
| 02:45 AM | | | 1 | 1 | 1 | 1 | 3 | 3 | 2 | |
| 03:00 AM | | | 4 | 0 | 1 | 2 | 1 | 0 | 1 | |
| 03:15 AM | | | 0 | 1 | 1 | 1 | 4 | 1 | 1 | |
| 03:30 AM | | | 1 | 0 | 2 | 1 | 3 | 2 | 2 | |
| 03:45 AM | | | 1 | 0 | 0 | 0 | 1 | 2 | 1 | |
| 04:00 AM | | | 0 | 1 | 2 | 1 | 0 | 2 | 1 | |
| 04:15 AM | | | 0 | 1 | 1 | 1 | 0 | 0 | 0 | |
| 04:30 AM | | | 2 | 4 | 0 | 2 | 1 | 2 | 2 | |
| 04:45 AM | | | 1 | 0 | 0 | 0 | 0 | 2 | 1 | |
| 05:00 AM | | | 1 | 1 | 2 | 1 | 1 | 3 | 2 | |
| 05:15 AM | | | 2 | 0 | 1 | 1 | 2 | 0 | 1 | |
| 05:30 AM | | | 0 | 1 | 1 | 1 | 2 | 3 | 1 | |
| 05:45 AM | | | 3 | 0 | 1 | 1 | 3 | 0 | 1 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** NB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 AM | | | 1 | 4 | 2 | 2 | 5 | 3 | 3 | |
| 06:15 AM | | | 1 | 1 | 1 | 1 | 4 | 1 | 2 | |
| 06:30 AM | | | 1 | 3 | 3 | 2 | 1 | 2 | 2 | |
| 06:45 AM | | | 6 | 0 | 8 | 5 | 2 | 4 | 4 | |
| 07:00 AM | | | 6 | 4 | 5 | 5 | 5 | 5 | 5 | |
| 07:15 AM | | | 6 | 7 | 14 | 9 | 10 | 16 | 11 | |
| 07:30 AM | | | 30 | 14 | 31 | 25 | 11 | 10 | 19 | |
| 07:45 AM | | | 15 | 20 | 30 | 22 | 16 | 24 | 21 | |
| 08:00 AM | | | 19 | 9 | 22 | 17 | 34 | 39 | 25 | |
| 08:15 AM | | | 11 | 15 | 16 | 14 | 16 | 24 | 16 | |
| 08:30 AM | | | 10 | 5 | 25 | 13 | 29 | 17 | 17 | |
| 08:45 AM | | | 13 | 15 | 18 | 15 | 27 | 38 | 22 | |
| 09:00 AM | | | 14 | 16 | 19 | 16 | 34 | 30 | 23 | |
| 09:15 AM | | | 14 | 23 | 24 | 20 | 38 | 29 | 26 | |
| 09:30 AM | | | 22 | 12 | 33 | 22 | 26 | 24 | 23 | |
| 09:45 AM | | | **38** | 14 | 28 | 27 | 29 | 36 | 29 | |
| 10:00 AM | | | 27 | 16 | 35 | 26 | 29 | 22 | 26 | |
| 10:15 AM | | | 24 | 28 | 28 | 27 | 32 | 22 | 27 | |
| 10:30 AM | | | 14 | 24 | 16 | 18 | 39 | 30 | 25 | |
| 10:45 AM | | | 17 | **30** | 32 | 26 | 32 | 39 | 30 | |
| 11:00 AM | | | 37 | 29 | **37** | **34** | 32 | 32 | **33** | |
| 11:15 AM | | | 22 | 26 | 27 | 25 | **44** | 32 | 30 | |
| 11:30 AM | | | 28 | 20 | 28 | 25 | 26 | **42** | 29 | |
| 11:45 AM | | | 28 | 24 | 26 | 26 | 40 | 28 | 29 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St **QC JOB #:** 15692505

**SPECIFIC LOCATION:** **DIRECTION:** NB

**CITY/STATE:** Kalaeloa, HI **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 PM | | | 26 | 22 | 30 | 26 | 38 | 33 | 30 | |
| 12:15 PM | | | 46 | 17 | 30 | 31 | 32 | 38 | 33 | |
| 12:30 PM | | | 20 | 22 | 37 | 26 | 36 | 22 | 27 | |
| 12:45 PM | | | 17 | 30 | 42 | 30 | 42 | 36 | 33 | |
| 01:00 PM | | | 25 | 20 | 30 | 25 | 33 | 32 | 28 | |
| 01:15 PM | | | 15 | 21 | 30 | 22 | 36 | 42 | 29 | |
| 01:30 PM | | | 38 | 32 | 32 | 34 | 26 | 29 | 31 | |
| 01:45 PM | | | 16 | 20 | 34 | 23 | 43 | 34 | 29 | |
| 02:00 PM | | | 20 | 21 | 28 | 23 | 31 | 16 | 23 | |
| 02:15 PM | | | 22 | 28 | 22 | 24 | 30 | 24 | 25 | |
| 02:30 PM | | | 20 | 18 | 28 | 22 | 34 | 23 | 25 | |
| 02:45 PM | | | 33 | 26 | 44 | 34 | 42 | 18 | 33 | |
| 03:00 PM | | | 44 | 41 | 28 | 38 | 42 | 10 | 33 | |
| 03:15 PM | | | 31 | 52 | 40 | 41 | 44 | 25 | 38 | |
| 03:30 PM | | | **48** | **56** | 26 | 43 | 59 | 33 | 44 | |
| 03:45 PM | | | 24 | 18 | 34 | 25 | 53 | 20 | 30 | |
| 04:00 PM | | | 31 | 31 | 29 | 30 | 48 | 32 | 34 | |
| 04:15 PM | | | 22 | 28 | 28 | 26 | 50 | 22 | 30 | |
| 04:30 PM | | | 33 | 30 | 32 | 32 | 53 | 30 | 36 | |
| 04:45 PM | | | 22 | 20 | 27 | 23 | 36 | 24 | 26 | |
| 05:00 PM | | | 36 | 20 | 21 | 26 | 56 | 36 | 34 | |
| 05:15 PM | | | 20 | 18 | 22 | 20 | 60 | 37 | 31 | |
| 05:30 PM | | | 30 | 20 | 24 | 25 | 46 | 34 | 31 | |
| 05:45 PM | | | 29 | 30 | 36 | 32 | 55 | 37 | 37 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 PM | | | 34 | 24 | 38 | 32 | 54 | 42 | 38 | |
| 06:15 PM | | | 30 | 23 | 56 | 36 | 48 | 34 | 38 | |
| 06:30 PM | | | 48 | 37 | **78** | **54** | **82** | **67** | **62** | |
| 06:45 PM | | | 44 | 37 | 66 | 49 | 72 | 46 | 53 | |
| 07:00 PM | | | 18 | 24 | 60 | 34 | 63 | 30 | 39 | |
| 07:15 PM | | | 18 | 6 | 20 | 15 | 46 | 31 | 24 | |
| 07:30 PM | | | 13 | 8 | 14 | 12 | 29 | 16 | 16 | |
| 07:45 PM | | | 2 | 5 | 14 | 7 | 7 | 16 | 9 | |
| 08:00 PM | | | 5 | 8 | 10 | 8 | 14 | 10 | 9 | |
| 08:15 PM | | | 4 | 11 | 11 | 9 | 10 | 4 | 8 | |
| 08:30 PM | | | 4 | 13 | 9 | 9 | 11 | 13 | 10 | |
| 08:45 PM | | | 12 | 16 | 17 | 15 | 10 | 9 | 13 | |
| 09:00 PM | | | 4 | 3 | 15 | 7 | 9 | 4 | 7 | |
| 09:15 PM | | | 6 | 26 | 12 | 15 | 9 | 5 | 12 | |
| 09:30 PM | | | 2 | 23 | 11 | 12 | 10 | 0 | 9 | |
| 09:45 PM | | | 8 | 18 | 16 | 14 | 7 | 2 | 10 | |
| 10:00 PM | | | 4 | 10 | 14 | 9 | 3 | 8 | 8 | |
| 10:15 PM | | | 4 | 10 | 24 | 13 | 3 | 1 | 8 | |
| 10:30 PM | | | 7 | 10 | 16 | 11 | 2 | 5 | 8 | |
| 10:45 PM | | | 3 | 5 | 17 | 8 | 10 | 3 | 8 | |
| 11:00 PM | | | 5 | 0 | 21 | 9 | 16 | 3 | 9 | |
| 11:15 PM | | | 8 | 2 | 12 | 7 | 7 | 3 | 6 | |
| 11:30 PM | | | 1 | 7 | 12 | 7 | 12 | 5 | 7 | |
| 11:45 PM | | | 5 | 5 | 8 | 6 | 0 | 3 | 4 | |
| **Day Total** | | | 1418 | 1368 | 1846 | 1543 | 2204 | 1655 | 1696 | |
| % Weekday Average | | | 91.9% | 88.7% | 119.6% | | | | | |
| % Week Average | | | 83.6% | 80.7% | 108.8% | 91% | 130% | 97.6% | | |
| AM Peak 15-min Vol | | | 9:45 AM 38 | 10:45 AM 30 | 11:00 AM 37 | 11:00 AM 34 | 11:15 AM 44 | 11:30 AM 42 | 11:00 AM 33 | |
| PM Peak 15-min Vol | | | 3:30 PM 48 | 3:30 PM 56 | 6:30 PM 78 | 6:30 PM 54 | 6:30 PM 82 | 6:30 PM 67 | 6:30 PM 62 | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** NB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 AM | 2 | 3 | | | | 3 | | | 3 | |
| 12:15 AM | 2 | 3 | | | | 3 | | | 3 | |
| 12:30 AM | 4 | 7 | | | | 6 | | | 6 | |
| 12:45 AM | 2 | 2 | | | | 2 | | | 2 | |
| 01:00 AM | 0 | 1 | | | | 1 | | | 1 | |
| 01:15 AM | 1 | 4 | | | | 3 | | | 3 | |
| 01:30 AM | 0 | 3 | | | | 2 | | | 2 | |
| 01:45 AM | 3 | 2 | | | | 3 | | | 3 | |
| 02:00 AM | 3 | 1 | | | | 2 | | | 2 | |
| 02:15 AM | 0 | 4 | | | | 2 | | | 2 | |
| 02:30 AM | 1 | 2 | | | | 2 | | | 2 | |
| 02:45 AM | 1 | 0 | | | | 1 | | | 1 | |
| 03:00 AM | 1 | 0 | | | | 1 | | | 1 | |
| 03:15 AM | 0 | 2 | | | | 1 | | | 1 | |
| 03:30 AM | 0 | 0 | | | | 0 | | | 0 | |
| 03:45 AM | 0 | 3 | | | | 2 | | | 2 | |
| 04:00 AM | 0 | 4 | | | | 2 | | | 2 | |
| 04:15 AM | 2 | 4 | | | | 3 | | | 3 | |
| 04:30 AM | 0 | 0 | | | | 0 | | | 0 | |
| 04:45 AM | 2 | 2 | | | | 2 | | | 2 | |
| 05:00 AM | 0 | 0 | | | | 0 | | | 0 | |
| 05:15 AM | 3 | 2 | | | | 3 | | | 3 | |
| 05:30 AM | 2 | 3 | | | | 3 | | | 3 | |
| 05:45 AM | 4 | 0 | | | | 2 | | | 2 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*



Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St **QC JOB #:** 15692505

**SPECIFIC LOCATION:** **DIRECTION:** NB

**CITY/STATE:** Kalaeloa, HI **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 AM | 5 | 2 | | | | 4 | | | 4 | |
| 06:15 AM | 7 | 5 | | | | 6 | | | 6 | |
| 06:30 AM | 10 | 4 | | | | 7 | | | 7 | |
| 06:45 AM | 3 | 4 | | | | 4 | | | 4 | |
| 07:00 AM | 7 | 8 | | | | 8 | | | 8 | |
| 07:15 AM | 15 | 10 | | | | 13 | | | 13 | |
| 07:30 AM | 19 | 13 | | | | 16 | | | 16 | |
| 07:45 AM | 14 | 18 | | | | 16 | | | 16 | |
| 08:00 AM | 25 | 21 | | | | 23 | | | 23 | |
| 08:15 AM | 17 | 18 | | | | 18 | | | 18 | |
| 08:30 AM | 20 | 19 | | | | 20 | | | 20 | |
| 08:45 AM | 20 | 18 | | | | 19 | | | 19 | |
| 09:00 AM | 24 | 29 | | | | 27 | | | 27 | |
| 09:15 AM | 28 | 22 | | | | 25 | | | 25 | |
| 09:30 AM | 26 | 24 | | | | 25 | | | 25 | |
| 09:45 AM | 23 | 24 | | | | 24 | | | 24 | |
| 10:00 AM | 28 | 26 | | | | 27 | | | 27 | |
| 10:15 AM | 33 | **42** | | | | **38** | | | **38** | |
| 10:30 AM | 29 | 34 | | | | 32 | | | 32 | |
| 10:45 AM | 29 | 22 | | | | 26 | | | 26 | |
| 11:00 AM | 29 | 36 | | | | 33 | | | 33 | |
| 11:15 AM | 24 | 34 | | | | 29 | | | 29 | |
| 11:30 AM | 37 | 16 | | | | 27 | | | 27 | |
| 11:45 AM | **48** | 25 | | | | 37 | | | 37 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 PM | 54 | 22 | | | | 38 | | | 38 | |
| 12:15 PM | 41 | 25 | | | | 33 | | | 33 | |
| 12:30 PM | 48 | 28 | | | | 38 | | | 38 | |
| 12:45 PM | 22 | 22 | | | | 22 | | | 22 | |
| 01:00 PM | 34 | 24 | | | | 29 | | | 29 | |
| 01:15 PM | 25 | 26 | | | | 26 | | | 26 | |
| 01:30 PM | 15 | 16 | | | | 16 | | | 16 | |
| 01:45 PM | 22 | 22 | | | | 22 | | | 22 | |
| 02:00 PM | 19 | 24 | | | | 22 | | | 22 | |
| 02:15 PM | 16 | 23 | | | | 20 | | | 20 | |
| 02:30 PM | 32 | 31 | | | | 32 | | | 32 | |
| 02:45 PM | 26 | 43 | | | | 35 | | | 35 | |
| 03:00 PM | 15 | 47 | | | | 31 | | | 31 | |
| 03:15 PM | 19 | 38 | | | | 29 | | | 29 | |
| 03:30 PM | 15 | 49 | | | | 32 | | | 32 | |
| 03:45 PM | 18 | 34 | | | | 26 | | | 26 | |
| 04:00 PM | 26 | 27 | | | | 27 | | | 27 | |
| 04:15 PM | 26 | 26 | | | | 26 | | | 26 | |
| 04:30 PM | 20 | 32 | | | | 26 | | | 26 | |
| 04:45 PM | 18 | 21 | | | | 20 | | | 20 | |
| 05:00 PM | 39 | 28 | | | | 34 | | | 34 | |
| 05:15 PM | 26 | 32 | | | | 29 | | | 29 | |
| 05:30 PM | 40 | 17 | | | | 29 | | | 29 | |
| 05:45 PM | 44 | 34 | | | | 39 | | | 39 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** NB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 PM | 30 | 40 | | | | 35 | | | 35 | |
| 06:15 PM | 31 | 30 | | | | 31 | | | 31 | |
| 06:30 PM | 42 | **54** | | | | 48 | | | 48 | |
| 06:45 PM | **57** | 49 | | | | **53** | | | **53** | |
| 07:00 PM | 52 | 52 | | | | 52 | | | 52 | |
| 07:15 PM | 22 | 40 | | | | 31 | | | 31 | |
| 07:30 PM | 16 | 8 | | | | 12 | | | 12 | |
| 07:45 PM | 20 | 10 | | | | 15 | | | 15 | |
| 08:00 PM | 11 | 2 | | | | 7 | | | 7 | |
| 08:15 PM | 8 | 2 | | | | 5 | | | 5 | |
| 08:30 PM | 6 | 4 | | | | 5 | | | 5 | |
| 08:45 PM | 3 | 4 | | | | 4 | | | 4 | |
| 09:00 PM | 13 | 4 | | | | 9 | | | 9 | |
| 09:15 PM | 12 | 10 | | | | 11 | | | 11 | |
| 09:30 PM | 5 | 6 | | | | 6 | | | 6 | |
| 09:45 PM | 5 | 1 | | | | 3 | | | 3 | |
| 10:00 PM | 8 | 11 | | | | 10 | | | 10 | |
| 10:15 PM | 6 | 4 | | | | 5 | | | 5 | |
| 10:30 PM | 5 | 15 | | | | 10 | | | 10 | |
| 10:45 PM | 7 | 6 | | | | 7 | | | 7 | |
| 11:00 PM | 11 | 5 | | | | 8 | | | 8 | |
| 11:15 PM | 5 | 6 | | | | 6 | | | 6 | |
| 11:30 PM | 3 | 5 | | | | 4 | | | 4 | |
| 11:45 PM | 2 | 0 | | | | 1 | | | 1 | |
| **Day Total** | 1593 | 1585 | | | | 1612 | | | 1612 | |
| % Weekday Average | 98.8% | 98.3% | | | | | | | | |
| % Week Average | 98.8% | 98.3% | | | | 100% | | | | |
| AM Peak 15-min Vol | 11:45 AM 48 | 10:15 AM 42 | | | | 10:15 AM 38 | | | 10:15 AM 38 | |
| PM Peak 15-min Vol | 6:45 PM 57 | 6:30 PM 54 | | | | 6:45 PM 53 | | | 6:45 PM 53 | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** NB, SB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 AM | | | 8 | 2 | 7 | 6 | 18 | 7 | 8 | |
| 12:15 AM | | | 5 | 3 | 2 | 3 | 13 | 1 | 5 | |
| 12:30 AM | | | 8 | 5 | 5 | 6 | 6 | 8 | 6 | |
| 12:45 AM | | | 4 | 0 | 4 | 3 | 15 | 21 | 9 | |
| 01:00 AM | | | 8 | 4 | 1 | 4 | 6 | 8 | 5 | |
| 01:15 AM | | | 6 | 5 | 4 | 5 | 6 | 4 | 5 | |
| 01:30 AM | | | 4 | 11 | 2 | 6 | 4 | 3 | 5 | |
| 01:45 AM | | | 1 | 4 | 2 | 2 | 12 | 0 | 4 | |
| 02:00 AM | | | 3 | 0 | 3 | 2 | 5 | 5 | 3 | |
| 02:15 AM | | | 2 | 2 | 1 | 2 | 4 | 5 | 3 | |
| 02:30 AM | | | 1 | 3 | 0 | 1 | 2 | 4 | 2 | |
| 02:45 AM | | | 2 | 3 | 1 | 2 | 3 | 4 | 3 | |
| 03:00 AM | | | 5 | 2 | 4 | 4 | 3 | 0 | 3 | |
| 03:15 AM | | | 1 | 1 | 1 | 1 | 6 | 3 | 2 | |
| 03:30 AM | | | 2 | 3 | 4 | 3 | 5 | 3 | 3 | |
| 03:45 AM | | | 2 | 0 | 0 | 1 | 4 | 3 | 2 | |
| 04:00 AM | | | 1 | 2 | 3 | 2 | 0 | 2 | 2 | |
| 04:15 AM | | | 1 | 3 | 3 | 2 | 2 | 1 | 2 | |
| 04:30 AM | | | 4 | 4 | 4 | 4 | 3 | 6 | 4 | |
| 04:45 AM | | | 1 | 0 | 5 | 2 | 2 | 6 | 3 | |
| 05:00 AM | | | 5 | 4 | 4 | 4 | 1 | 6 | 4 | |
| 05:15 AM | | | 4 | 2 | 7 | 4 | 6 | 2 | 4 | |
| 05:30 AM | | | 6 | 9 | 10 | 8 | 11 | 9 | 9 | |
| 05:45 AM | | | 13 | 8 | 12 | 11 | 12 | 8 | 11 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB, SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 AM | | | 20 | 14 | 27 | 20 | 13 | 13 | 17 | |
| 06:15 AM | | | 27 | 32 | 38 | 32 | 25 | 32 | 31 | |
| 06:30 AM | | | 43 | 37 | 40 | 40 | 31 | 29 | 36 | |
| 06:45 AM | | | 56 | 40 | 46 | 47 | 41 | 43 | 45 | |
| 07:00 AM | | | **65** | **60** | 60 | **62** | 31 | 40 | 51 | |
| 07:15 AM | | | 44 | 49 | 60 | 51 | 42 | 48 | 49 | |
| 07:30 AM | | | 54 | 39 | **67** | 53 | 55 | 35 | 50 | |
| 07:45 AM | | | 39 | 43 | 62 | 48 | 54 | 58 | 51 | |
| 08:00 AM | | | 32 | 27 | 54 | 38 | 60 | 73 | 49 | |
| 08:15 AM | | | 43 | 32 | 42 | 39 | 38 | 52 | 41 | |
| 08:30 AM | | | 43 | 17 | 56 | 39 | 69 | 49 | 47 | |
| 08:45 AM | | | 42 | 37 | 52 | 44 | 73 | **78** | 56 | |
| 09:00 AM | | | 38 | 39 | 55 | 44 | 76 | 53 | 52 | |
| 09:15 AM | | | 44 | 40 | 54 | 46 | 76 | 65 | 56 | |
| 09:30 AM | | | 56 | 29 | 59 | 48 | 59 | 52 | 51 | |
| 09:45 AM | | | 64 | 29 | 66 | 53 | 63 | 66 | 58 | |
| 10:00 AM | | | 39 | 33 | 55 | 42 | 79 | 63 | 54 | |
| 10:15 AM | | | 48 | 50 | 46 | 48 | 62 | 57 | 53 | |
| 10:30 AM | | | 27 | 40 | 34 | 34 | **97** | 66 | 53 | |
| 10:45 AM | | | 27 | 52 | 43 | 41 | 76 | 73 | 54 | |
| 11:00 AM | | | 53 | 51 | 63 | 56 | 70 | 61 | 60 | |
| 11:15 AM | | | 48 | 56 | 63 | 56 | 74 | 63 | 61 | |
| 11:30 AM | | | 46 | 32 | 48 | 42 | 56 | 72 | 51 | |
| 11:45 AM | | | 52 | 54 | 51 | 52 | 83 | 70 | **62** | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB, SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 PM | | | 40 | 47 | 62 | 50 | 80 | 61 | 58 | |
| 12:15 PM | | | 62 | 38 | 56 | 52 | 76 | 68 | 60 | |
| 12:30 PM | | | 38 | 44 | 63 | 48 | 89 | 56 | 58 | |
| 12:45 PM | | | 39 | 64 | 68 | 57 | 96 | 64 | 66 | |
| 01:00 PM | | | 43 | 55 | 51 | 50 | 67 | 69 | 57 | |
| 01:15 PM | | | 29 | 45 | 50 | 41 | 80 | 82 | 57 | |
| 01:30 PM | | | 56 | 51 | 53 | 53 | 82 | 59 | 60 | |
| 01:45 PM | | | 37 | 38 | 60 | 45 | 98 | 60 | 59 | |
| 02:00 PM | | | 47 | 49 | 48 | 48 | 69 | 43 | 51 | |
| 02:15 PM | | | 46 | 48 | 40 | 45 | 68 | 46 | 50 | |
| 02:30 PM | | | 41 | 52 | 64 | 52 | 74 | 51 | 56 | |
| 02:45 PM | | | 65 | 56 | 78 | 66 | 77 | 42 | 64 | |
| 03:00 PM | | | **82** | 69 | 69 | 73 | 104 | 34 | 72 | |
| 03:15 PM | | | 55 | **82** | 65 | 67 | 94 | 43 | 68 | |
| 03:30 PM | | | 63 | 81 | 65 | 70 | 97 | 55 | 72 | |
| 03:45 PM | | | 51 | 37 | 70 | 53 | 100 | 49 | 61 | |
| 04:00 PM | | | 65 | 43 | 69 | 59 | 86 | 48 | 62 | |
| 04:15 PM | | | 60 | 58 | 68 | 62 | 100 | 39 | 65 | |
| 04:30 PM | | | 61 | 54 | 70 | 62 | 91 | 50 | 65 | |
| 04:45 PM | | | 51 | 50 | 65 | 55 | 80 | 45 | 58 | |
| 05:00 PM | | | 65 | 37 | 64 | 55 | 96 | 49 | 62 | |
| 05:15 PM | | | 42 | 45 | 68 | 52 | **106** | 71 | 66 | |
| 05:30 PM | | | 51 | 44 | 71 | 55 | 79 | 64 | 62 | |
| 05:45 PM | | | 53 | 49 | 81 | 61 | 88 | 65 | 67 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB, SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 PM | | | 58 | 54 | 64 | 59 | 90 | 74 | 68 | |
| 06:15 PM | | | 50 | 46 | 90 | 62 | 69 | 54 | 62 | |
| 06:30 PM | | | 56 | 57 | **108** | **74** | 106 | **85** | **82** | |
| 06:45 PM | | | 53 | 54 | 86 | 64 | 82 | 60 | 67 | |
| 07:00 PM | | | 30 | 34 | 84 | 49 | 74 | 40 | 52 | |
| 07:15 PM | | | 23 | 16 | 30 | 23 | 58 | 37 | 33 | |
| 07:30 PM | | | 15 | 12 | 30 | 19 | 34 | 22 | 23 | |
| 07:45 PM | | | 4 | 13 | 32 | 16 | 16 | 21 | 17 | |
| 08:00 PM | | | 11 | 14 | 28 | 18 | 24 | 16 | 19 | |
| 08:15 PM | | | 8 | 15 | 26 | 16 | 16 | 10 | 15 | |
| 08:30 PM | | | 7 | 17 | 24 | 16 | 17 | 21 | 17 | |
| 08:45 PM | | | 14 | 24 | 28 | 22 | 15 | 13 | 19 | |
| 09:00 PM | | | 11 | 6 | 31 | 16 | 27 | 8 | 17 | |
| 09:15 PM | | | 6 | 29 | 19 | 18 | 13 | 13 | 16 | |
| 09:30 PM | | | 8 | 28 | 22 | 19 | 12 | 4 | 15 | |
| 09:45 PM | | | 11 | 21 | 21 | 18 | 14 | 11 | 16 | |
| 10:00 PM | | | 8 | 13 | 23 | 15 | 10 | 11 | 13 | |
| 10:15 PM | | | 5 | 14 | 36 | 18 | 5 | 5 | 13 | |
| 10:30 PM | | | 10 | 12 | 30 | 17 | 9 | 8 | 14 | |
| 10:45 PM | | | 7 | 10 | 22 | 13 | 13 | 5 | 11 | |
| 11:00 PM | | | 13 | 1 | 27 | 14 | 22 | 4 | 13 | |
| 11:15 PM | | | 12 | 4 | 19 | 12 | 11 | 7 | 11 | |
| 11:30 PM | | | 2 | 10 | 13 | 8 | 19 | 7 | 10 | |
| 11:45 PM | | | 6 | 9 | 16 | 10 | 5 | 4 | 8 | |
| **Day Total** | | | 2817 | 2761 | 3757 | 3110 | 4390 | 3283 | 3402 | |
| % Weekday Average | | | 90.6% | 88.8% | 120.8% | | | | | |
| % Week Average | | | 82.8% | 81.2% | 110.4% | 91.4% | 129% | 96.5% | | |
| AM Peak 15-min Vol | | | 7:00 AM 65 | 7:00 AM 60 | 7:30 AM 67 | 7:00 AM 62 | 10:30 AM 97 | 8:45 AM 78 | 11:45 AM 62 | |
| PM Peak 15-min Vol | | | 3:00 PM 82 | 3:15 PM 82 | 6:30 PM 108 | 6:30 PM 74 | 5:15 PM 106 | 6:30 PM 85 | 6:30 PM 82 | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** NB, SB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 AM | 2 | 7 | | | | 5 | | | 5 | |
| 12:15 AM | 3 | 8 | | | | 6 | | | 6 | |
| 12:30 AM | 5 | 7 | | | | 6 | | | 6 | |
| 12:45 AM | 4 | 5 | | | | 5 | | | 5 | |
| 01:00 AM | 2 | 1 | | | | 2 | | | 2 | |
| 01:15 AM | 2 | 7 | | | | 5 | | | 5 | |
| 01:30 AM | 1 | 4 | | | | 3 | | | 3 | |
| 01:45 AM | 3 | 2 | | | | 3 | | | 3 | |
| 02:00 AM | 3 | 2 | | | | 3 | | | 3 | |
| 02:15 AM | 0 | 4 | | | | 2 | | | 2 | |
| 02:30 AM | 1 | 4 | | | | 3 | | | 3 | |
| 02:45 AM | 1 | 0 | | | | 1 | | | 1 | |
| 03:00 AM | 1 | 0 | | | | 1 | | | 1 | |
| 03:15 AM | 0 | 2 | | | | 1 | | | 1 | |
| 03:30 AM | 0 | 2 | | | | 1 | | | 1 | |
| 03:45 AM | 1 | 6 | | | | 4 | | | 4 | |
| 04:00 AM | 0 | 6 | | | | 3 | | | 3 | |
| 04:15 AM | 4 | 6 | | | | 5 | | | 5 | |
| 04:30 AM | 0 | 1 | | | | 1 | | | 1 | |
| 04:45 AM | 3 | 2 | | | | 3 | | | 3 | |
| 05:00 AM | 1 | 2 | | | | 2 | | | 2 | |
| 05:15 AM | 7 | 10 | | | | 9 | | | 9 | |
| 05:30 AM | 14 | 15 | | | | 15 | | | 15 | |
| 05:45 AM | 16 | 6 | | | | 11 | | | 11 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*



Report generated on 2/18/2022 8:44 AM

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**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB, SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 AM | 31 | 22 | | | | 27 | | | 27 | |
| 06:15 AM | 32 | 33 | | | | 33 | | | 33 | |
| 06:30 AM | 43 | 54 | | | | 49 | | | 49 | |
| 06:45 AM | 39 | 54 | | | | 47 | | | 47 | |
| 07:00 AM | 45 | **70** | | | | 58 | | | 58 | |
| 07:15 AM | 53 | 54 | | | | 54 | | | 54 | |
| 07:30 AM | 53 | 47 | | | | 50 | | | 50 | |
| 07:45 AM | 34 | 51 | | | | 43 | | | 43 | |
| 08:00 AM | 51 | 51 | | | | 51 | | | 51 | |
| 08:15 AM | 37 | 52 | | | | 45 | | | 45 | |
| 08:30 AM | 56 | 43 | | | | 50 | | | 50 | |
| 08:45 AM | **81** | 40 | | | | 61 | | | 61 | |
| 09:00 AM | 63 | 55 | | | | 59 | | | 59 | |
| 09:15 AM | 73 | 43 | | | | 58 | | | 58 | |
| 09:30 AM | 62 | 38 | | | | 50 | | | 50 | |
| 09:45 AM | 53 | 50 | | | | 52 | | | 52 | |
| 10:00 AM | 48 | 41 | | | | 45 | | | 45 | |
| 10:15 AM | 57 | 60 | | | | 59 | | | 59 | |
| 10:30 AM | 51 | 52 | | | | 52 | | | 52 | |
| 10:45 AM | 55 | 40 | | | | 48 | | | 48 | |
| 11:00 AM | 51 | 59 | | | | 55 | | | 55 | |
| 11:15 AM | 56 | 52 | | | | 54 | | | 54 | |
| 11:30 AM | 57 | 30 | | | | 44 | | | 44 | |
| 11:45 AM | 76 | 53 | | | | **65** | | | **65** | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*



Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB, SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 PM | 74 | 47 | | | | 61 | | | 61 | |
| 12:15 PM | 61 | 52 | | | | 57 | | | 57 | |
| 12:30 PM | 67 | 54 | | | | 61 | | | 61 | |
| 12:45 PM | 48 | 53 | | | | 51 | | | 51 | |
| 01:00 PM | 52 | 44 | | | | 48 | | | 48 | |
| 01:15 PM | 41 | 44 | | | | 43 | | | 43 | |
| 01:30 PM | 33 | 38 | | | | 36 | | | 36 | |
| 01:45 PM | 44 | 42 | | | | 43 | | | 43 | |
| 02:00 PM | 40 | 53 | | | | 47 | | | 47 | |
| 02:15 PM | 37 | 61 | | | | 49 | | | 49 | |
| 02:30 PM | 60 | 65 | | | | 63 | | | 63 | |
| 02:45 PM | 47 | 79 | | | | 63 | | | 63 | |
| 03:00 PM | 39 | **81** | | | | 60 | | | 60 | |
| 03:15 PM | 45 | 66 | | | | 56 | | | 56 | |
| 03:30 PM | 39 | 73 | | | | 56 | | | 56 | |
| 03:45 PM | 44 | 62 | | | | 53 | | | 53 | |
| 04:00 PM | 56 | 60 | | | | 58 | | | 58 | |
| 04:15 PM | 55 | 60 | | | | 58 | | | 58 | |
| 04:30 PM | 54 | 67 | | | | 61 | | | 61 | |
| 04:45 PM | 56 | 51 | | | | 54 | | | 54 | |
| 05:00 PM | **91** | 60 | | | | **76** | | | **76** | |
| 05:15 PM | 64 | 57 | | | | 61 | | | 61 | |
| 05:30 PM | 74 | 40 | | | | 57 | | | 57 | |
| 05:45 PM | 75 | 62 | | | | 69 | | | 69 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** NB, SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 PM | 53 | 65 | | | | 59 | | | 59 | |
| 06:15 PM | 57 | 46 | | | | 52 | | | 52 | |
| 06:30 PM | 65 | 70 | | | | 68 | | | 68 | |
| 06:45 PM | 66 | 58 | | | | 62 | | | 62 | |
| 07:00 PM | 60 | 56 | | | | 58 | | | 58 | |
| 07:15 PM | 30 | 48 | | | | 39 | | | 39 | |
| 07:30 PM | 24 | 11 | | | | 18 | | | 18 | |
| 07:45 PM | 25 | 16 | | | | 21 | | | 21 | |
| 08:00 PM | 20 | 9 | | | | 15 | | | 15 | |
| 08:15 PM | 13 | 8 | | | | 11 | | | 11 | |
| 08:30 PM | 11 | 7 | | | | 9 | | | 9 | |
| 08:45 PM | 9 | 7 | | | | 8 | | | 8 | |
| 09:00 PM | 24 | 14 | | | | 19 | | | 19 | |
| 09:15 PM | 19 | 12 | | | | 16 | | | 16 | |
| 09:30 PM | 10 | 15 | | | | 13 | | | 13 | |
| 09:45 PM | 14 | 5 | | | | 10 | | | 10 | |
| 10:00 PM | 13 | 16 | | | | 15 | | | 15 | |
| 10:15 PM | 8 | 12 | | | | 10 | | | 10 | |
| 10:30 PM | 11 | 17 | | | | 14 | | | 14 | |
| 10:45 PM | 13 | 10 | | | | 12 | | | 12 | |
| 11:00 PM | 13 | 9 | | | | 11 | | | 11 | |
| 11:15 PM | 8 | 9 | | | | 9 | | | 9 | |
| 11:30 PM | 3 | 7 | | | | 5 | | | 5 | |
| 11:45 PM | 7 | 1 | | | | 4 | | | 4 | |
| **Day Total** | 3203 | 3152 | | | | 3208 | | | 3208 | |
| % Weekday Average | 99.8% | 98.3% | | | | | | | | |
| % Week Average | 99.8% | 98.3% | | | | 100% | | | | |
| AM Peak 15-min Vol | 8:45 AM 81 | 7:00 AM 70 | | | | 11:45 AM 65 | | | 11:45 AM 65 | |
| PM Peak 15-min Vol | 5:00 PM 91 | 3:00 PM 81 | | | | 5:00 PM 76 | | | 5:00 PM 76 | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St **QC JOB #:** 15692505

**SPECIFIC LOCATION:** **DIRECTION:** SB

**CITY/STATE:** Kalaeloa, HI **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 AM | | | 1 | 1 | 3 | 2 | 3 | 2 | 2 | |
| 12:15 AM | | | 0 | 0 | 0 | 0 | 4 | 0 | 1 | |
| 12:30 AM | | | 1 | 3 | 1 | 2 | 2 | 4 | 2 | |
| 12:45 AM | | | 1 | 0 | 3 | 1 | 5 | 10 | 4 | |
| 01:00 AM | | | 2 | 3 | 0 | 2 | 2 | 4 | 2 | |
| 01:15 AM | | | 1 | 1 | 2 | 1 | 1 | 2 | 1 | |
| 01:30 AM | | | 1 | 1 | 0 | 1 | 1 | 2 | 1 | |
| 01:45 AM | | | 0 | 0 | 1 | 0 | 6 | 0 | 1 | |
| 02:00 AM | | | 0 | 0 | 1 | 0 | 1 | 1 | 1 | |
| 02:15 AM | | | 1 | 1 | 0 | 1 | 3 | 1 | 1 | |
| 02:30 AM | | | 1 | 2 | 0 | 1 | 0 | 1 | 1 | |
| 02:45 AM | | | 1 | 2 | 0 | 1 | 0 | 1 | 1 | |
| 03:00 AM | | | 1 | 2 | 3 | 2 | 2 | 0 | 2 | |
| 03:15 AM | | | 1 | 0 | 0 | 0 | 2 | 2 | 1 | |
| 03:30 AM | | | 1 | 3 | 2 | 2 | 2 | 1 | 2 | |
| 03:45 AM | | | 1 | 0 | 0 | 0 | 3 | 1 | 1 | |
| 04:00 AM | | | 1 | 1 | 1 | 1 | 0 | 0 | 1 | |
| 04:15 AM | | | 1 | 2 | 2 | 2 | 2 | 1 | 2 | |
| 04:30 AM | | | 2 | 0 | 4 | 2 | 2 | 4 | 2 | |
| 04:45 AM | | | 0 | 0 | 5 | 2 | 2 | 4 | 2 | |
| 05:00 AM | | | 4 | 3 | 2 | 3 | 0 | 3 | 2 | |
| 05:15 AM | | | 2 | 2 | 6 | 3 | 4 | 2 | 3 | |
| 05:30 AM | | | 6 | 8 | 9 | 8 | 9 | 6 | 8 | |
| 05:45 AM | | | 10 | 8 | 11 | 10 | 9 | 8 | 9 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 AM | | | 19 | 10 | 25 | 18 | 8 | 10 | 14 | |
| 06:15 AM | | | 26 | 31 | 37 | 31 | 21 | 31 | 29 | |
| 06:30 AM | | | 42 | 34 | 37 | 38 | 30 | 27 | 34 | |
| 06:45 AM | | | 50 | 40 | 38 | 43 | 39 | 39 | 41 | |
| 07:00 AM | | | **59** | **56** | **55** | **57** | 26 | 35 | **46** | |
| 07:15 AM | | | 38 | 42 | 46 | 42 | 32 | 32 | 38 | |
| 07:30 AM | | | 24 | 25 | 36 | 28 | 44 | 25 | 31 | |
| 07:45 AM | | | 24 | 23 | 32 | 26 | 38 | 34 | 30 | |
| 08:00 AM | | | 13 | 18 | 32 | 21 | 26 | 34 | 25 | |
| 08:15 AM | | | 32 | 17 | 26 | 25 | 22 | 28 | 25 | |
| 08:30 AM | | | 33 | 12 | 31 | 25 | 40 | 32 | 30 | |
| 08:45 AM | | | 29 | 22 | 34 | 28 | 46 | 40 | 34 | |
| 09:00 AM | | | 24 | 23 | 36 | 28 | 42 | 23 | 30 | |
| 09:15 AM | | | 30 | 17 | 30 | 26 | 38 | 36 | 30 | |
| 09:30 AM | | | 34 | 17 | 26 | 26 | 33 | 28 | 28 | |
| 09:45 AM | | | 26 | 15 | 38 | 26 | 34 | 30 | 29 | |
| 10:00 AM | | | 12 | 17 | 20 | 16 | 50 | 41 | 28 | |
| 10:15 AM | | | 24 | 22 | 18 | 21 | 30 | 35 | 26 | |
| 10:30 AM | | | 13 | 16 | 18 | 16 | **58** | 36 | 28 | |
| 10:45 AM | | | 10 | 22 | 11 | 14 | 44 | 34 | 24 | |
| 11:00 AM | | | 16 | 22 | 26 | 21 | 38 | 29 | 26 | |
| 11:15 AM | | | 26 | 30 | 36 | 31 | 30 | 31 | 31 | |
| 11:30 AM | | | 18 | 12 | 20 | 17 | 30 | 30 | 22 | |
| 11:45 AM | | | 24 | 30 | 25 | 26 | 43 | **42** | 33 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 PM | | | 14 | 25 | 32 | 24 | 42 | 28 | 28 | |
| 12:15 PM | | | 16 | 21 | 26 | 21 | 44 | 30 | 27 | |
| 12:30 PM | | | 18 | 22 | 26 | 22 | 53 | 34 | 31 | |
| 12:45 PM | | | 22 | 34 | 26 | 27 | 54 | 28 | 33 | |
| 01:00 PM | | | 18 | **35** | 21 | 25 | 34 | 37 | 29 | |
| 01:15 PM | | | 14 | 24 | 20 | 19 | 44 | **40** | 28 | |
| 01:30 PM | | | 18 | 19 | 21 | 19 | 56 | 30 | 29 | |
| 01:45 PM | | | 21 | 18 | 26 | 22 | 55 | 26 | 29 | |
| 02:00 PM | | | 27 | 28 | 20 | 25 | 38 | 27 | 28 | |
| 02:15 PM | | | 24 | 20 | 18 | 21 | 38 | 22 | 24 | |
| 02:30 PM | | | 21 | 34 | 36 | 30 | 40 | 28 | 32 | |
| 02:45 PM | | | 32 | 30 | 34 | 32 | 35 | 24 | 31 | |
| 03:00 PM | | | **38** | 28 | 41 | **36** | **62** | 24 | **39** | |
| 03:15 PM | | | 24 | 30 | 25 | 26 | 50 | 18 | 29 | |
| 03:30 PM | | | 15 | 25 | 39 | 26 | 38 | 22 | 28 | |
| 03:45 PM | | | 27 | 19 | 36 | 27 | 47 | 29 | 32 | |
| 04:00 PM | | | 34 | 12 | 40 | 29 | 38 | 16 | 28 | |
| 04:15 PM | | | 38 | 30 | 40 | 36 | 50 | 17 | 35 | |
| 04:30 PM | | | 28 | 24 | 38 | 30 | 38 | 20 | 30 | |
| 04:45 PM | | | 29 | 30 | 38 | 32 | 44 | 21 | 32 | |
| 05:00 PM | | | 29 | 17 | 43 | 30 | 40 | 13 | 28 | |
| 05:15 PM | | | 22 | 27 | 46 | 32 | 46 | 34 | 35 | |
| 05:30 PM | | | 21 | 24 | **47** | 31 | 33 | 30 | 31 | |
| 05:45 PM | | | 24 | 19 | 45 | 29 | 33 | 28 | 30 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*



Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon | Tue | Wed 9 Feb 22 | Thu 10 Feb 22 | Fri 11 Feb 22 | Average Weekday 15-min Traffic | Sat 12 Feb 22 | Sun 13 Feb 22 | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 PM | | | 24 | 30 | 26 | 27 | 36 | 32 | 30 | |
| 06:15 PM | | | 20 | 23 | 34 | 26 | 21 | 20 | 24 | |
| 06:30 PM | | | 8 | 20 | 30 | 19 | 24 | 18 | 20 | |
| 06:45 PM | | | 9 | 17 | 20 | 15 | 10 | 14 | 14 | |
| 07:00 PM | | | 12 | 10 | 24 | 15 | 11 | 10 | 13 | |
| 07:15 PM | | | 5 | 10 | 10 | 8 | 12 | 6 | 9 | |
| 07:30 PM | | | 2 | 4 | 16 | 7 | 5 | 6 | 7 | |
| 07:45 PM | | | 2 | 8 | 18 | 9 | 9 | 5 | 8 | |
| 08:00 PM | | | 6 | 6 | 18 | 10 | 10 | 6 | 9 | |
| 08:15 PM | | | 4 | 4 | 15 | 8 | 6 | 6 | 7 | |
| 08:30 PM | | | 3 | 4 | 15 | 7 | 6 | 8 | 7 | |
| 08:45 PM | | | 2 | 8 | 11 | 7 | 5 | 4 | 6 | |
| 09:00 PM | | | 7 | 3 | 16 | 9 | 18 | 4 | 10 | |
| 09:15 PM | | | 0 | 3 | 7 | 3 | 4 | 8 | 4 | |
| 09:30 PM | | | 6 | 5 | 11 | 7 | 2 | 4 | 6 | |
| 09:45 PM | | | 3 | 3 | 5 | 4 | 7 | 9 | 5 | |
| 10:00 PM | | | 4 | 3 | 9 | 5 | 7 | 3 | 5 | |
| 10:15 PM | | | 1 | 4 | 12 | 6 | 2 | 4 | 5 | |
| 10:30 PM | | | 3 | 2 | 14 | 6 | 7 | 3 | 6 | |
| 10:45 PM | | | 4 | 5 | 5 | 5 | 3 | 2 | 4 | |
| 11:00 PM | | | 8 | 1 | 6 | 5 | 6 | 1 | 4 | |
| 11:15 PM | | | 4 | 2 | 7 | 4 | 4 | 4 | 4 | |
| 11:30 PM | | | 1 | 3 | 1 | 2 | 7 | 2 | 3 | |
| 11:45 PM | | | 1 | 4 | 8 | 4 | 5 | 1 | 4 | |
| **Day Total** | | | 1399 | 1393 | 1911 | 1566 | 2186 | 1628 | 1705 | |
| % Weekday Average | | | 89.3% | 89% | 122% | | | | | |
| % Week Average | | | 82.1% | 81.7% | 112.1% | 91.8% | 128.2% | 95.5% | | |
| AM Peak 15-min Vol | | | 7:00 AM 59 | 7:00 AM 56 | 7:00 AM 55 | 7:00 AM 57 | 10:30 AM 58 | 11:45 AM 42 | 7:00 AM 46 | |
| PM Peak 15-min Vol | | | 3:00 PM 38 | 1:00 PM 35 | 5:30 PM 47 | 3:00 PM 36 | 3:00 PM 62 | 1:15 PM 40 | 3:00 PM 39 | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** SB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 AM | 0 | 4 | | | | 2 | | | 2 | |
| 12:15 AM | 1 | 5 | | | | 3 | | | 3 | |
| 12:30 AM | 1 | 0 | | | | 1 | | | 1 | |
| 12:45 AM | 2 | 3 | | | | 3 | | | 3 | |
| 01:00 AM | 2 | 0 | | | | 1 | | | 1 | |
| 01:15 AM | 1 | 3 | | | | 2 | | | 2 | |
| 01:30 AM | 1 | 1 | | | | 1 | | | 1 | |
| 01:45 AM | 0 | 0 | | | | 0 | | | 0 | |
| 02:00 AM | 0 | 1 | | | | 1 | | | 1 | |
| 02:15 AM | 0 | 0 | | | | 0 | | | 0 | |
| 02:30 AM | 0 | 2 | | | | 1 | | | 1 | |
| 02:45 AM | 0 | 0 | | | | 0 | | | 0 | |
| 03:00 AM | 0 | 0 | | | | 0 | | | 0 | |
| 03:15 AM | 0 | 0 | | | | 0 | | | 0 | |
| 03:30 AM | 0 | 2 | | | | 1 | | | 1 | |
| 03:45 AM | 1 | 3 | | | | 2 | | | 2 | |
| 04:00 AM | 0 | 2 | | | | 1 | | | 1 | |
| 04:15 AM | 2 | 2 | | | | 2 | | | 2 | |
| 04:30 AM | 0 | 1 | | | | 1 | | | 1 | |
| 04:45 AM | 1 | 0 | | | | 1 | | | 1 | |
| 05:00 AM | 1 | 2 | | | | 2 | | | 2 | |
| 05:15 AM | 4 | 8 | | | | 6 | | | 6 | |
| 05:30 AM | 12 | 12 | | | | 12 | | | 12 | |
| 05:45 AM | 12 | 6 | | | | 9 | | | 9 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St
**QC JOB #:** 15692505
**SPECIFIC LOCATION:**
**DIRECTION:** SB
**CITY/STATE:** Kalaeloa, HI
**DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 AM | 26 | 20 | | | | 23 | | | 23 | |
| 06:15 AM | 25 | 28 | | | | 27 | | | 27 | |
| 06:30 AM | 33 | 50 | | | | 42 | | | 42 | |
| 06:45 AM | 36 | 50 | | | | 43 | | | 43 | |
| 07:00 AM | 38 | **62** | | | | **50** | | | **50** | |
| 07:15 AM | 38 | 44 | | | | 41 | | | 41 | |
| 07:30 AM | 34 | 34 | | | | 34 | | | 34 | |
| 07:45 AM | 20 | 33 | | | | 27 | | | 27 | |
| 08:00 AM | 26 | 30 | | | | 28 | | | 28 | |
| 08:15 AM | 20 | 34 | | | | 27 | | | 27 | |
| 08:30 AM | 36 | 24 | | | | 30 | | | 30 | |
| 08:45 AM | **61** | 22 | | | | 42 | | | 42 | |
| 09:00 AM | 39 | 26 | | | | 33 | | | 33 | |
| 09:15 AM | 45 | 21 | | | | 33 | | | 33 | |
| 09:30 AM | 36 | 14 | | | | 25 | | | 25 | |
| 09:45 AM | 30 | 26 | | | | 28 | | | 28 | |
| 10:00 AM | 20 | 15 | | | | 18 | | | 18 | |
| 10:15 AM | 24 | 18 | | | | 21 | | | 21 | |
| 10:30 AM | 22 | 18 | | | | 20 | | | 20 | |
| 10:45 AM | 26 | 18 | | | | 22 | | | 22 | |
| 11:00 AM | 22 | 23 | | | | 23 | | | 23 | |
| 11:15 AM | 32 | 18 | | | | 25 | | | 25 | |
| 11:30 AM | 20 | 14 | | | | 17 | | | 17 | |
| 11:45 AM | 28 | 28 | | | | 28 | | | 28 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*



Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St **QC JOB #:** 15692505

**SPECIFIC LOCATION:** **DIRECTION:** SB

**CITY/STATE:** Kalaeloa, HI **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 PM | 20 | 25 | | | | 23 | | | 23 | |
| 12:15 PM | 20 | 27 | | | | 24 | | | 24 | |
| 12:30 PM | 19 | 26 | | | | 23 | | | 23 | |
| 12:45 PM | 26 | 31 | | | | 29 | | | 29 | |
| 01:00 PM | 18 | 20 | | | | 19 | | | 19 | |
| 01:15 PM | 16 | 18 | | | | 17 | | | 17 | |
| 01:30 PM | 18 | 22 | | | | 20 | | | 20 | |
| 01:45 PM | 22 | 20 | | | | 21 | | | 21 | |
| 02:00 PM | 21 | 29 | | | | 25 | | | 25 | |
| 02:15 PM | 21 | **38** | | | | 30 | | | 30 | |
| 02:30 PM | 28 | 34 | | | | 31 | | | 31 | |
| 02:45 PM | 21 | 36 | | | | 29 | | | 29 | |
| 03:00 PM | 24 | 34 | | | | 29 | | | 29 | |
| 03:15 PM | 26 | 28 | | | | 27 | | | 27 | |
| 03:30 PM | 24 | 24 | | | | 24 | | | 24 | |
| 03:45 PM | 26 | 28 | | | | 27 | | | 27 | |
| 04:00 PM | 30 | 33 | | | | 32 | | | 32 | |
| 04:15 PM | 29 | 34 | | | | 32 | | | 32 | |
| 04:30 PM | 34 | 35 | | | | 35 | | | 35 | |
| 04:45 PM | 38 | 30 | | | | 34 | | | 34 | |
| 05:00 PM | **52** | 32 | | | | **42** | | | **42** | |
| 05:15 PM | 38 | 25 | | | | 32 | | | 32 | |
| 05:30 PM | 34 | 23 | | | | 29 | | | 29 | |
| 05:45 PM | 31 | 28 | | | | 30 | | | 30 | |
| **Day Total** | | | | | | | | | | |
| % Weekday Average | | | | | | | | | | |
| % Week Average | | | | | | | | | | |
| AM Peak 15-min Vol | | | | | | | | | | |
| PM Peak 15-min Vol | | | | | | | | | | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

**LOCATION:** Coral Sea Rd just north of Long Island St | **QC JOB #:** 15692505

**SPECIFIC LOCATION:** | **DIRECTION:** SB

**CITY/STATE:** Kalaeloa, HI | **DATE:** Feb 9 2022 - Feb 15 2022

| Start Time | Mon 14 Feb 22 | Tue 15 Feb 22 | Wed | Thu | Fri | Average Weekday 15-min Traffic | Sat | Sun | Average Week 15-min Traffic | Average Week Profile |
|---|---|---|---|---|---|---|---|---|---|---|
| 06:00 PM | 23 | 25 | | | | 24 | | | 24 | |
| 06:15 PM | 26 | 16 | | | | 21 | | | 21 | |
| 06:30 PM | 23 | 16 | | | | 20 | | | 20 | |
| 06:45 PM | 9 | 9 | | | | 9 | | | 9 | |
| 07:00 PM | 8 | 4 | | | | 6 | | | 6 | |
| 07:15 PM | 8 | 8 | | | | 8 | | | 8 | |
| 07:30 PM | 8 | 3 | | | | 6 | | | 6 | |
| 07:45 PM | 5 | 6 | | | | 6 | | | 6 | |
| 08:00 PM | 9 | 7 | | | | 8 | | | 8 | |
| 08:15 PM | 5 | 6 | | | | 6 | | | 6 | |
| 08:30 PM | 5 | 3 | | | | 4 | | | 4 | |
| 08:45 PM | 6 | 3 | | | | 5 | | | 5 | |
| 09:00 PM | 11 | 10 | | | | 11 | | | 11 | |
| 09:15 PM | 7 | 2 | | | | 5 | | | 5 | |
| 09:30 PM | 5 | 9 | | | | 7 | | | 7 | |
| 09:45 PM | 9 | 4 | | | | 7 | | | 7 | |
| 10:00 PM | 5 | 5 | | | | 5 | | | 5 | |
| 10:15 PM | 2 | 8 | | | | 5 | | | 5 | |
| 10:30 PM | 6 | 2 | | | | 4 | | | 4 | |
| 10:45 PM | 6 | 4 | | | | 5 | | | 5 | |
| 11:00 PM | 2 | 4 | | | | 3 | | | 3 | |
| 11:15 PM | 3 | 3 | | | | 3 | | | 3 | |
| 11:30 PM | 0 | 2 | | | | 1 | | | 1 | |
| 11:45 PM | 5 | 1 | | | | 3 | | | 3 | |
| **Day Total** | 1610 | 1567 | | | | 1605 | | | 1605 | |
| % Weekday Average | 100.3% | 97.6% | | | | | | | | |
| % Week Average | 100.3% | 97.6% | | | | 100% | | | | |
| AM Peak 15-min Vol | 8:45 AM 61 | 7:00 AM 62 | | | | 7:00 AM 50 | | | 7:00 AM 50 | |
| PM Peak 15-min Vol | 5:00 PM 52 | 2:15 PM 38 | | | | 5:00 PM 42 | | | 5:00 PM 42 | |

*Comments:*

Report generated on 2/18/2022 8:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

# Appendix B: Existing (2022) Conditions Intersection Analysis Worksheets

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 486 | 64 | 79 | 763 | 47 | 72 |
| Future Vol, veh/h | 486 | 64 | 79 | 763 | 47 | 72 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | Yield | - | None | - | None |
| Storage Length | - | - | 200 | - | 0 | 100 |
| Veh in Median Storage, # | 0 | - | - | 0 | 2 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 4 | 3 | 2 | 3 | 7 | 3 |
| Mvmt Flow | 540 | 71 | 88 | 848 | 52 | 80 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 540 | 0 | 1600 | 576 |
| Stage 1 | - | - | - | - | 576 | - |
| Stage 2 | - | - | - | - | 1024 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.47 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.47 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.47 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.563 | 3.327 |
| Pot Cap-1 Maneuver | - | - | 1028 | - | 114 | 515 |
| Stage 1 | - | - | - | - | 552 | - |
| Stage 2 | - | - | - | - | 339 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1028 | - | 104 | 515 |
| Mov Cap-2 Maneuver | - | - | - | - | 269 | - |
| Stage 1 | - | - | - | - | 552 | - |
| Stage 2 | - | - | - | - | 310 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.8 | 16.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 269 | 515 | - | - | 1028 | - |
| HCM Lane V/C Ratio | 0.194 | 0.155 | - | - | 0.085 | - |
| HCM Control Delay (s) | 21.6 | 13.3 | - | - | 8.8 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.7 | 0.5 | - | - | 0.3 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 792 | 73 | 113 | 409 | 55 | 107 |
| Future Vol, veh/h | 792 | 73 | 113 | 409 | 55 | 107 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | Yield | - | None | - | None |
| Storage Length | - | - | 200 | - | 0 | 100 |
| Veh in Median Storage, # | 0 | - | - | 0 | 2 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 4 | 3 | 2 | 3 | 7 | 3 |
| Mvmt Flow | 880 | 81 | 126 | 454 | 61 | 119 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 880 | 0 | 1627 | 921 |
| Stage 1 | - | - | - | - | 921 | - |
| Stage 2 | - | - | - | - | 706 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.47 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.47 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.47 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.563 | 3.327 |
| Pot Cap-1 Maneuver | - | - | 768 | - | 109 | 326 |
| Stage 1 | - | - | - | - | 380 | - |
| Stage 2 | - | - | - | - | 480 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 768 | - | 91 | 326 |
| Mov Cap-2 Maneuver | - | - | - | - | 276 | - |
| Stage 1 | - | - | - | - | 380 | - |
| Stage 2 | - | - | - | - | 401 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.3 | 22 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 276 | 326 | - | - | 768 | - |
| HCM Lane V/C Ratio | 0.221 | 0.365 | - | - | 0.163 | - |
| HCM Control Delay (s) | 21.7 | 22.2 | - | - | 10.6 | - |
| HCM Lane LOS | C | C | - | - | B | - |
| HCM 95th %tile Q(veh) | 0.8 | 1.6 | - | - | 0.6 | - |

# Appendix C: Baseline (2024) Conditions Intersection Analysis Worksheets

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 501 | 66 | 82 | 787 | 49 | 75 |
| Future Vol, veh/h | 501 | 66 | 82 | 787 | 49 | 75 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | Yield | - | None | - | None |
| Storage Length | - | - | 200 | - | 0 | 100 |
| Veh in Median Storage, # | 0 | - | - | 0 | 2 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 4 | 3 | 2 | 3 | 7 | 3 |
| Mvmt Flow | 557 | 73 | 91 | 874 | 54 | 83 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 557 | 0 | 1650 | 594 |
| Stage 1 | - | - | - | - | 594 | - |
| Stage 2 | - | - | - | - | 1056 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.47 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.47 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.47 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.563 | 3.327 |
| Pot Cap-1 Maneuver | - | - | 1014 | - | 106 | 503 |
| Stage 1 | - | - | - | - | 542 | - |
| Stage 2 | - | - | - | - | 327 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1014 | - | 96 | 503 |
| Mov Cap-2 Maneuver | - | - | - | - | 259 | - |
| Stage 1 | - | - | - | - | 542 | - |
| Stage 2 | - | - | - | - | 298 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.8 | 17.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 259 | 503 | - | - | 1014 | - |
| HCM Lane V/C Ratio | 0.21 | 0.166 | - | - | 0.09 | - |
| HCM Control Delay (s) | 22.6 | 13.6 | - | - | 8.9 | - |
| HCM Lane LOS | C | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.8 | 0.6 | - | - | 0.3 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 816 | 76 | 117 | 422 | 57 | 111 |
| Future Vol, veh/h | 816 | 76 | 117 | 422 | 57 | 111 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | Yield | - | None | - | None |
| Storage Length | - | - | 200 | - | 0 | 100 |
| Veh in Median Storage, # | 0 | - | - | 0 | 2 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 4 | 3 | 2 | 3 | 7 | 3 |
| Mvmt Flow | 907 | 84 | 130 | 469 | 63 | 123 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 907 | 0 | 1678 | 949 |
| Stage 1 | - | - | - | - | 949 | - |
| Stage 2 | - | - | - | - | 729 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.47 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.47 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.47 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.563 | 3.327 |
| Pot Cap-1 Maneuver | - | - | 750 | - | 102 | 315 |
| Stage 1 | - | - | - | - | 368 | - |
| Stage 2 | - | - | - | - | 469 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 750 | - | 84 | 315 |
| Mov Cap-2 Maneuver | - | - | - | - | 265 | - |
| Stage 1 | - | - | - | - | 368 | - |
| Stage 2 | - | - | - | - | 388 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.3 | 23.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 265 | 315 | - | - | 750 | - |
| HCM Lane V/C Ratio | 0.239 | 0.392 | - | - | 0.173 | - |
| HCM Control Delay (s) | 22.8 | 23.6 | - | - | 10.8 | - |
| HCM Lane LOS | C | C | - | - | B | - |
| HCM 95th %tile Q(veh) | 0.9 | 1.8 | - | - | 0.6 | - |

# Appendix D: Baseline (2024) Plus Project Conditions Intersection Analysis Worksheets

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 501 | 106 | 122 | 787 | 55 | 81 |
| Future Vol, veh/h | 501 | 106 | 122 | 787 | 55 | 81 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | Yield | - | None | - | None |
| Storage Length | - | - | 200 | - | 0 | 100 |
| Veh in Median Storage, # | 0 | - | - | 0 | 2 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 4 | 3 | 2 | 3 | 7 | 3 |
| Mvmt Flow | 557 | 118 | 136 | 874 | 61 | 90 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 557 | 0 | 1762 | 616 |
| Stage 1 | - | - | - | - | 616 | - |
| Stage 2 | - | - | - | - | 1146 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.47 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.47 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.47 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.563 | 3.327 |
| Pot Cap-1 Maneuver | - | - | 1014 | - | 90 | 489 |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 296 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1014 | - | 78 | 489 |
| Mov Cap-2 Maneuver | - | - | - | - | 226 | - |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 256 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 1.2 | 19.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 226 | 489 | - | - | 1014 | - |
| HCM Lane V/C Ratio | 0.27 | 0.184 | - | - | 0.134 | - |
| HCM Control Delay (s) | 26.7 | 14 | - | - | 9.1 | - |
| HCM Lane LOS | D | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 1.1 | 0.7 | - | - | 0.5 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 0 | 0 | 198 | 292 | 12 |
| Future Vol, veh/h | 2 | 0 | 0 | 198 | 292 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 2 | 0 | 0 | 215 | 317 | 13 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 539 | 324 | 330 | 0 | - | 0 |
| Stage 1 | 324 | - | - | - | - | - |
| Stage 2 | 215 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 503 | 717 | 1229 | - | - | - |
| Stage 1 | 733 | - | - | - | - | - |
| Stage 2 | 821 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 503 | 717 | 1229 | - | - | - |
| Mov Cap-2 Maneuver | 503 | - | - | - | - | - |
| Stage 1 | 733 | - | - | - | - | - |
| Stage 2 | 821 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 12.2 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1229 | - | 503 | - | - |
| HCM Lane V/C Ratio | - | - | 0.004 | - | - |
| HCM Control Delay (s) | 0 | - | 12.2 | - | - |
| HCM Lane LOS | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 10 | 0 | 0 | 188 | 234 | 58 |
| Future Vol, veh/h | 10 | 0 | 0 | 188 | 234 | 58 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 11 | 0 | 0 | 204 | 254 | 63 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 490 | 286 | 317 | 0 | - | 0 |
| Stage 1 | 286 | - | - | - | - | - |
| Stage 2 | 204 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 537 | 753 | 1243 | - | - | - |
| Stage 1 | 763 | - | - | - | - | - |
| Stage 2 | 830 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 537 | 753 | 1243 | - | - | - |
| Mov Cap-2 Maneuver | 537 | - | - | - | - | - |
| Stage 1 | 763 | - | - | - | - | - |
| Stage 2 | 830 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.8 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1243 | - | 537 | - | - |
| HCM Lane V/C Ratio | - | - | 0.02 | - | - |
| HCM Control Delay (s) | 0 | - | 11.8 | - | - |
| HCM Lane LOS | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 0 | 0 | 186 | 222 | 12 |
| Future Vol, veh/h | 2 | 0 | 0 | 186 | 222 | 12 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 2 | 0 | 0 | 202 | 241 | 13 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 450 | 248 | 254 | 0 | - | 0 |
| Stage 1 | 248 | - | - | - | - | - |
| Stage 2 | 202 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 567 | 791 | 1311 | - | - | - |
| Stage 1 | 793 | - | - | - | - | - |
| Stage 2 | 832 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 567 | 791 | 1311 | - | - | - |
| Mov Cap-2 Maneuver | 567 | - | - | - | - | - |
| Stage 1 | 793 | - | - | - | - | - |
| Stage 2 | 832 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 11.4 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1311 | - | 567 | - | - |
| HCM Lane V/C Ratio | - | - | 0.004 | - | - |
| HCM Control Delay (s) | 0 | - | 11.4 | - | - |
| HCM Lane LOS | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 816 | 90 | 131 | 422 | 114 | 168 |
| Future Vol, veh/h | 816 | 90 | 131 | 422 | 114 | 168 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | Yield | - | None | - | None |
| Storage Length | - | - | 200 | - | 0 | 100 |
| Veh in Median Storage, # | 0 | - | - | 0 | 2 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 4 | 3 | 2 | 3 | 7 | 3 |
| Mvmt Flow | 907 | 100 | 146 | 469 | 127 | 187 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 907 | 0 | 1718 | 957 |
| Stage 1 | - | - | - | - | 957 | - |
| Stage 2 | - | - | - | - | 761 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.47 | 6.23 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.47 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.47 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.563 | 3.327 |
| Pot Cap-1 Maneuver | - | - | 750 | - | ~ 96 | 311 |
| Stage 1 | - | - | - | - | 365 | - |
| Stage 2 | - | - | - | - | 453 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 750 | - | ~ 77 | 311 |
| Mov Cap-2 Maneuver | - | - | - | - | 255 | - |
| Stage 1 | - | - | - | - | 365 | - |
| Stage 2 | - | - | - | - | 365 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.6 | 32.4 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 255 | 311 | - | - | 750 | - |
| HCM Lane V/C Ratio | 0.497 | 0.6 | - | - | 0.194 | - |
| HCM Control Delay (s) | 32.3 | 32.5 | - | - | 11 | - |
| HCM Lane LOS | D | D | - | - | B | - |
| HCM 95th %tile Q(veh) | 2.6 | 3.6 | - | - | 0.7 | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 18 | 0 | 0 | 356 | 316 | 5 |
| Future Vol, veh/h | 18 | 0 | 0 | 356 | 316 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 20 | 0 | 0 | 387 | 343 | 5 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 733 | 346 | 348 | 0 | - | 0 |
| Stage 1 | 346 | - | - | - | - | - |
| Stage 2 | 387 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 388 | 697 | 1211 | - | - | - |
| Stage 1 | 716 | - | - | - | - | - |
| Stage 2 | 686 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 388 | 697 | 1211 | - | - | - |
| Mov Cap-2 Maneuver | 388 | - | - | - | - | - |
| Stage 1 | 716 | - | - | - | - | - |
| Stage 2 | 686 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14.8 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1211 | - | 388 | - | - |
| HCM Lane V/C Ratio | - | - | 0.05 | - | - |
| HCM Control Delay (s) | 0 | - | 14.8 | - | - |
| HCM Lane LOS | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 86 | 0 | 0 | 270 | 295 | 21 |
| Future Vol, veh/h | 86 | 0 | 0 | 270 | 295 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 93 | 0 | 0 | 293 | 321 | 23 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 626 | 333 | 344 | 0 | - | 0 |
| Stage 1 | 333 | - | - | - | - | - |
| Stage 2 | 293 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 448 | 709 | 1215 | - | - | - |
| Stage 1 | 726 | - | - | - | - | - |
| Stage 2 | 757 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 448 | 709 | 1215 | - | - | - |
| Mov Cap-2 Maneuver | 448 | - | - | - | - | - |
| Stage 1 | 726 | - | - | - | - | - |
| Stage 2 | 757 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 15.1 | 0 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1215 | - | 448 | - | - |
| HCM Lane V/C Ratio | - | - | 0.209 | - | - |
| HCM Control Delay (s) | 0 | - | 15.1 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.8 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 18 | 0 | 0 | 252 | 290 | 5 |
| Future Vol, veh/h | 18 | 0 | 0 | 252 | 290 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 20 | 0 | 0 | 274 | 315 | 5 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 592 | 318 | 320 | 0 | - | 0 |
| Stage 1 | 318 | - | - | - | - | - |
| Stage 2 | 274 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 469 | 723 | 1240 | - | - | - |
| Stage 1 | 738 | - | - | - | - | - |
| Stage 2 | 772 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 469 | 723 | 1240 | - | - | - |
| Mov Cap-2 Maneuver | 469 | - | - | - | - | - |
| Stage 1 | 738 | - | - | - | - | - |
| Stage 2 | 772 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13 | 0 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1240 | - | 469 | - | - |
| HCM Lane V/C Ratio | - | - | 0.042 | - | - |
| HCM Control Delay (s) | 0 | - | 13 | - | - |
| HCM Lane LOS | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

Appendix H

# Measurement Results of Existing Aircraft Noise Levels

# Y. Ebisu & Associates

Acoustical and Electronic Engineers

1126 12th Ave., Room 305
Honolulu, Hawaii 96816
Ph. (808) 735-1634
email: ebisuyassoc@aol.com


April 20, 2022

G70
111 S. King Street, Suite 170
Honolulu, HI 96813

Attention: Mr. Kawika McKeague, ACIP

Subject: Measurement Results of Existing Aircraft Noise Levels at Northwest Corner of Proposed Honokea Kalaeloa (Surf Village)

Dear Mr. McKeague:

Sound level measurements were obtained at the northwest Corner of Honokea Kalaeloa in attempts to validate the "JRF 2020 Noise Exposure Map (NEM)" provided by the HDOT-A in their comments regarding the proposed Surfer Training Facility located makai of Kalaeloa Airport (see Figure 1). The HDOT-A's NEM indicates that the proposed cabins are located within the 65 to 60 DNL noise contours of the JRF 2020 NEM.

Because the NEM may not represent current aircraft noise levels at the project site, 24-hour sound level measurements were obtained at Location A in Figure 1 to obtain the DNL values at a location representative of the worst case aircraft noise levels at the cabins. The measurements were obtained between 9:00 am on April 13, 2022 (Wednesday) through 9:00 am on April 16, 2022 (Saturday). Friday, April 15, 2022 was Easter Holiday.

The measurement results are summarized in Figures 2A through 4B, with unadjusted, measured DNL values for the three 24-hour periods being 61.2, 60.6, and 56.8 DNL as shown in Figures 2A, 3A, and 4A. The lowest 56.8 DNL unadjusted result was attributed to the Easter Holiday on Friday.

During the measurement period, it was determined from visual observation and evaluation of the measured noise data that USCG C-130 and light propeller General Aviation aircraft were probably overflying the area near measurement Location A. Using measured noise data from a USCG C-130 and from a grey colored C-130 departing Kalaeloa Airport on runway heading past Location A, the noise levels of those events (total of 11) suspected as being associated with C-130 overfligthts were mathematically replaced with the average noise level of the two C-130 which were measured on Runway 04R heading during takeoff. These DNL's, when adjusted for the measured C-130's which were on runway heading, are shown with the turquoise curve sections in Figures 2B, 3B, and 4B as 60.1, 59.4, and 56.8 DNL.

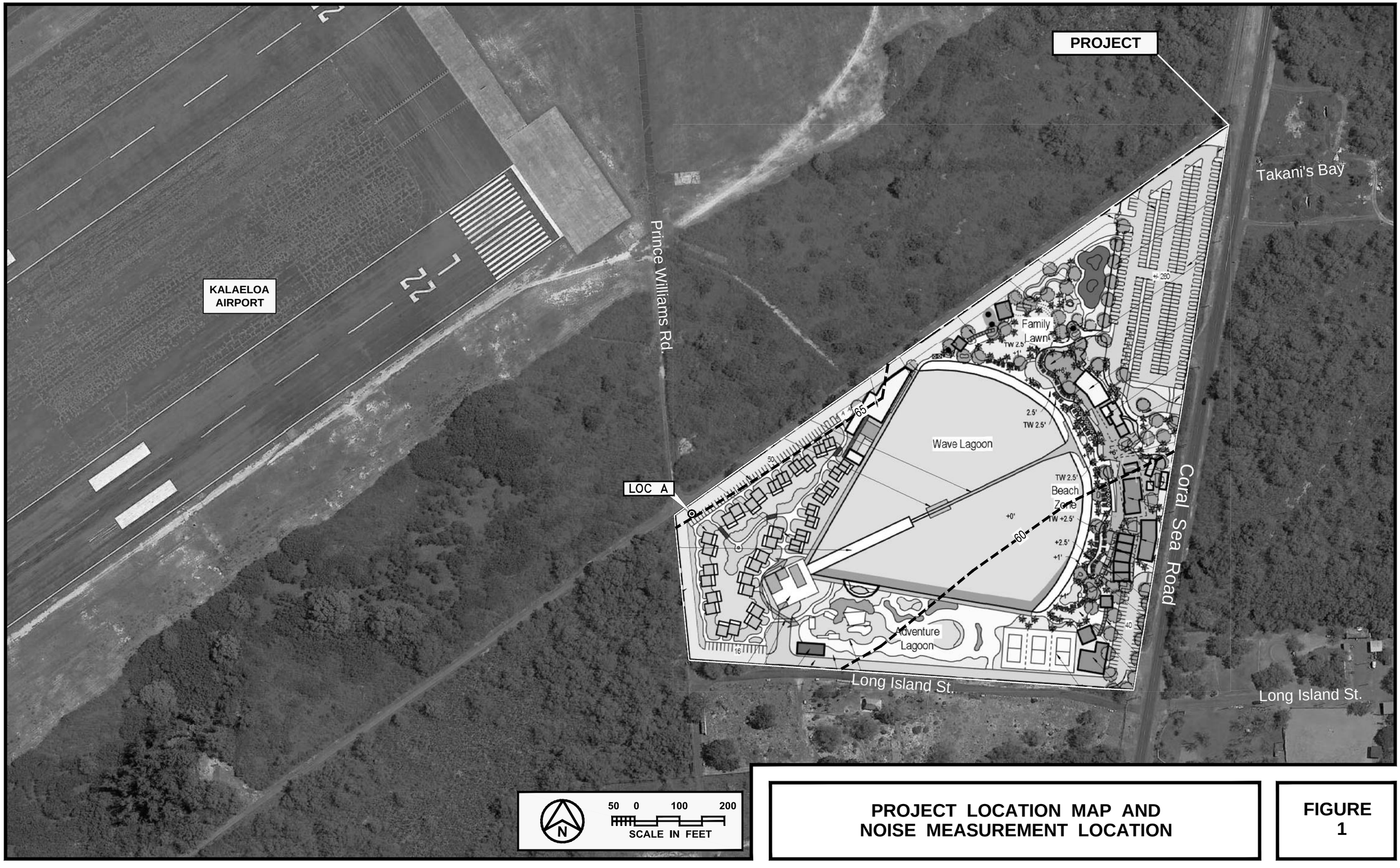
Based on these measurement results, and the higher DNL's believed to be associated with USCG C-130 flyovers in the vicinity of Location A, it was concluded that the Honokea Kalaeloa's camp site is probably exposed to DNL levels less than 60 DNL except for days when aircraft operating at Kalaeloa Airport overfly the project site. An appendix is attached to this letter report to describe the aircraft noise measurement results in more detail, and the methodology that was used to adjust the DNL values for conditions with only C-130 departures on Runway 04R heading.

Because the existing Kalaeloa Heritage Park adjoins the proposed Honokea Kalaeloa project site, because educational tours and other cultural activities occur at the existing park, and because low level aircraft overflights considered to be unnecessary have resulted in complaints at other state airports and below tour helicopter routes, it is recommended that all aircraft departing on Runway 04 avoid overflying the Kalaeloa Heritage Park at low altitudes, and maintain runway heading during takeoff until approximately 1,000 feet beyond the east end of Runway 04R. This is probably the airport noise modeling assumption for the local flight track which was used to develop the NEM's for Kalaeloa Airport in the past.

Sincerely,

Yoichi Ebisu, P.E.

encl.




**PROJECT LOCATION MAP AND NOISE MEASUREMENT LOCATION**

**FIGURE 1**

**FIGURE 2A**
**MEASURED HOURLY NOISE LEVELS AT LOC A**
**(61.2 DNL; APRIL 13-14, 2022)**

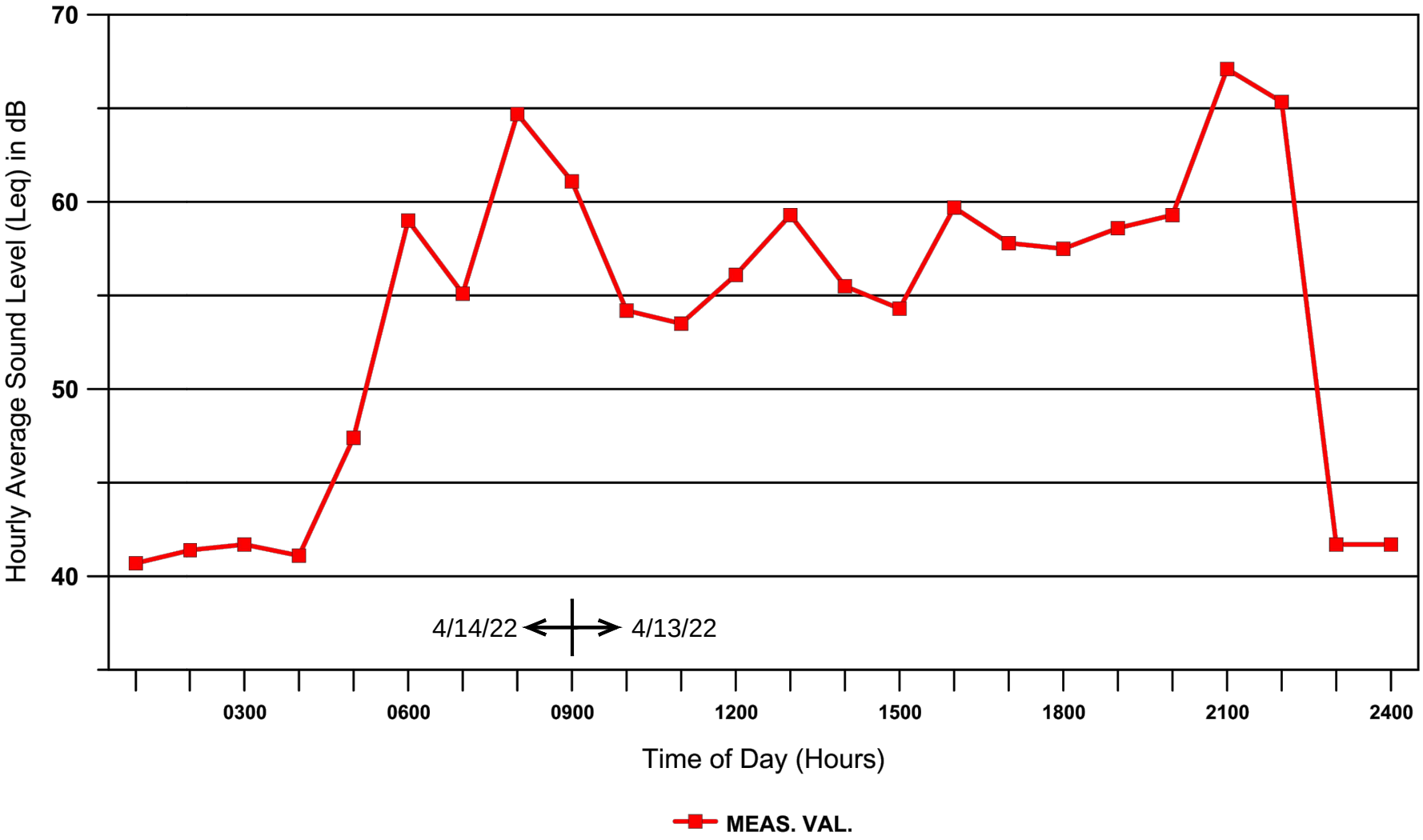


**FIGURE 2B**
**MEASURED HOURLY NOISE LEVELS AT LOC A ADJUSTED FOR PROBABLE 6 EA. C-130 OVERFLIGHTS (60.1 DNL; APRIL 13-14, 2022)**

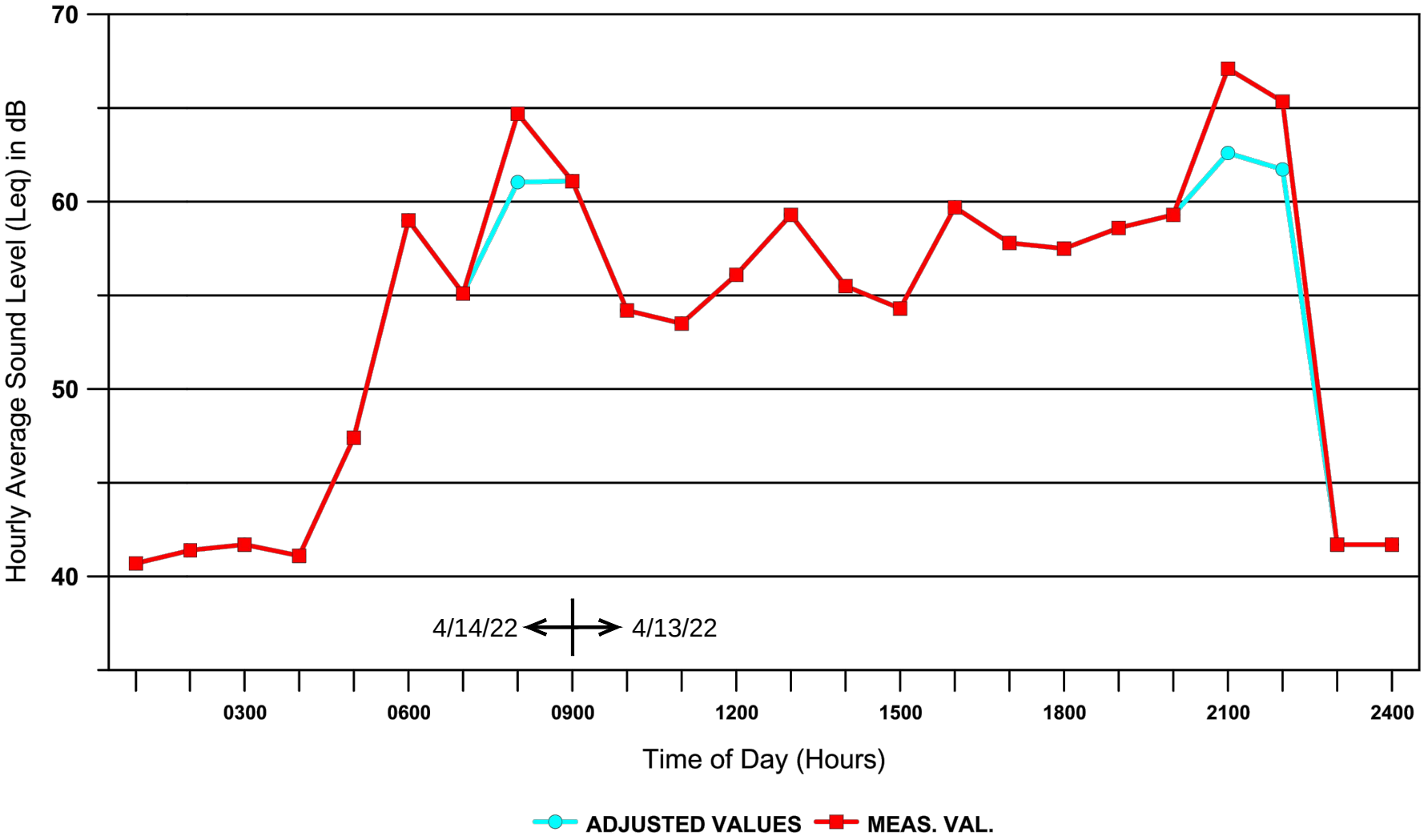


**FIGURE 3A**
**MEASURED HOURLY NOISE LEVELS AT LOC A**
**(60.6 DNL; APRIL 14-15, 2022)**

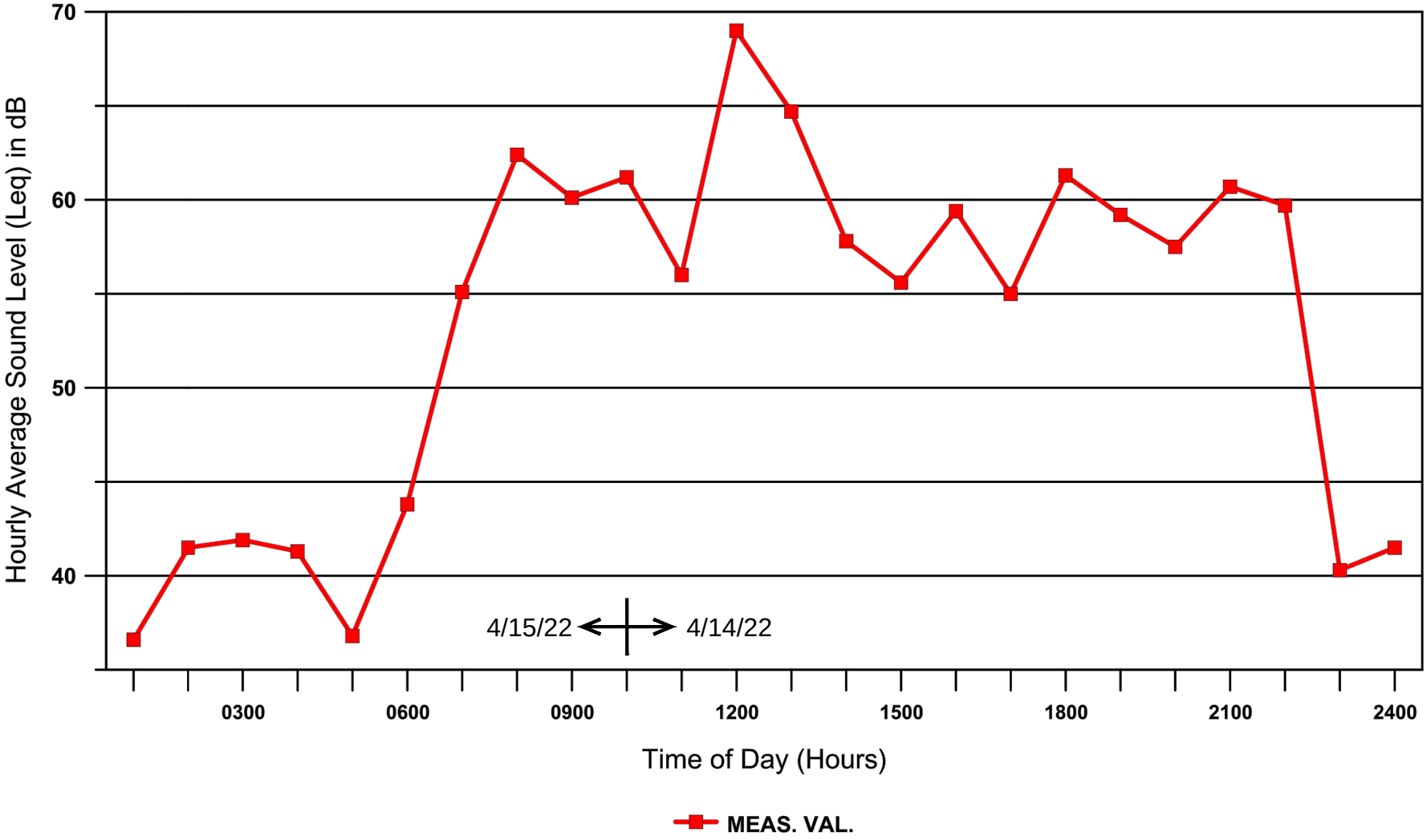


**FIGURE 3B**
**MEASURED HOURLY NOISE LEVELS AT LOC A ADJUSTED FOR PROBABLE 4 EA. C-130 OVERFLIGHTS (59.4 DNL; APRIL 14-15, 2022)**

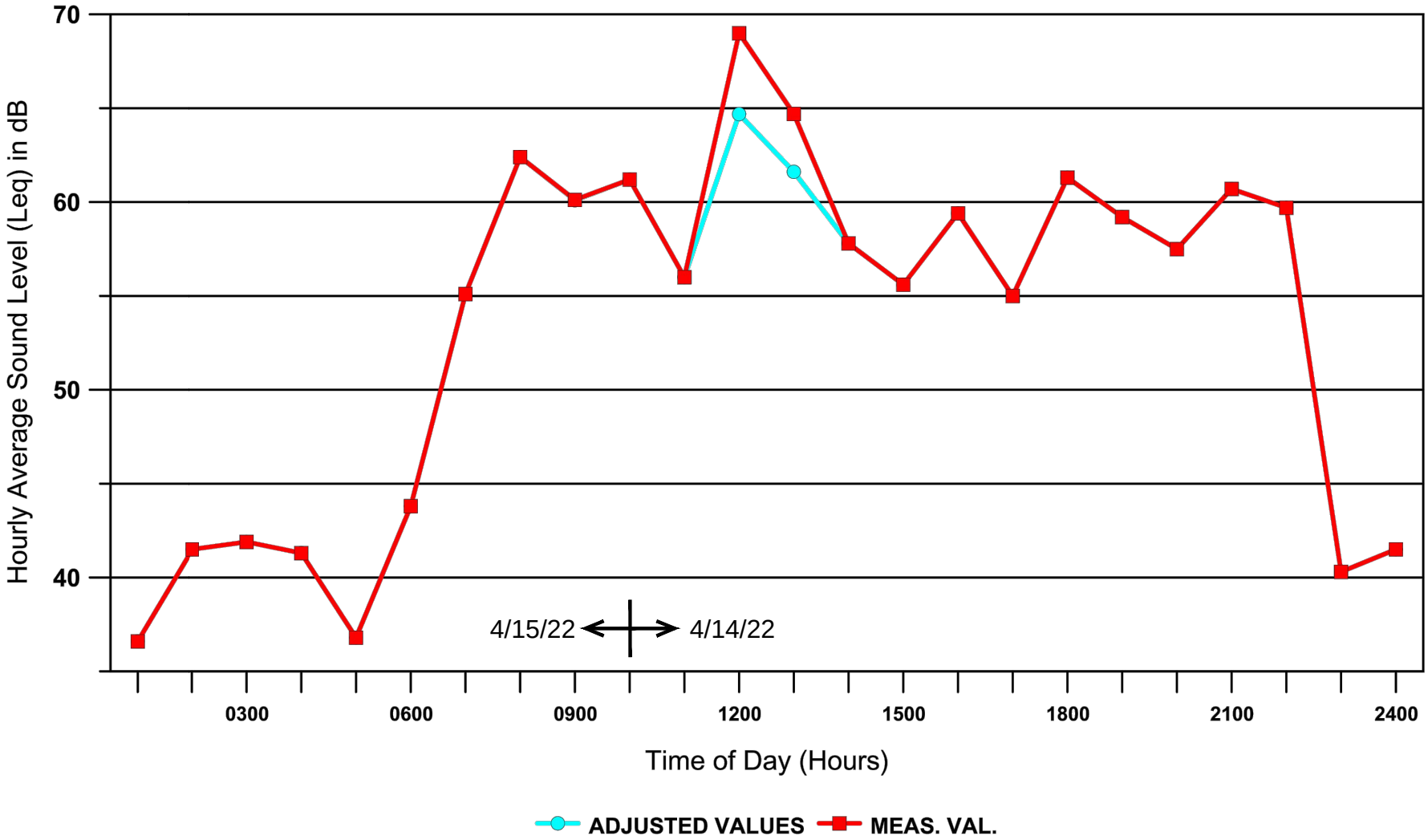


**FIGURE 4A**
**MEASURED HOURLY NOISE LEVELS AT LOC A**
**(56.8 DNL; APRIL 15-16, 2022)**

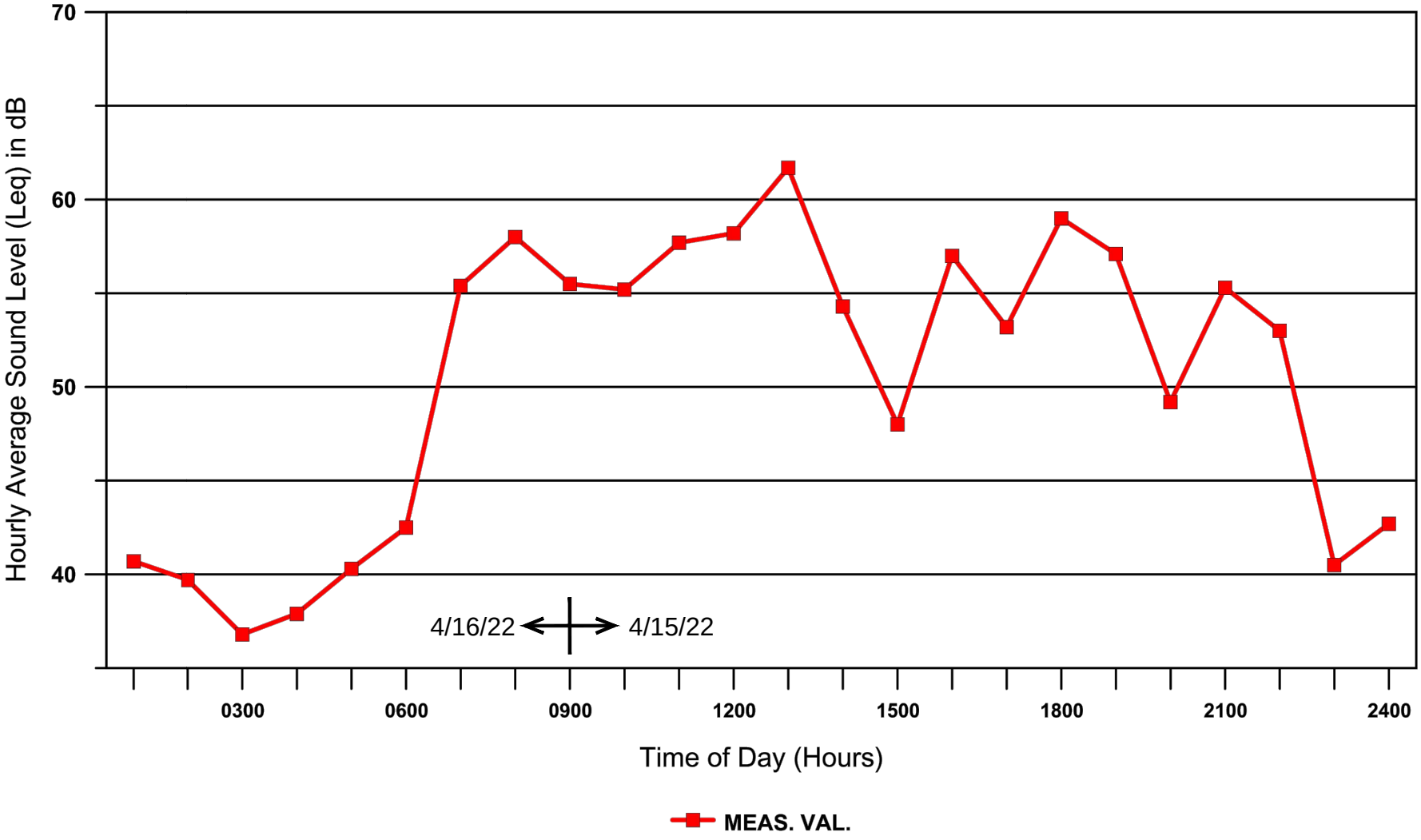


**FIGURE 4B**
**MEASURED HOURLY NOISE LEVELS AT LOC A ADJUSTED FOR PROBABLE 1 EA. C-130 OVERFLIGHT (56.5 DNL; APRIL 15-16, 2022)**